

Construction of a concordance from SLAs to DGPs

Background

This paper describes the methodology used by Prometheus Information in developing a concordance suitable for apportioning SLA data to DGP, for data based on 2001 SLAs of usual residence.

Developing such a concordance poses some challenges since DGP boundaries are defined by reference to postcodes. In some parts of Australia postcodes and SLAs can be aligned reasonably well but in other parts (such as north Queensland) postcodes cover large areas and are often broken into disjoint areas with poorly defined boundaries.

The concordance is to be used primarily to estimate rates and percentages at the DGP level. Age adjusted mortality and hospitalization rates and prevalence estimates (ie population percentages) for chronic illnesses and risk factors are the main applications for the concordance.

In the calculation of rates and percentages the concordance is applied to both the numerator and the denominator in the calculation. This makes the resulting rates tolerant to imprecision in the concordance.

It should be noted that this concordance should be used only for the context for which it was developed. It is applicable to data based on 2001 SLAs of usual residence.

Data sources

A statistically valid data source was required for this task. The data source needs to match the Australian population in 2001 by place of usual residence since the data to which it is to be applied is based on place of usual residence.

A data file was obtained from the ABS to provide the basis for the concordances to be developed.

The file included the fields shown in the following table.

Field	Description/Comment
CD	Collection District Census 2001
POA	Postal Area that includes CD
SLA	SLA in ASGC 2001 includes CD
Census count – place of enumeration	Census count enumerated at this CD
Census count – place of usual residence	Census count where this CD was the usual place of residence
ERP June 30 2001	ABS estimated resident population

The total of the ERP field was total estimated resident population for Australia in 2001.

The CD, POA, SLA and ERP fields were used in the SLA to DGP concordance.

The Census count figures were obtained to make possible the construction of concordances for Census data for other uses and for comparison with the ERP based concordance. They were not used in the development of the SLA to DGP concordance discussed here.

The concordance used to define DGPs in terms of postcodes was obtained from the DoHA website. The concordance was checked for internal consistency.

Construction of the SLA to DGP concordance

The postcode to DGP concordance from the DOHA website was applied to the CD data obtained from ABS. The POA field was used to split each CD across the DGPs in accordance with proportions of the POA in each division. In doing this we are treating POAs as if they are the same as the postcodes by which DGPs are defined, but there is no other basis on which to proceed.

The result was a new file with one record for each CD-DGP combination resulting from the concordance apportionment of the populations in the CDs. The totals of the population fields were unchanged by this process.

The first version of the concordance was created by aggregating the records across CDs and POAs leaving records based on SLA and DGP. These records contained the number of people from each SLA who have notionally been allocated to each DGP.

A percentage based concordance was then created by dividing the population on each record by the corresponding SLA population.

There were considerable differences in some cases in the percentages estimated using the three population measures – Census 2001 by place of enumeration, Census 2001 by place of usual residence and ERP at June 30 2001.

The ERP field was used for the final concordance since it will be applied mainly to data where the geography is on an ERP basis (eg deaths and hospital episodes).

The concordance developed is robust in the sense that the DGP estimates it produces when applied to SLA based populations are closely tied to the underlying SLA figures since they are weighted sums of those figures. Clearly SLAs that are entirely within a DGP are entirely allocated (ie with a weight of 1) to that DGP. SLAs that cross DGP boundaries are apportioned across two or more DGPs in a manner that preserves the population counts. In general the figures from the SLAs entirely within a DGP outweigh the figures from the apportioned SLAs which means that errors in the proportional allocations will in most cases have a only a marginal affect on DGP figures. Moreover, any errors in the proportions of SLAs to DGPs will tend to cancel one another out further reducing any errors at the DGP level.

An example of the process for step 1 is shown at attachment 1.

Future Possibilities

The concordance can be adjusted to meet any new configuration of Division boundaries based on the 2001 Collection Districts. While this concordance will differ for SLAs on the borders of DGPs, the results of its application to specific data can be expected to be similar to the concordance developed using the method described above provided the concordance is applied to both numerators and denominators.

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Example of steps and output in the development of the concordance using 1 SLA - Balranald (A)

Input data from ABS

<u>CD</u>	<u>POA</u>	<u>SLA</u>	<u>SLA Name</u>	<u>POE pop</u>	<u>UR pop</u>	<u>ERP pop</u>
1010101	2715	10300	(10300) Balranald(A)	804	806	858
1010102	2715	10300	(10300) Balranald(A)	478	431	460
1010103	2711	10300	(10300) Balranald(A)	139	109	116
1010104	2737	10300	(10300) Balranald(A)	154	146	154
1010105	2715	10300	(10300) Balranald(A)	89	58	62
1010106	2715	10300	(10300) Balranald(A)	114	107	113
1010107	2737	10300	(10300) Balranald(A)	234	237	253
1010108	2737	10300	(10300) Balranald(A)	511	480	511
1010109	2715	10300	(10300) Balranald(A)	142	128	136
1010110	2715	10300	(10300) Balranald(A)	105	103	110

Input data - concordance file

Postcode to Divisions of General Practice concordance file from DoHA website

<u>Postcode</u>	<u>%</u>	<u>DGP code</u>	<u>DGP name</u>
2715	100	332	332 Mallee Division of General Practice
2737	100	332	332 Mallee Division of General Practice
2711	100	232	232 Murrumbidgee Division of General Practice Ltd

Output file with DGPs added by using above concordance

<u>CD</u>	<u>POA</u>	<u>SLA</u>	<u>SLA Name</u>	<u>POE pop</u>	<u>UR pop</u>	<u>ERP pop</u>	<u>DGP</u>
1010101	2715	10300	(10300) Balranald(A)	804	806	858	332
1010102	2715	10300	(10300) Balranald(A)	478	431	460	332
1010103	2711	10300	(10300) Balranald(A)	139	109	116	232
1010104	2737	10300	(10300) Balranald(A)	154	146	154	332
1010105	2715	10300	(10300) Balranald(A)	89	58	62	332
1010106	2715	10300	(10300) Balranald(A)	114	107	113	332
1010107	2737	10300	(10300) Balranald(A)	234	237	253	332
1010108	2737	10300	(10300) Balranald(A)	511	480	511	332
1010109	2715	10300	(10300) Balranald(A)	142	128	136	332
1010110	2715	10300	(10300) Balranald(A)	105	103	110	332

Output file with CDs & POAs removed - pops aggregated to SLA level

<u>SLA</u>	<u>SLA Name</u>	<u>POE pop</u>	<u>UR pop</u>	<u>ERP pop</u>	<u>DGP</u>
10300	(10300) Balranald(A)	139	109	116	232
10300	(10300) Balranald(A)	2631	2496	2657	332

Output file with percentage of SLA to allocate to DGP

<u>SLA</u>	<u>SLA Name</u>	<u>POE pop</u>	<u>UR pop</u>	<u>ERP pop</u>	<u>DGP</u>	<u>% SLA in DGP</u>
10300	(10300) Balranald(A)	139	109	116	232	4.1832
10300	(10300) Balranald(A)	2631	2496	2657	332	95.8168

Abbreviations

ABS: Australian Bureau of Statistics

CD: Collection district (ABS)

SLA: Statistical local area (ABS)

DGP: Divisions of General Practice

POA: Postal area (ABS)

Pop: Population

POE: Place of enumeration (the place where the person was when the census was taken)

UR: Usual residence (the place of usual residence - derived from the census)

ERP: Estimated resident population