In 2004, the Public Sector Mapping Agency of Australia released Australia’s first geocoded national address file (G-NAF). The G-NAF contains more than twelve million geocoded, collated, and verified street addresses for Australia, sourced from various government agency databases including those of the Australian Electoral Commission and Australia Post. This factsheet reports on the use of G-NAF to conduct a state-wide geocoded mail survey in the Northern Territory (NT).

**Aim**

To conduct a state-wide, geocoded, mail survey.

**Questionnaire design**

As part of a research project investigating the spatial catchments of gambling venues, we required the precise geospatial location of the residential addresses of venue patrons. To do this we developed a mail survey using G-NAF as our address database. We first assembled a list of all street addresses recorded in G-NAF for the NT (n = 95,300). We designed a questionnaire that included a G-NAF identifier so that responses could be linked to a geocoded address (Figure 1). Reply-paid envelopes were printed using the corresponding addresses in the G-NAF database and included with the questionnaire. We geocoded all responses based on the G-NAF identified on the returned questionnaires.

**Coverage**

A visual inspection of NT G-NAF survey responses revealed that, although there was good coverage of the larger towns, very remote areas remained under-represented. The relative distributions of G-NAF responses and 2006 census dwellings by remoteness are presented in Figure 2.

**Figure 1: Questionnaire with G-NAF identifier**

**Figure 2: Proportion of dwellings by remoteness, NT**

**Pilot**

A pilot mail survey was conducted for Alice Springs in April 2010. Because G-NAF includes some non-residential addresses, the category field of the G-NAF (derived from ABS meshblock land use categories) was used to select only residential areas. This strategy potentially excluded some addresses because it is derived from normative state planning/zoning scheme data. For example, people who live in areas zoned for industrial use were excluded from the mail survey.

There were 10,049 residential zone addresses in the Alice Springs local government area. All were selected for the mail survey to be delivered by Australia Post. Of the 10,049 street addresses selected, only 8,571 (85%) could be delivered to, because Australia Post does not deliver unsolicited mail outside specific urban areas.
Limitations
Although 14% of delivered questionnaires were returned, there were three sources of spatial sampling bias (see Figure 3): (1) Addresses to which Australia Post will not deliver; (2) Residential addresses in non-residential zones; (3) Addresses missing from G-NAF, most notably in town camps.

Hand-delivery
To access areas to which Australia post does not deliver unsolicited mail (notably the southern half of Alice Springs, see Figure 3) we undertook hand-deliveries in the Alice Springs peri-urban area. Although 1,456 addresses were identified for hand-delivery, only 300 questionnaires were delivered. This was primarily because many addresses, once identified, were found to have no dwelling present (i.e. they were vacant blocks or had a non-residential structure). 30% of hand-delivered questionnaires were returned.

State-wide
When conducting the survey for the entire jurisdiction, three modifications were made. First, a list of areas to which Australia Post deliver unsolicited mail was obtained. This limited our study to Alice Springs, Darwin and Katherine. In addition, questionnaires were hand-delivered to a spatially stratified sample of 2,000 addresses from 7,000 potential addresses in the Australian Post undeliverable zone between 20km to 40km from central Darwin. Second, local knowledge and Google Earth was used to identify blocks of probable residential addresses in non-residentially zoned areas. Third, a non-mail based strategy involving interviews was developed to gather qualitative data in areas with addresses missing from G-NAF such as Alice Springs’ town camps and the very remote periphery.

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