

# Research project accurately plots cardiac care using location data from Pitney Bowes

## Customer profile

### Cardiac ARIA

- The Cardiac ARIA project was undertaken by the University of Adelaide Department of Geography and the University of South Australia Faculty of Health.
- Both faculties maintain a close involvement with industry, community and government and design the most relevant curriculum for students.



## Mapping cardiac care by drive time

Cardiovascular disease (CVD) is Australia's biggest killer. Currently 9 out of 10 Australians have at least one risk factor for CVD. In 2007, a team of researchers from the University of Adelaide and the University of South Australia began a program to assess the level of accessibility to cardiac care from every population centre in Australia. The outcome of the project was a numeric alpha index which rated how close population centres in Australia were to cardiac care within one hour's travel and which cardiac support services were available within that distance.

## Challenge

The Cardiac ARIA measured access to cardiac care through a 'geographic lens' and rated access within three time periods, independent of professional, socio-economic or political influences. The project indexed every population centre in Australia and required experts in both cardiac care and geography. Accurate geographical data was vital to the project. The project required not only up-to-date road network distance data for the whole of Australia, but also data on the locations of pharmacies, GPs, cardiac services, pathology and medical centres as well as hospitals.

*"StreetPro® Australia let us access comprehensive data on every area of the Australian population, without missing areas that previous GIS systems had struggled with."*

— Robyn Clark, Associate Professor

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## Technology used

- StreetPro Australia is a high quality digital road network that provides real-world detailed display with the spatial accuracy and attribution needed for spatial business solutions.
- It offers high-quality, up-to-date data and comprehensive street coverage for Australia.

*“Accessibility modelling is an excellent method for assessing service delivery (supply) with population (demand). However, these models require accurate and up-to-date spatial data. Otherwise the results are unreliable.”*

— Neil Coffee, Senior Research Fellow

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## Solution

In order to help move the project forward, Pitney Bowes and Tonkin Consulting provided the project with the StreetPro Australia road network data. This data was used to calculate the route and distance residents would travel by road to their nearest cardiac care facility (air travel was not considered).

StreetPro Australia provided the Cardiac ARIA project with one of the key data sets to measure the relationship between the location of care facilities, population and the road network required for access. It also provided the Cardiac ARIA project with a more detailed network with fewer break-in-network problems which resulted in a more accurate analysis and subsequent results and conclusions.

## Benefits

The Cardiac ARIA was the first comparable measure of the time and distance from any Australian population centre to the nearest cardiac service facility, nationally and internationally. The Cardiac ARIA indices were linked with 2006 Australian Bureau of Statistics Census population characteristics using location to provide detailed sociodemographic data associated with each population centre.

This unique, innovative and highly collaborative project has delivered a powerful tool to highlight and combat

the burden imposed by CVD in Australia. Outcomes of the study found that 71 percent of the Australian population had cardiac services available within one hour's drive, suggesting that in many cases education is the issue, rather than accessibility.

The Cardiac ARIA model could be applied internationally and to other acute and chronic conditions such as mental health, cancer, respiratory disease, and diabetes and burns services. Using GIS to underpin medical research in this way will give greater insight into the links between people's health and their geographical location.

StreetPro Australia:

- Provided a more detailed and connected road network
- Increased the scope of the project and provided accurate results and conclusions
- Highlighted areas where access to health services was currently limited
- Highlighted the potential for GIS to be used extensively in other areas of medicine
- It is a model that could be applied internationally and to other acute and chronic conditions



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