

Capturing temporal fluctuations in small area populations: towards a methodology for the estimation of service populations

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An enduring practical problem for the population geographer is to find effective ways of capturing, measuring and representing temporal fluctuations in population at the local level. Conventional approaches to population estimates ascribe a single figure to each area in a given year, generally purporting to represent the resident population. In practice, however, population numbers vary widely on a seasonal, weekly and daily basis in response to various forms of temporary population movement. Such variations have far-reaching implications for planning and the provision of services at the regional and local level.

While previous work has clearly demonstrated that this seasonality is a central feature of temporary population mobility, empirical studies are few and have generally focused on large regions, or relied on ideographic data sets. Moreover, prior research has given little attention to formally modelling temporal patterns of visitation, or to establishing their determinants. For scholars interested in estimating the temporary populations of small areas, a better understanding of seasonal variations in the level of visitation is a key challenge.

This paper presents first results from a study to establish the dynamics of temporal variation in visitor numbers to regions of Australia, at a range of time scales. It builds on previous work (Bell, 2004; Brown and Bell, 2005) which identified nine interlocking dimensions of temporary population mobility, of which seasonality, duration and intensity emerge as the primary temporal variables. The project forms part of a larger study aimed at developing a simulation model of service populations - the population of an area, both permanent and temporary, who demand goods or services from providers of such commodities (Cook, 1996).

Using data from the Australian National Visitor Survey, a set of statistical measures are generated to capture the key facets of seasonal variation in visitor numbers to 38 Australian tourism regions over the period 1998-2004. Building on recent work by Koenig and Bischoff (2003), the measures used are the coefficient of variation; the Gini Coefficient, seasonal factors; and the index of similarity. These measures are subjected to

Principal components analysis to identify the key dimensions and cluster analysis is then employed to develop a classification of regions with similar seasonality profiles.

Results reveal strong spatial regularities in patterns of visitor seasonality to Australian tourism regions which reflect both regional influences and functional attributes. Explanation is sought by reference to a theoretical framework that distinguishes consumption-related and production-related moves (Bell & Ward 2000). This in turn points to a range of natural and institutional factors which influence the temporal and spatial patterns of temporary population movement, and emerge as a driving force underpinning shifts in population counts at the local level. The paper concludes by using these findings to sketch elements of the proposed simulation model.

References

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