

Opening the Census;

The Journey to Work Treasure Chest

Michael Edwards

David Whiterod



Main issues

This presentation covers a number of issues –

- Access to fine level detailed information from the Census
- The value and use of this data, and
- Dissemination of this information



Journey to Work Data from the Census

- Journey to work data is potentially one of the most powerful datasets available from the Census.
- It is the only detailed data set of its type but because of restrictions has been significantly underutilised.
- Many transport departments have developed their own systems for analysing travel data but these are largely built around sample surveys.



Access to Journey to Work Census Data

The fundamental table from the census journey to work data is **collection district of origin *by* work destination zone**.

In the case of Adelaide this matrix would contain over 600,000 cells – 2,100 collection districts *by* 300 destination zones.

ABS policy has been not to release a table where the number of cells exceeded the table population. In Adelaide's case there were approximately 450,000 employed residents, consequently the ABS would not release this data.



The value of unrandomised data

ABS policy is to randomise cells which contain values between 0 and 3.

If the ABS had released the aforementioned table over 90% of the tables cells would have been randomised.

AND

approximately 60% of the total numbers would be contained within those randomised cells.



In Summary

- Planning SA couldn't access the basic journey to work table from the Census, and
- even if it could the ABS policy of randomisation would have made it virtually unusable



Planning SA approached the ABS with its concerns which culminated in the Australian Statistician agreeing to provide access to select **unrandomised** data from the 2001 Census.

- the data requested and released was deemed to not enable the identification of any individual, and
- was therefore considered not to contravene the confidentiality clauses of the Census Act.
- as an added precaution and to address any concerns the data was released under strict confidentiality control measures.



The table provided by the ABS contained –

collection district of origin by destination zone by mode of transport

This was considered the most basic journey to work table from the ABS Census that didn't contain personal information. It enabled analysts to examine workers collection district of residence, their work destination zone and their method and distance of travel.



Access to this data allowed us to exact details that were never possible before. The number of possible permutations for analysis was massive.

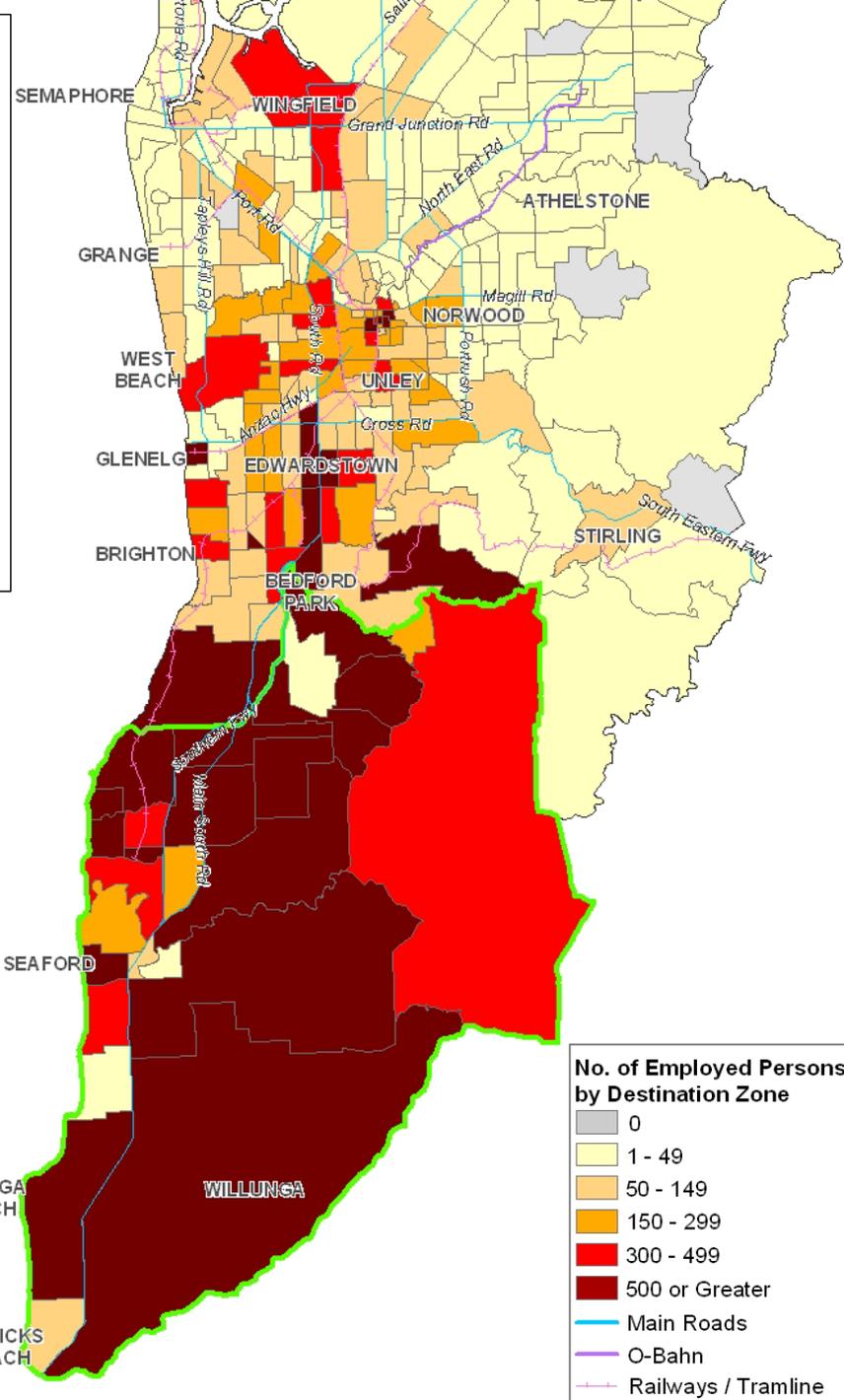
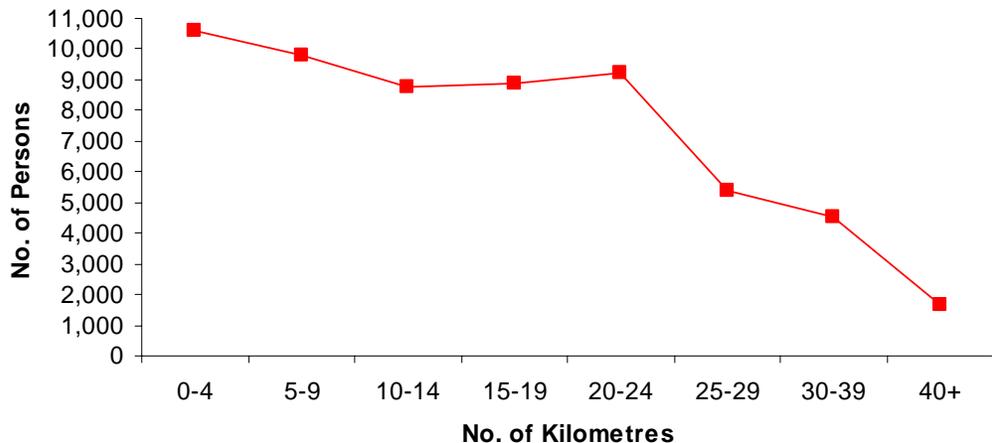
It was therefore decided to initially analyse the data on a council by council basis. There are around 19 councils in the Adelaide region. Each was examined from a destination and origin perspective as well as being classified by mode of transport.

Modes were aggregated into a number of principal categories – all modes, bicycle, walking, car, public transport and other modes.

The following slides show examples of the output for the Onkaparinga Council which is south of Adelaide.

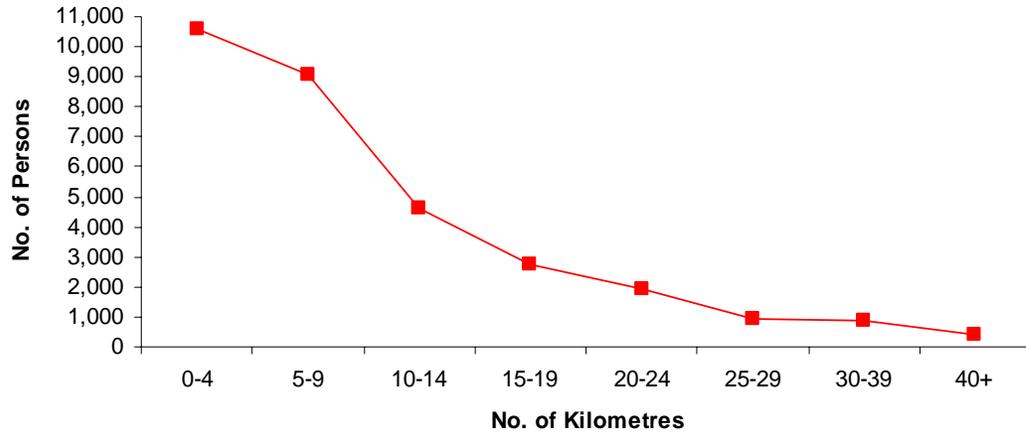


Distance Travelled to Work by Persons Residing in Onkaparinga Local Government Area

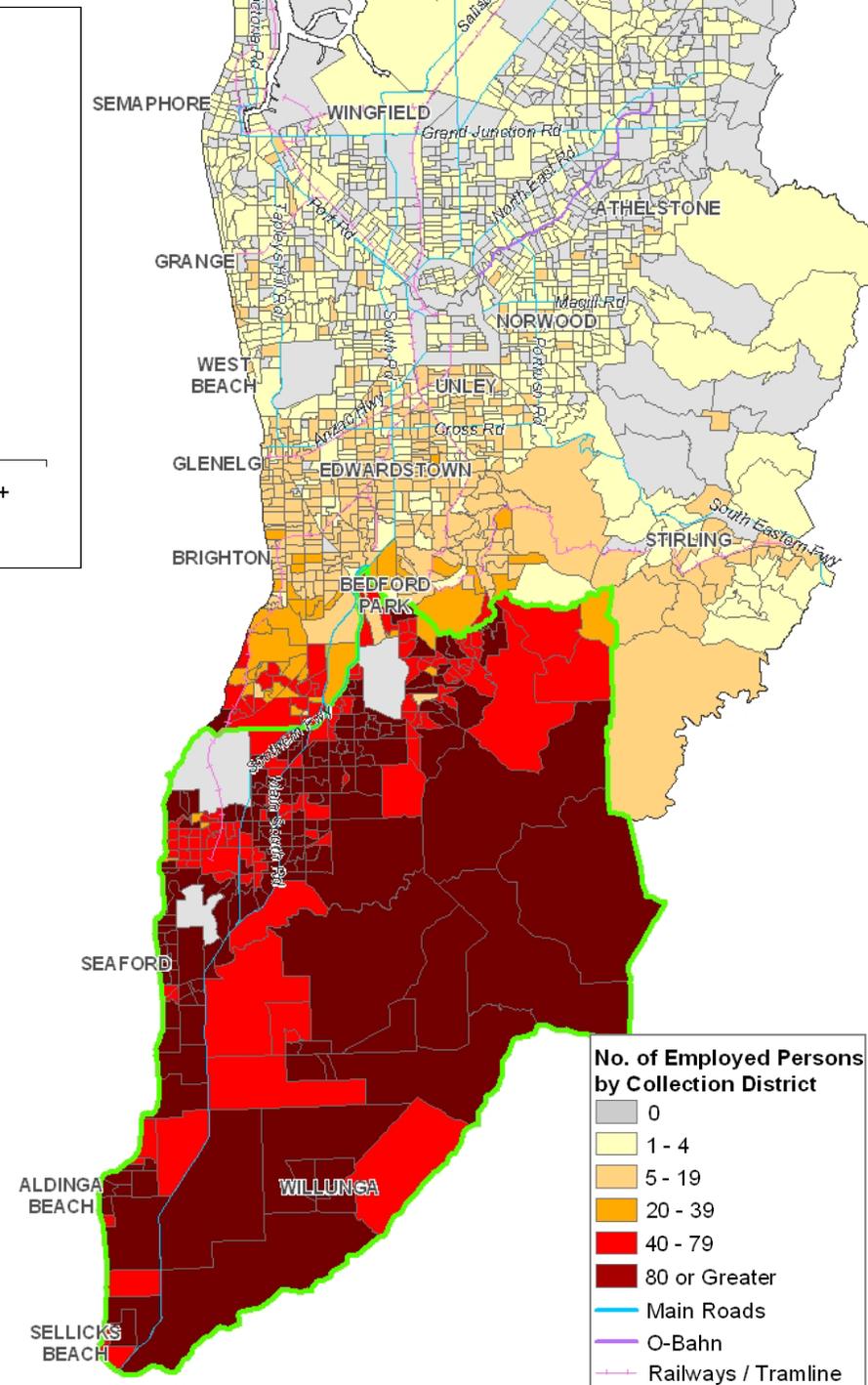


- 18% (10,579) of Onkaparinga local government area's resident employed persons travel less than 4km to their work destination zone
- 49.5% (29,131) of Onkaparinga local government area's resident employed persons travel less than 14km to their work destination zone
- The median distance travelled to work by persons residing in Onkaparinga local government area, is approximately 14.2km
- The average distance travelled to work by persons residing in Onkaparinga local government area is approximately 15.7km
- The 25% of Onkaparinga local government area's employed persons who travelled the furthest to work, travelled 22km or more

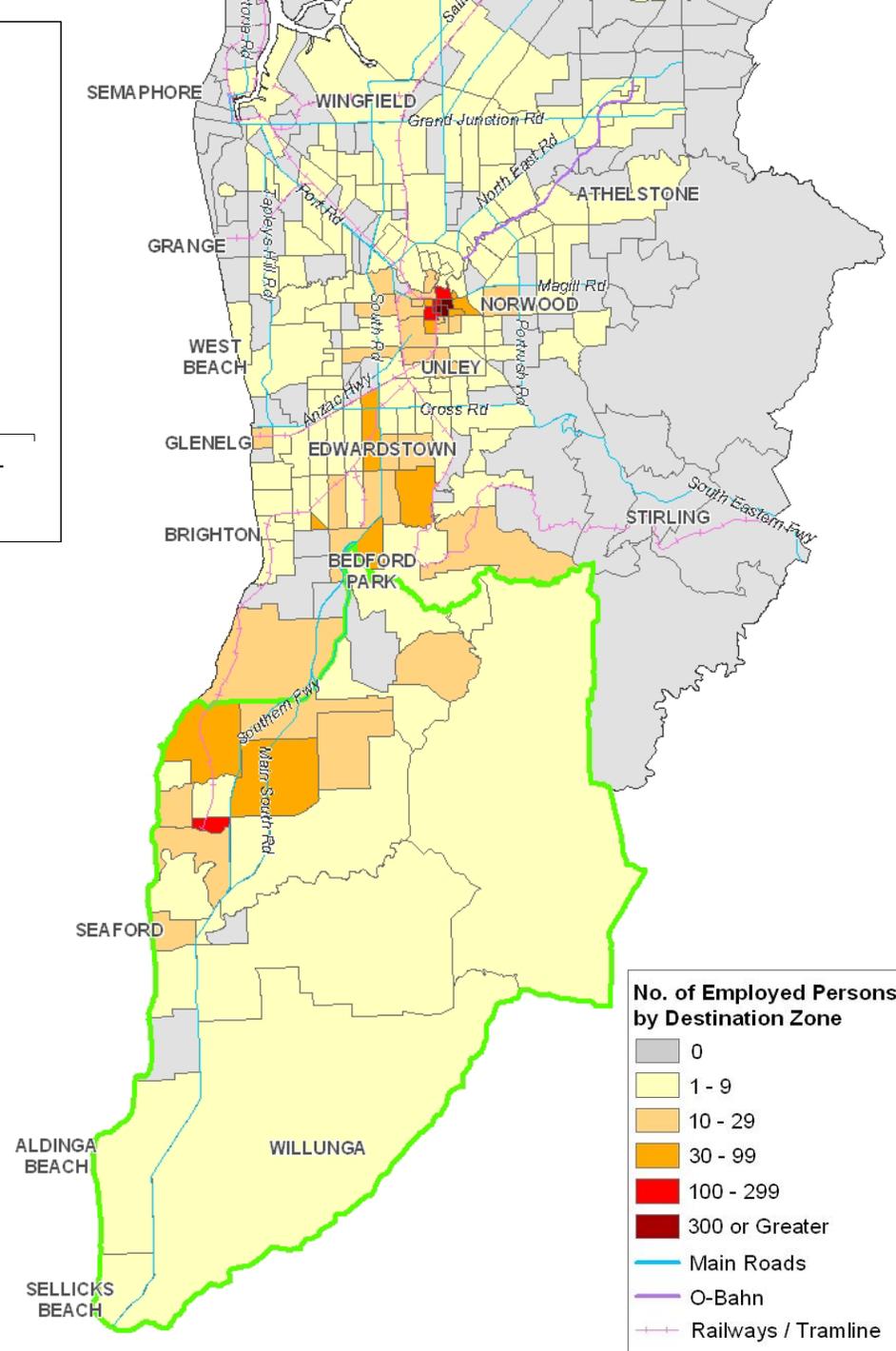
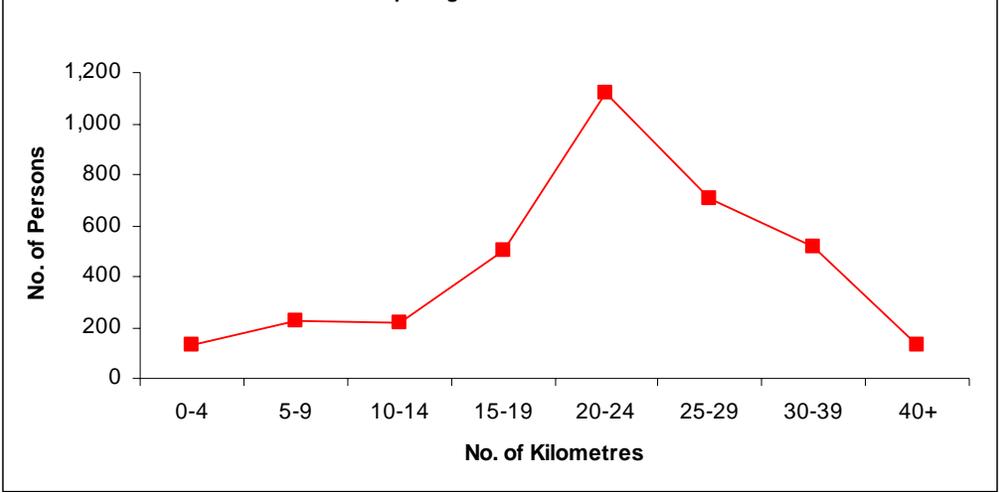
Distance Travelled to Work by Persons Employed in Onkaparinga Local Government Area



- 34% (10,594) of persons working in Onkaparinga local government area travel less than 4km from their collection district of origin
- 77.9% (24,273) of persons working in Onkaparinga local government area travel less than 14km from their collection district of origin
- The median distance travelled to work by persons employed in Onkaparinga local government area, is approximately 6.2km
- The average distance travelled to work by persons employed in Onkaparinga local government area is approximately 9.7km
- The 25% of persons who travelled the furthest to work in Onkaparinga local government area, travelled 12.7km or more



Distance Travelled to Work by Persons Using Public Transport who Reside in Onkaparinga Local Government Area



- The median distance travelled to work by persons residing in Onkaparinga local government area who use public transport is approximately 22.1km
- The average distance travelled to work by persons residing in Onkaparinga local government area who use public transport is approximately 22.6km
- The 25% of Onkaparinga local government area's employed persons who used public transport and travelled the furthest to work travelled 27.6km or more

Onkaparinga Local Government Area Summary Statistics

- Of the 64,489 employed persons residing in Onkaparinga local government area, 38.3% (24,675) work within Onkaparinga local government area
- The remaining 39,814 (61.7%) employed residents work outside Onkaparinga local government area or have no fixed work address
- The median distance travelled to work by persons residing in Onkaparinga local government area was 14.2km, compared to 6.2km travelled to work by persons working in Onkaparinga local government area



- At this stage a couple of hundred maps had been produced
- Principal State Government users of this information included planning, transport and public transport
- With a large number of users and large volumes of information a quick, cost-effective means of dissemination was required
- The following slide shows a menu driven Intranet system that was developed to assist in this process



Journey To Work Map Index

LGA-Based Maps

LGA**Map Type**

Adelaide Statistical Division Maps

- [Work Destination of Persons Living in the ASD by Destination Zone](#)
- [Median Distance Travelled to Work by Persons Living in the ASD by Destination Zone](#)
- [Median Distance Travelled to Work by Persons Living in the ASD by Collection District of Origin](#)
- [Origin of Persons Employed in the Adelaide Statistical Division by Collection District](#)
- [Number of Employed Persons using Public Transport to Travel to Work within the ASD by Census Collection District](#)
- [Percentage of Employed Persons using Public Transport to Travel to Work by Destination Zone](#)
- [Percentage of Employed Persons using Public Transport to Travel to Work within the ASD by Census Collection District](#)
- [Employed Persons who Work From Home by CCD of Origin](#)



Government
of South Australia

Primary Industries
and Resources SA

Key stakeholders in the project needed additional flexibility. They required catchment data and information for transport corridors. The problems were –

- The number of combinations were huge
- Data dissemination was again a problem
- Confidentialising the end result



Online Intranet Enquiry System

- Planning SA have developed an online Intranet enquiry system that allows users to produce a request on-the-fly that is tailored to their needs.
- The end product is based around Planning SA's current online mapping system "maps in minutes". This allows users to access many other GIS layers (e.g. as roads, public transport routes, schools, shopping, open space and much more) thus allowing the identification of an area of interest and/or adding context to the query.
- The enquiry system is multi-directional in that it allows the user to specify (**by mode of transport**) either
 - a set of collection districts of origin for employed persons and to generate a destination zone map for those persons, or
 - a set of destination zones for employed persons and generate a collection district of origin map for those persons



Journey to Work Profiler

About Contact Us Planning SA

Query type
 Select Residential areas to map employees' workplace destinations

Transport mode All Modes

Run Report

Clear CD List

4071402

SEMAPHORE
GRANGE
GLENELG

Map tool: zoomin

Local intranet



Select Geography

The screenshot shows a web browser window titled "Journey to Work Profiler | Add Geography - Microsoft Inter...". The browser's address bar and menu bar are visible. The main content area has a header "Journey to Work Profiler" with links for "About", "Contact Us", and "Planning SA". Below the header, there are two dropdown menus: "Query type" set to "Select Residential areas to map employees' workplace destinations" and "Transport mode" set to "All Modes". A "Run Report" button is positioned below these menus. Further down, there are two columns of buttons. The left column contains "Clear CD List" and a list of five CD numbers: 4071301, 4071410, 4071305, 4071406, and 4071409. The right column contains "Clear SLA List" and a single SLA entry: 405204344 Mitcham (C) - North-East. The browser's status bar at the bottom indicates "Local intranet".

Journey to Work Profiler
About Contact Us Planning SA

Query type
Select Residential areas to map employees' workplace destinations

Transport mode All Modes

Run Report

Clear CD List
4071301
4071410
4071305
4071406
4071409

Clear SLA List
405204344 Mitcham (C) - North-East

Local intranet



MiniMapper Full Map Viewer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

MiniMapper Standard GeoBookmarks Query Markup Planning SA

Layers

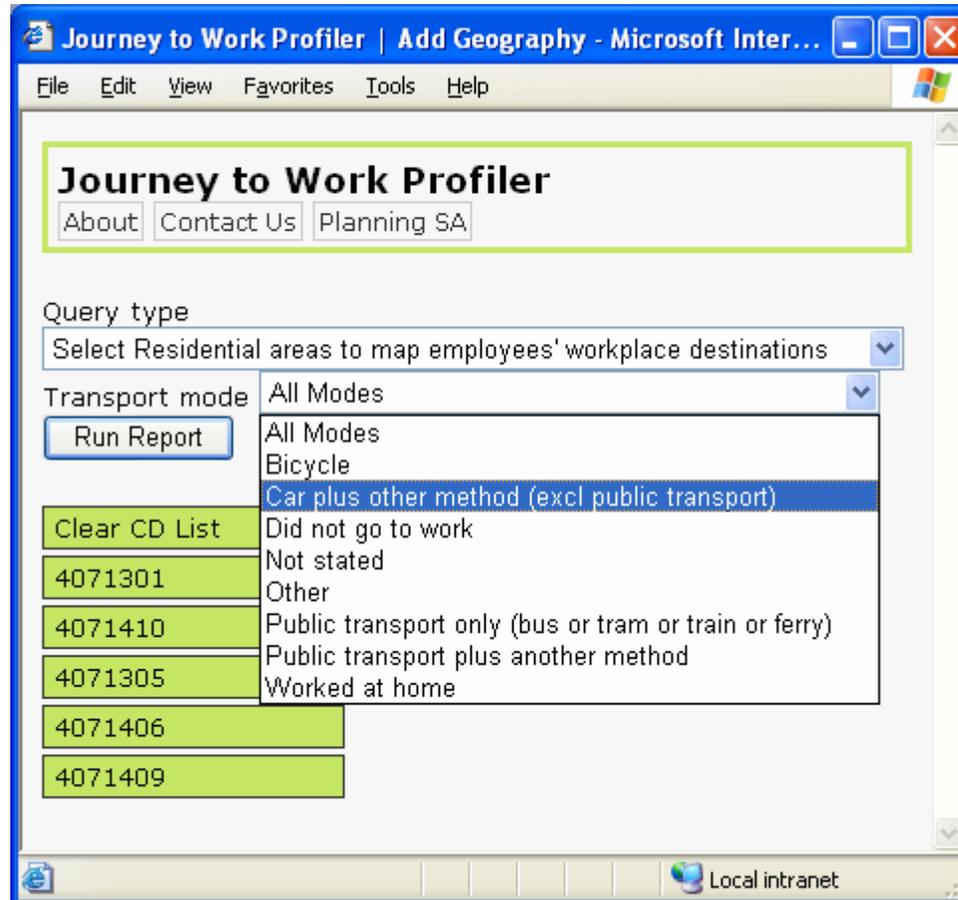
- Place Names labels
- Zoning labels
- Detailed Roads labels
- DCDB labels
- Suburb labels
- Heritage site points
- Health Services

Scale 1: 24,662

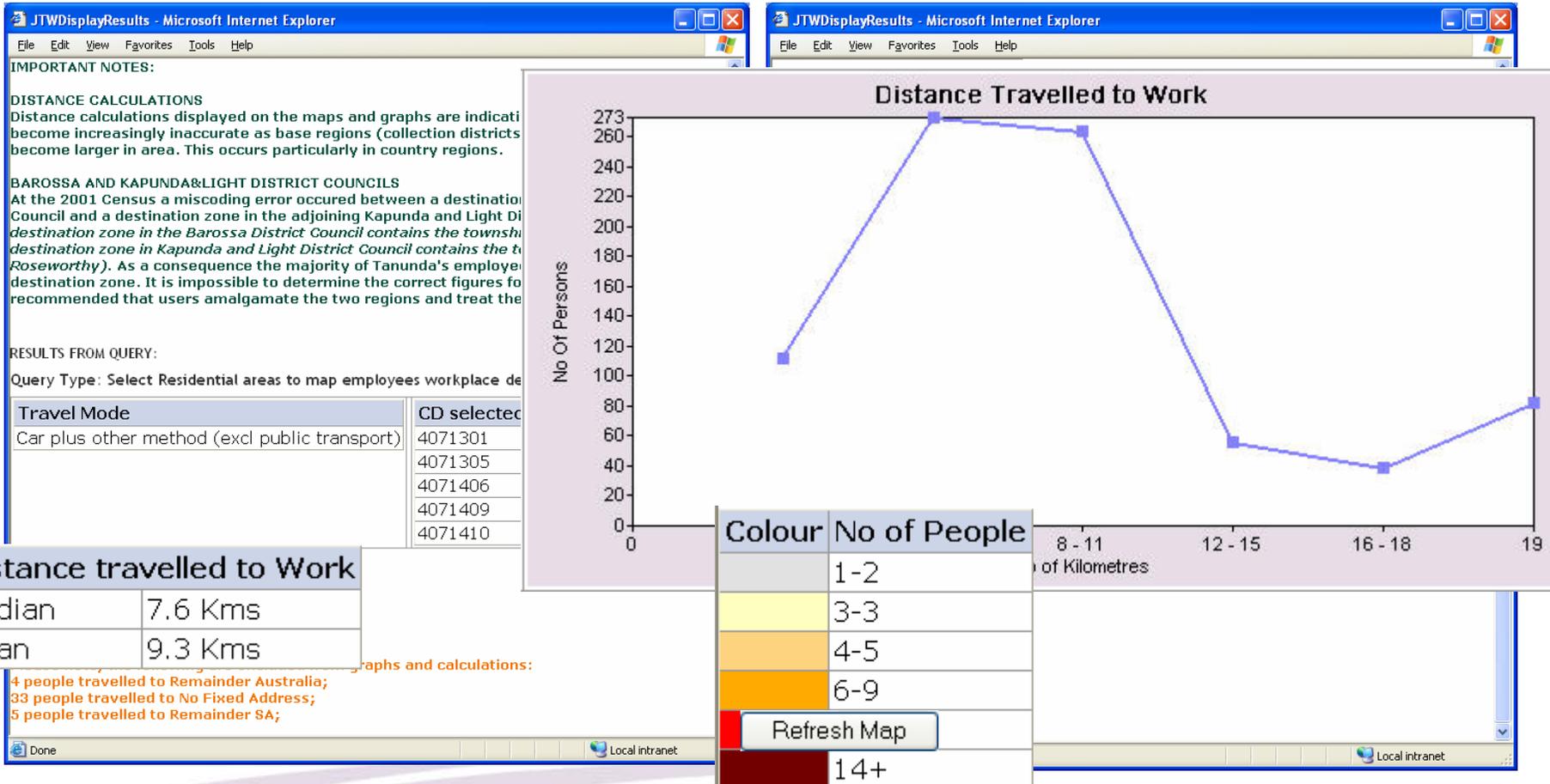
Map tool: selectboxdynamicMap: Easting (x) =1328359 Northing (y) =1664713 (l) Local intranet



Run Report



View Report



MiniMapper Full Map Viewer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

MiniMapper Standard GeoBookmarks Query Markup Planning SA

Government Owned Land 2005
 Metropolitan Adelaide
 Windspeed
 Broadacre 2004
 MOSS Study Area
 Zoning Categories
 Landuse 2004
 Generalised Geology
 Metro Aerial 2004
 State Satellite

Scale 1: 19,300

Map tool: zoomindynamicMap: Easting (x) =1328140 Northing (y) =1670802 (Lar

Local intranet



Benefits

- In this form the system gives the user flexibility and allows them to elicit the fine level detail required for analysing transport corridors
For example, public transport analysts can examine the destinations of workers along railway corridors. This can be contrasted with the corresponding public transport usage and from this potential patronage can be calculated.
- The Intranet delivery system allows a wide range of users access to the system whilst preventing them from accessing the core dataset.
- In addition the maps have been presented in a fashion such that any individual cannot be identified, thus addressing any ABS confidentiality concerns.



The journey to work data was a major input into the 2005 review of Adelaide's public transport system which required mapping and analysis of sub-LGA regions.

The analysis concentrated on underperforming areas or regions with big gaps in services.

As a consequence some regions

- had an increase in the frequency of services
- further development of existing services, and
- provision of new services



The Potential

The journey to work data from the Census is standard across Australia.

Only the geography differs, but it is still based on origin collection districts and work destination zones.

Therefore this system could be applied within every State.

