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EXPLORING MEASURES OF LOW SOCIAL CAPITAL FOR AUSTRALIA

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This paper provides a brief summary of a recent Australian Bureau of Statistics (ABS) research paper, “Exploring Measures of Low Social Capital”.¹ Developing measures of social capital across individuals and communities has attracted a large amount of attention and policy interest. However, this is a difficult task. The enumeration of the 2006 General Social Survey (GSS) provides an important opportunity to explore a range of measures of social capital and see how they are related to each other. The results presented in this paper show that although a single measure of social capital is useful in summarising the patterns across the population, there is sufficient variation to warrant a number of dimensions of social capital to be analysed separately.

I. INTRODUCTION

1. The aims of the analysis presented in the paper are to use the 2006 General Social Survey (GSS) to: deepen the understanding of social capital in Australia by exploring a number of measures of low social capital derived from the 2006 GSS; and assist those who will eventually perform their own analysis of social capital using the 2006 GSS or similar surveys.
2. The Australian Bureau of Statistics (ABS) defines social capital as the “networks, together with shared norms, values and understandings which facilitate cooperation within or among groups” (Organisation for Economic Cooperation and Development,
3. 2001: p. 41). While the concept of social capital has received a reasonably large amount of attention and policy interest, identifying measures that quantify the levels of social capital held by individuals and/or communities has been more difficult.
4. The enumeration of the 2006 GSS provides a unique opportunity to analyse a number of different aspects of social capital and how they are related to one another. The paper presents results that empirically explore the concept of social capital in more depth than has been possible before due to the new data collected, and it examines associations between the various social capital items.
5. A number of the questions used to capture aspects of social capital have not been asked before in such a large survey, whereas others have not been collected alongside as wide a range

¹ The ABS research paper, *Exploring Measures of Low Social Capital*, authored by: Nicholas Biddle, Elisabeth Davis, Jennifer Myers and Reshen Soorinarain Dodhy.

of demographic and socio-economic information. To explore measures of social capital, the analysis presented in the paper is structured around four research questions:

- (a) What is the incidence of and associations between the social capital items?
- (b) Are there unobserved factors that explain the variance across the social capital data items?
- (c) Is it feasible to produce meaningful composite items from the dimensions of social capital?
- (d) How do the social capital measures vary across demographic groups?

II. SOCIAL CAPITAL: CONCEPTS AND FRAMEWORKS

6. There are a number of different ways to define social capital. The ABS uses as its starting point the definition from the Organisation for Economic Cooperation and Development (OECD). That is, social capital is the “networks, together with shared norms, values and understandings which facilitate cooperation within or among groups” (OECD, 2001: p. 41). An alternative way to think of social capital is that, while “... economic capital is in people’s bank accounts and human capital is inside their heads, social capital inheres in the structure of their relationships” (Portes, 1998, p. 7).

7. Within the broad definition of social capital, the ABS has developed a comprehensive Social Capital Framework, which is depicted in the figure in Appendix A (ABS, 2004). Under this framework, social capital is seen as being a resource which draws on and feeds into other types of resources (natural, produced economic and human capital). Social capital resources can be classified into a number of attributes of networks including network qualities, network structure, network transactions and types of networks. The aim of the paper is not to extend the ABS (2004) framework but rather to consider measures that fit within it.

III. SOCIAL CAPITAL LITERATURE AND PREVIOUS RESEARCH

8. In the social capital literature, there have been two strands of quantitative analysis which drew upon, and contributed to, the development of the theory of social capital.

9. The first strand looks at the measurement of social capital, which is the focus of the paper. The second strand of quantitative research (comprising the bulk of the literature) relates to the outcomes of social capital.

10. The ABS has made a strong contribution to the measurement of social capital in Australia, mainly through the development of the ABS Social Capital Framework (ABS, 2004), but also through analysis of the 2002 GSS (ABS, 2006). This built on work by the Productivity Commission (2003) and the Australian Institute of Family Studies (for example, Stone and Hughes, 2002). A number of researchers have also looked at the socio-economic and demographic variables that are expected to influence the development of an individual’s or community’s level of social capital.

11. It is clear that improved measures of social capital, a better understanding of the relationships between these measures, and a better understanding of the relationship of these

measures with various demographic groups and aspects of well-being would be greatly beneficial to the social capital debate.

IV. THE MEASUREMENT OF SOCIAL CAPITAL

12. Given the difficulties in measuring social capital, the scope of the research presented in the paper is restrained in a number of ways. Firstly, no attempt is made to quantify the level of social capital in Australia in monetary or other terms. Rather, the focus will be on relative measures of social capital and how they vary across the population.

13. Secondly, there is no structural analysis of the factors that determine whether or not a person has low or high levels of social capital and the elements that social capital might influence. Finally, the measures of social capital are restricted to those that come from, or can be derived from, the 2006 GSS. As this is an individual level dataset, area level factors are not considered in the paper.

14. The 2006 General Social Survey (GSS) collected information from 13,670 private dwellings. Information was obtained across a range of topics covering various aspects of people's social and economic lives. By collecting data from such a range of areas of social interest, the GSS allows researchers to connect information in ways not generally possible in more targeted collections. This is likely to be of particular use in developing broad-based social policy that is not restricted to one aspect of a person's life.

15. The 2006 GSS is the second such survey and follows the 2002 GSS. The most important addition to the 2006 GSS from the point of view of the paper is the module on social capital. A full list of the variables in the 2006 GSS social capital module is in Appendix B. The variables are grouped into a few broad dimensions:

- (a) Network qualities (trust, efficacy, active involvement in groups, friendship);
- (b) Network structure;
- (c) Network transactions; and
- (d) Network type.

16. While the variables collected as part of the social capital module make up a large proportion of those analysed in the paper, other data items in the survey are also related to social capital. These were also included in the initial list of variables that were analysed in the remainder of the paper.

V. THE INCIDENCE OF SOCIAL CAPITAL ITEMS

17. Because a large number of the variables in the 2006 GSS have not been collected before, or at least not concurrently, in a large scale national survey, the first step in the analysis is to obtain a descriptive understanding of individual measures of social capital, as well as the interactions between them. The analysis in the paper begins by examining the proportion of the total population who reported each of the social capital items used in the paper, then how the incidence varies by a few key demographic variables, and finally, the interactions between social capital items. (The detailed results will not be presented in this summary paper.)

18. In order to construct measures of low social capital it is often necessary to convert the social capital variables from categorical to binary outcomes. In order to create these binary variables, however, cut-offs need to be chosen. To do this, a number of decisions need to be made, as illustrated by examples detailed in the research paper.

19. For instance, for the question on whether people agree that in general people can be trusted, there are five categories (strongly agree, somewhat agree, neither agree or disagree, somewhat disagree or strongly disagree). In turning this particular categorical variable into a binary variable, two related decisions need to be made. First, should the binary variable measure low or high values of social capital and second, what should be done with the middle neutral category? Given much of the research literature and policy focus is on the relationship between low social capital and poor outcomes (low health, being unemployed, etc.) for this paper, binary variables are constructed to measure low social capital. Hence the neutral category is grouped with the high social capital categories.

20. One example of the summary findings on the incidence of low social capital is that for the majority of the binary low social capital variables, there was a statistically significant difference between those who were born in 'Australia' compared to those born 'Overseas', and/or between those who live in 'Regional/Rural' areas compared to 'Major cities'. Furthermore, the direction of the differences are very consistent. For all the variables where there is a significant difference, those who were born 'Overseas' have a higher reported incidence than those born in 'Australia', and those in 'Major cities' have a higher reported incidence than those who live in a 'Regional/Rural' area.

VI. ASSOCIATION BETWEEN MEASURES OF SOCIAL CAPITAL

21. While all of the variables are likely to capture unique aspects of social capital, a number of them are also likely to be associated with each other. For example, those who report low levels of generalised trust may also report low levels of trust in specific institutions. To understand measures of social capital in the GSS, it is important to know which variables are associated with each other and how strong the associations are.

22. There are a number of variables that have been used as proxies of social capital by other authors and/or were discussed in ABS (2006) based on the 2002 GSS or other collections. It is worth considering the correlations between these variables and other social capital variables in the 2006 GSS in order to see how previous conclusions may have varied with the wider range of information available in the 2006 GSS.

23. For example, the 'Level of generalised trust' variable was correlated weakly with measures of low social capital except for the institutional trust variables. This is an important finding as other authors (for example, Leigh, 2006) used generalised trust as a proxy for social capital. However, these results suggest that trust does not capture all of the aspects of social capital.

24. Another measure that has been used as a proxy for social capital relate to a person's feelings of safety. The three variables measuring a person's feelings of safety did not have a large correlation with other social capital variables (apart from each other). The two variables measuring safety at home had a only a low level of correlation with 'No social activities in the last 3 months', 'Unable to ask for small favours' and 'Has no support in a time of crisis'.

VII. THE DIMENSIONS OF SOCIAL CAPITAL: FACTORS THAT EXPLAIN THE VARIATION

25. Although a number of the social capital variables had reasonably large positive correlations with each other, a high proportion of the bivariate correlations were either low or occasionally negative. Such a correlation structure would tend to suggest that, rather than there being one underlying concept of social capital, there may be a set of dimensions of social capital that the measures fall into.

26. Those variables within a particular dimension are likely to have strong positive correlations with each other, but lower correlations with variables in different dimensions. The analysis attempts to identify the dimensions of social capital by estimating whether there is a set of unobserved factors that explain the variation across the social capital items.

27. To examine the dimensions of social capital, common factor analysis is used. Unlike a regression style analysis which is used to look at the relationship between one variable of interest (the dependent variable) and a set of observed explanatory variables (the independent variable), factor analysis is used to study the patterns of relationships among many dependent variables (Darlington, 1997). This is done with the aim of identifying the underlying variables that directly affect them, even though these variables are unobserved or not measurable directly. These variables are called factors and the relationship between the observed variables and the underlying factor is given by the factor loadings. Eigenvalues give an indication of the amount of variance explained by that factor.

28. There are three main steps involved in the common factor analysis:

(a) The first step in undertaking any type of factor analysis is to create a correlation matrix of those variables that might potentially be influenced by the underlying factors;

(b) Based on these correlation matrices, the next stage of the factor analysis produces a set of eigenvalues for all possible factors. These eigenvalues represent the weighted sum of the squared correlations for each factor with the observed variables;

(c) After selecting the number of factors to retain, the next step is to rotate the matrix of factor loadings. To interpret the rotated results, variables that have a factor loading of 0.4 or higher for a given factor are assumed to be influenced by that unobserved factor.

29. The results showed that five factors emerged from the analysis. Looking first at the eigenvalues, whether or not there is one or more than one dimension of social capital depends on the criteria used. If using the scree test, an argument could be made that there is only one factor that underlies the 32 social capital measures in the 2006 GSS. However, if a cut-off of one for the eigenvalues was used, then it would appear that there are five underlying latent variables or factors that are discussed in the next section.

VIII. EXPLORING COMPOSITE MEASURES OF LOW SOCIAL CAPITAL

30. The analysis shows there was potentially a limited set of factors that explained a large amount of the variation across 32 of the social capital data items in the 2006 GSS. These factors can be thought of as unobserved or latent variables that constitute a particular dimension of social capital with the loadings that the individual variables had on the factors being an indication of the relationship between the latent and observed variables. Making this assumption allows us to derive a set of composite variables representing each of the dimensions. In discussing the results in the previous section, it was identified that either a one-factor or five-factor solution was appropriate for the 32 binary measures of low social capital. The composite items for the five dimensions of low social capital items outlined in the table below are labelled as follows (a summary of the factor / variable association is presented in Appendix C):

- (a) Support – Comp. 1;
- (b) Community involvement – Comp. 2;
- (c) Trust – Comp. 3;
- (d) Feelings of safety – Comp. 4; and
- (e) Network type – Comp. 5.

31. While the mean values for the measures of low social capital are a useful summary of the distribution across the population subgroups, it is often those individuals with very low values of social capital that are of most policy interest. The second section of the relevant tables in the research paper therefore give the proportion of the particular sub-population who have a value for each of the composite items that puts them in the decile with the lowest level of social capital. Values greater than 10% indicate a greater proportion of the population group with very low levels of social capital than the population average.

Mean Values and per cent of population with very low relative levels of social capital – Total population and by sex and age group

	Sex		Age				
	Total	Male	Female	18 to 29	30 to 44	45 to 59	60 plus
Mean value for composite indicators							
Comp. A – Social capital	100.0	104.1 *	96.0 *	100.6	95.2 *	95.8 *	110.4 *
Comp. 1 – Support	100.0	106.9 *	93.3 *	87.1 *	99.4	105.8 *	106.2 *
Comp. 2 – Community Involvement	100.0	101.2	98.9	112.8 *	96.5 *	89.8 *	104.2 *
Comp. 3 – Trust	100.0	106.1 *	94.1 *	103.9 *	101.3	100.3	94.2 *
Comp. 4 – Feelings of safety	100.0	94.1 *	105.8 *	100.4	101.0	97.4 *	101.3
Comp. 5 – Network type	100.0	95.5 *	104.4 *	93.7 *	93.0 *	101.2	113.4 *
Percent of population in decile with lowest social capital							
Comp. A – Social capital	10.0%	11.6%	8.5%	7.7%	8.1%	10.2%	14.2%
Comp. 1 – Support	10.0%	12.5%	7.6%	5.4%	8.7%	12.6%	12.9%
Comp. 2 – Community Involvement	10.0%	9.5%	10.4%	14.4%	8.6%	7.0%	11.0%
Comp. 3 – Trust	10.0%	12.5%	7.5%	12.5%	10.2%	10.0%	7.4%
Comp. 4 – Feelings of safety	10.0%	7.9%	12.0%	9.7%	10.5%	8.7%	11.2%
Comp. 5 – Network type	10.0%	8.1%	11.6%	7.2%	8.0%	10.6%	14.4%
Proportion of population	1.00	0.49	0.51	0.22	0.29	0.27	0.23

Note: In the first part of the table indicate, higher values indicate lower levels of social capital with values marked with an * are significantly different from the national average (100) at the 5% level of significance. Standard errors are presented in Appendix C.

IX. SUMMARY

32. While the concept of social capital has received a reasonably large amount of attention and policy interest, identifying measures that quantify the levels of social capital has been more difficult. Those who have used social capital in quantitative research have often relied on proxy measures or variables that measure one particular aspect only. Enumeration of the 2006 General Social Survey (GSS) provides an opportunity to develop more detailed measures of social capital than had been possible in Australia. Based in part on the Social Capital Framework developed by the ABS (2004), the 2006

33. GSS contained a range of questions that touched on many aspects of social capital at the individual level.

34. Returning to the research questions outlined in the paper, the following observations are made:

(a) In answering the first research question, there was a great deal of variation in the incidence of the different measures of social capital. There was also substantial variation in the social capital items by population subgroup;

(b) Addressing the second and third research questions, based on common factor analysis using a correlation matrix of 32 individual measures of social capital, the results presented in this paper confirmed that the concept of social capital can be partitioned into a number of dimensions. This fits well into the ABS (2004) framework of social capital;

(c) Addressing the fourth research question, by estimating a set of composite items rather than one, it was possible to show that individual dimensions of social capital occasionally varied across demographic groups in different ways. Some demographic groups (those born overseas or those who live in major cities) had consistently low levels of social capital across the dimensions.

35. Whilst somewhat exploratory, what this analysis demonstrates is that in many cases the dimensions of social capital need to be treated separately. Rather than being a single measure, social capital is clearly better thought of as a set of related concepts.

36. Ultimately more research needs to be carried out on these and other measures of social capital to test their validity for the purposes of research and policy formulation. For example, although it was found that the measures of low social capital varied across demographic groups, it was not shown whether or not they were related to aspects of well-being or whether these associations remain after controlling for demographic characteristics.

37. An upcoming paper will test the validity of the composite measures created in the paper in terms of their associations with aspects of well-being, and whether these associations remain after controlling for demographic characteristics.

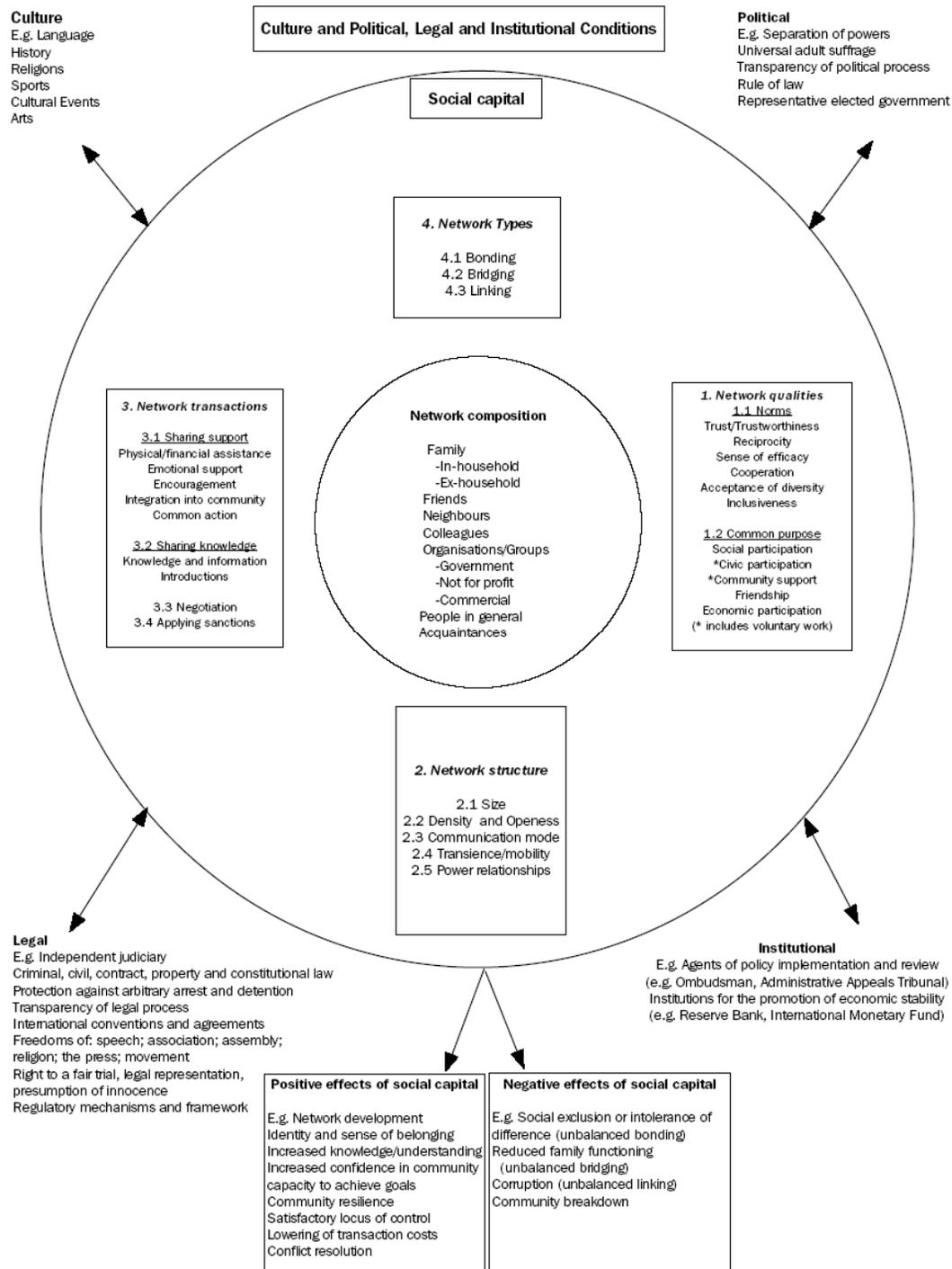
X. REFERENCES

- Australian Bureau of Statistics (2004) *Measuring Social Capital: An Australian Framework and Indicators*, cat.no. 1378.0, ABS, Canberra.
- (2006) *Aspects of Social Capital: Australia*, cat.no. 4911.0, ABS, Canberra.
- (2007) *General Social Survey: User Guide, Australia, 2006*, cat.no. 4159.0.55.002, ABS, Canberra.
- Berkman, L.F. and Glass, T. (2000) "Social Integration, Social Networks, Social Support and Health" in Berkman, L.F. and Kawachi, I. (eds.), *Social Epidemiology*, Oxford University Press, New York, pp. 137–173.
- Berry, H.L.; Rodgers, B. and Dear, K.B.G. (2007) "Preliminary Development and Validation of an Australian Community Participation Questionnaire: Types of Participation and Associations with Distress in an Australian Coastal Region", *Social Science & Medicine*, 64(8), pp. 1719–1737.
- Bureau of Transport and Regional Economics (2005) *Focus on Regions No. 4: Social Capital*, Information Paper no. 55, Department of Transport and Regional Services.
- Chavez, R.; Kemp, L. and Harris, E. (2004) "The Social Capital: Health Relationship in Two Disadvantaged Neighbourhoods", *Journal of Health Services Research & Policy*, 9(Supp2), pp. 29–34.
- Cox, E. (1995) *A Truly Civil Society: 1995 Boyer Lectures*, ABC Books, Sydney.
- Darlington, R.B. (1997) *Factor Analysis* (last viewed 19th January 2007)
<<http://www.psych.cornell.edu/Darlington/factor.htm>>
- Egan, M.; Tannahill, C.; Petticrew, M. and Thomas, S. (2008) "Psychosocial Risk Factors in Home and Community Settings and their Associations with Population Health and Health Inequalities: A Systematic Meta-review", *BMC Public Health*, July, 8(239).
- Islam, M.K.; Merlo, J.; Kawachi, I.; Lindström, M. and Gerdtham, U. (2006) "Social Capital and Health: Does Egalitarianism Matter? A Literature Review", *International Journal for Equity in Health*, April, 5(3).
- Knack, S. and Keefer, P. (1997) "Does Social Capital have an Economic Payoff? A Cross-Country Investigation", *Quarterly Journal of Economics*, 112(4), pp. 1251–1288.
- Kritsotakis, G.; Koutis, A.D.; Alegakis, A.K. and Philalithis, A.E. (2008) "Development of the Social Capital Questionnaire in Greece", *Research in Nursing and Health*, 31(3), pp. 217–225.
- Leigh, A. (2006) "Trust, Inequality and Ethnic Heterogeneity", *Economic Record*, 82(258), pp. 268–80.

- McDonald, R.P. and Burr, E.J. (1967) "A Comparison of Four Methods of Constructing Factor Scores", *Psychometrika*, 32, pp. 381–401.
- Olsson, U. (1979) "Maximum Likelihood Estimation of the Polychoric Correlation Coefficient", *Psychometrika*, 44, pp. 443–460.
- Organisation for Economic Cooperation and Development (2001) *The Well-Being of Nations: The Role of Human and Social Capital*, OECD Centre for Educational Research and Innovation, Paris, France.
- Onyx, J. and Bullen, P. (1997) *Measuring Social Capital in Five Communities in NSW: An Analysis*, Working Paper No. 41, Centre for Australian Community Organisations and Management, University of Technology, Sydney.
- Onyx, J. and Bullen, P. (2000) "Measuring Social Capital in Five Communities", *Journal of Applied Behavioural Science*, 36, pp. 23–42.
- Portes, A. (1998) "Social Capital: Its Origins and Applications in Modern Sociology", *Annual Review of Sociology*, 50, pp. 1–24.
- Putnam, R.D. (2000) *Bowling Alone: The Collapse and Revival of American Community*, Touchstone, New York.
- Productivity Commission (2003) *Social Capital: Reviewing the Concept and its Policy Implications*, Research Paper, AusInfo, Canberra.
- Rigdon, E.E. and Ferguson, Jr., C.E. (1991) "The Performance of the Polychoric Correlation Coefficient and Selected Fitting Functions in Confirmatory Factor Analysis with Ordinal Data", *Journal of Marketing Research*, 28(4), pp. 491–497.
- Sabatini, F. (forthcoming) "Social Capital as Social Networks: A New Framework for Measurement and Empirical Analysis of its Determinants and Consequences", *Journal of Socio-economics*, forthcoming.
- Schuller, T.; Baron, S. and Field, J. (2000) "Social Capital: A Review and Critique", in Baron, S.; Field, J. and Schuller, T. (eds.), *Social Capital: Critical Perspectives*, Oxford University Press, New York, pp. 1–38.
- Siahpush, M. and Singh, G.K. (1999) "Social Integration and Mortality in Australia", *Australian and New Zealand Journal of Public Health*, 23(6), pp. 571–577.
- Stone, W. and Hughes, J. (2002) *Social Capital: Empirical Meaning and Measurement Validity*, Research Paper No. 27, Australian Institute of Family Studies, Melbourne.
- Ziersch, A.M.; Baum, F.E.; MacDougall, C. and Putland, C. (2005) "Neighborhood Life and Social Capital: The Implications for Health", *Social Science & Medicine*, 60(1), pp. 71–86.

Appendix A

2.1 Social Capital, Culture and Political, Legal and Institutional Conditions in Australia



Source: *Measuring Social Capital, an Australian Framework and Indicators, 2004 (cat. no. 1378.0)*

Appendix B – Social Capital Variables in the 2006 GSS

<i>Network attribute</i>	<i>Variable name</i>
Network qualities	
Norms: Trust	Level of generalised trust
	Level of trust in institutions – doctor
	Level of trust in institutions – hospitals
	Level of trust in institutions – police in local area
	Level of trust in institutions – police outside local area
	Feelings of safety walking alone in local area after dark
Norms: Sense of efficacy	Feels able to have a say with family and friends on important issues
	Feels able to have a say within community on important issues
Active involvement in groups	Active involvement in social or support group in the last 12 months by type of organisation
	Active involvement in group in the last 12 months by type of organisation: governance and citizenship
	Active involvement in group in the last 12 months by type of organisation: community support
	Type of civic activity engaged in, in the last 12 months
Friendship	Has ex-household family members feels close to, can confide in
	Number of ex-household family members can confide in
	Has friends feels close to, can confide in
	Number of friends can confide in
Network structure	Frequency of face-to-face contact – ex-household family and friends
	Frequency of other forms of contact – ex-household family and friends
	Other forms of contact used with family and friends
	Frequency of Internet or SMS contact with family and friends
	Type of participation in group activities as child/youth
	Parent(s) did voluntary work
	Person knows of someone in type of organisation would feel comfortable contacting for information/advice
Network transactions	Provision of unpaid work/types of support in past four weeks to ex-household persons
	Provision of unpaid assistance, by recipient
	Whether person spent time in last four weeks providing unpaid care, help or assistance to family members or others because of a disability, a long-term illness or problems related to old age
	Whether attended a community event in past six months
	Whether ever been active in project to organise new service or activity, or preserve existing one in the local area
Network type	Proportion of friends of similar age
	Proportion of friends of same ethnic background
	Proportion of friends with roughly the same level of education
	Number of organisations where personally knows someone

Appendix C – Summary of factor / variable association

Factor	Label	Binary Social Capital data items
Comp. 1	Support	Has no support in a time of crisis Does not have a friend they are close to or can confide in Unable to ask for small favours Does not have an ex-household family member they are close to or can confide in No social activities in the last 3 months Frequency of other forms of contact with ex-household family and friends monthly or less Frequency of face-to-face contact with ex-household family and friends monthly or less Does not feel able to have a say with family and friends on important issues
Comp. 2	Community Involvement	Did not do unpaid voluntary work in the last 12 months No involvement in civic activity in the last 12 months Has not been active in a project in the local area No involvement in governance or citizenship group in the last 12 months Did not provide work or support for ex-household persons in the last 4 weeks No involvement in social or support group in the last 12 months Did not attend a community event in the past 6 months Did not provide care to family member or others in last 4 weeks Does not know someone in an organisation for information and advice Did not personally donate money in the last 12 months
Comp. 3	Trust	Low trust in institutions - police in local area Low trust in institutions - police outside local area Low trust in institutions - hospitals Low trust in institutions - doctor Low generalised trust
Comp. 4	Feelings of Safety	Feels unsafe or very unsafe at home alone during day Feels unsafe or very unsafe walking alone in local area after dark Feels unsafe or very unsafe at home alone after dark
Comp. 5	Network Type	Low or high proportion of friends with roughly the same level of education Low or high proportion of friends of same ethnic background Low or high proportion of friends of similar age
	other data items	Did not attend a sporting event in the last 12 months Could not raise \$2000 within a week Does not feel able to have a say within community on important issues

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