

Section 7

Correlation analysis for Priority Area indicators

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Introduction

A correlation analysis has been undertaken to illustrate the extent of association at the SLA level between the indicators in this atlas for which data were available by Statistical Local Area. Separate analyses were undertaken for the capital cities and non-metropolitan areas.

The results of the correlation analysis are shown in the following tables. As a general rule, correlation coefficients of plus or minus 0.71 or above are of substantial statistical significance, because this higher value represents at least fifty per cent shared variation (r^2 greater than or equal to 0.5): these are referred to as being 'very strong' correlations, while those of 0.50 to 0.70 are of meaningful statistical significance, and are referred to as being 'strong' correlations. Correlations from plus or minus 0.30 to less than 0.50 are referred to in the text as being 'moderate'; and those just below plus or minus 0.30 are referred to as 'weak'. See Appendix A for further details.

Readers should note that correlations between socioeconomic disadvantage (as measured by the IRSD) and poor health outcomes (e.g., high rates of premature death) appear in the matrix as negative numbers. This occurs because low numbers (under 1000) indicate high levels of relative socioeconomic disadvantage under the IRSD and high numbers (above 1000) indicate low levels of relative socioeconomic disadvantage.

Results

Capital cities

There is a very strong association at the SLA/SLA group level across all capital cities between socioeconomic disadvantage (as measured by the IRSD) and high proportions/ prevalence for the following population groups:

- children living in jobless families;
- those who have been unemployed long-term;
- children in welfare-dependent, low income families;
- people with a profound or severe disability and not employed (people living in the community, excluding those in non-private dwellings);
- estimated prevalence of high/ very high psychological distress;
- estimated prevalence of diabetes type 2;
- estimated prevalence of male smokers;
- estimated prevalence of female smokers;
- estimated prevalence of female obesity; and
- premature mortality from all causes.

Strong associations are evident with:

- children in families where the mother has low educational attainment;
- AEDI – children developmentally vulnerable on one or more domains;
- women smoking during pregnancy;
- dwellings rented from government authorities;
- estimated number of people with long-term mental health problems who are unemployed;
- estimated prevalence of circulatory system diseases; and
- estimated prevalence of male obesity.

While acknowledging that some people will have been counted in more than one of these indicators, it is clear from the above results that the population groups described live in areas of relatively high socioeconomic disadvantage. Some of the indicators point to long-term effects (children in families where the mother has low educational attainment, together with the results of the AEDI, which show there are high proportions of children who are assessed as being developmentally vulnerable on one or more domains; people with mental health problems, or profound or severe disabilities; high rates of long-term unemployment); and others highlight the extent to which disadvantaged communities are concentrated in areas with relatively poor resources (areas with high proportions of dwellings rented from government authorities). Further, the very strong association with premature mortality is a clear indication of the profound impact of such disadvantage.

Non-metropolitan areas

Typically, there are fewer very strong or strong correlations in non-metropolitan areas, in part due to the many SLAs with relatively small populations. Note that for this analysis, the five major urban centres of Newcastle, Wollongong, Geelong, Gold Coast and Townsville-Thuringowa have been included as non-metropolitan.

However, there are very strong associations at the SLA/SLA group level across all non-metropolitan areas between socioeconomic disadvantage (as measured by the IRSD) and high proportions/ prevalence for the following population groups:

- those who have been unemployed long-term;
- AEDI – children developmentally vulnerable on one or more domains;
- the Indigenous population;
- estimated prevalence of male smokers; and
- premature mortality from all causes.

In the non-metropolitan areas, strong associations are evident at the SLA level with:

- children in families where the mother has low educational attainment;
- women smoking during pregnancy;
- estimated prevalence of high/ very high psychological distress;
- estimated prevalence of diabetes type 2;
- estimated prevalence of female smokers;
- estimated prevalence of male obesity; and
- estimated prevalence of female obesity.

Table 62: Correlations matrix of the indicator data at the Statistical Local Area level in the capital cities, Australia

Indicators	Estimated prevalence																			Breast screening		Premature mortality		
	IRSD	Children living in jobless families	Long-term unemployment	Children in low income, welfare-dependent families	Children in families where mother has low educational achievement	AEDI - children developmentally vulnerable on one or more domains	Women smoking during pregnancy	Homelessness	Dwellings rented from government housing authorities	People with a profound or severe disability and not employed	Estimated number of people with long-term mental health problems, & unemployed	Estimated prevalence of high/ very high psychological distress	Aboriginal and Torres Strait Islander population	Indigenous participation in full-time secondary education at age 16	circulatory system diseases	diabetes type 2	male smokers	female smokers	obesity: males	obesity: females	participation	screen-detected breast cancer	all causes	suicide and self-inflicted injury
IRSD	1.00	-0.91**	-0.87**	-0.90**	-0.64**	-0.65**	-0.68**	-0.05	-0.65**	-0.84**	-0.57**	-0.88**	-0.45**	-0.26*	-0.55**	-0.82**	-0.84**	-0.71**	-0.59**	-0.83**	-0.03	0.06	-0.71**	-0.42**
Children living in jobless families	-0.91**	1.00	0.86**	0.91**	0.55**	0.64**	0.66**	-0.02	0.64**	0.81**	0.53**	0.85**	0.39**	0.20	0.47**	0.74**	0.76**	0.64**	0.56**	0.73**	-0.07	-0.04	0.63**	0.42**
Long-term unemployment	-0.87**	0.86**	1.00	0.91**	0.56**	0.51**	0.65**	0.09	0.58**	0.81**	0.62**	0.82**	0.36**	0.35**	0.58**	0.73**	0.74**	0.64**	0.48**	0.74**	0.03	-0.06	0.69**	0.47**
Children in low income, welfare-dependent families	-0.90**	0.91**	0.91**	1.00	0.70**	0.63**	0.68**	0.06	0.55**	0.83**	0.56**	0.83**	0.40**	0.26*	0.51**	0.78**	0.81**	0.69**	0.58**	0.79**	0.02	-0.12	0.63**	0.38**
Children in families where mother has low educational achievement	-0.64**	0.55**	0.56**	0.70**	1.00	0.59**	0.73**	-0.11*	0.24**	0.64**	0.19**	0.49**	0.43**	0.46**	0.25**	0.45**	0.78**	0.78**	0.66**	0.73**	-0.01	-0.21**	0.48**	0.14*
AEDI - children developmentally vulnerable on one or more domains	-0.65**	0.64**	0.51**	0.63**	0.59**	1.00	0.62**	0.13*	0.37**	0.56**	0.22**	0.60**	0.42**	0.08	0.23**	0.57**	0.65**	0.62**	0.53**	0.59**	-0.11	-0.23**	0.49**	0.29**
Women smoking during pregnancy	-0.68**	0.66**	0.65**	0.68**	0.73**	0.62**	1.00	-0.14	0.55**	0.82**	0.30**	0.42**	0.54**	0.48**	0.52**	0.37**	0.71**	0.82**	0.38**	0.67**	-0.21*	0.00	0.62**	0.57**
Homelessness	-0.05	-0.02	0.09	0.06	-0.11*	0.13*	-0.14	1.00	0.11*	-0.11*	0.22**	0.09	0.28**	0.08	-0.12*	0.21**	0.11*	0.06	0.04	0.08	0.78**	0.19**	0.16**	0.08
Dwellings rented from government housing authorities	-0.65**	0.64**	0.58**	0.55**	0.24**	0.37**	0.55**	0.11*	1.00	0.51**	0.33**	0.54**	0.42**	0.25*	0.33**	0.54**	0.39**	0.34**	0.30**	0.45**	0.03	0.07	0.58**	0.44**
People with a profound or severe disability and not employed	-0.84**	0.81**	0.81**	0.83**	0.64**	0.56**	0.82**	-0.11*	0.51**	1.00	0.52**	0.70**	0.40**	0.38**	0.61**	0.67**	0.73**	0.70**	0.57**	0.77**	0.10	-0.05	0.56**	0.47**
Estimated number of people with long-term mental health problems, & unemployed	-0.57**	0.53**	0.62**	0.56**	0.19**	0.22**	0.30**	0.22**	0.33**	0.52**	1.00	0.60**	0.19**	0.06	0.40**	0.59**	0.60**	0.40**	0.22**	0.48**	0.09	0.04	0.46**	0.48**
Estimated prevalence of high/ very high psychological distress	-0.88**	0.85**	0.82**	0.83**	0.49**	0.60**	0.42**	0.09	0.54**	0.70**	0.60**	1.00	0.26**	0.08	0.44**	0.87**	0.79**	0.66**	0.59**	0.75**	-0.02	-0.13	0.63**	0.32**
Aboriginal and Torres Strait Islander population	-0.45**	0.39**	0.36**	0.40**	0.43**	0.42**	0.54**	0.28**	0.42**	0.40**	0.19**	0.26**	1.00	0.41**	0.01	0.38**	0.50**	0.62**	0.52**	0.47**	0.19**	0.02	0.58**	0.41**
Indigenous participation in full-time secondary education at age 16	-0.26*	0.20	0.35**	0.26*	0.46**	0.08	0.48**	0.08	0.25*	0.38**	0.06	0.08	0.41**	1.00	0.02	0.17	0.36**	0.46**	0.34**	0.32**	0.22	0.28	0.35**	0.25*
Estimated prevalence of circulatory system diseases	-0.55**	0.47**	0.58**	0.51**	0.25**	0.23**	0.52**	-0.12*	0.33**	0.61**	0.40**	0.44**	0.01	0.02	1.00	0.41**	0.38**	0.33**	0.05	0.54**	0.05	-0.05	0.35**	0.34**
Estimated prevalence of diabetes type 2	-0.82**	0.74**	0.73**	0.78**	0.45**	0.57**	0.37**	0.21**	0.54**	0.67**	0.59**	0.87**	0.38**	0.17	0.41**	1.00	0.74**	0.61**	0.54**	0.76**	0.17**	-0.06	0.67**	0.35**
Estimated prevalence of male smokers	-0.84**	0.76**	0.74**	0.81**	0.78**	0.65**	0.71**	0.11*	0.39**	0.73**	0.60**	0.79**	0.50**	0.36**	0.38**	0.74**	1.00	0.90**	0.63**	0.83**	0.03	-0.09	0.68**	0.41**
Estimated prevalence of female smokers	-0.71**	0.64**	0.64**	0.69**	0.78**	0.62**	0.82**	0.06	0.34**	0.70**	0.40**	0.66**	0.62**	0.46**	0.33**	0.61**	0.90**	1.00	0.70**	0.78**	0.00	-0.15*	0.67**	0.44**
Estimated prevalence of obesity: males	-0.59**	0.56**	0.48**	0.58**	0.66**	0.53**	0.38**	0.04	0.30**	0.57**	0.22**	0.59**	0.52**	0.34**	0.05	0.54**	0.63**	0.70**	1.00	0.64**	0.00	-0.15*	0.48**	0.17**
Estimated prevalence of obesity: females	-0.83**	0.73**	0.74**	0.79**	0.73**	0.59**	0.67**	0.08	0.45**	0.77**	0.48**	0.75**	0.47**	0.32**	0.54**	0.76**	0.83**	0.78**	0.64**	1.00	0.12*	-0.09	0.66**	0.35**
Breast screening participation	-0.03	-0.07	0.03	0.02	-0.01	-0.11	-0.21*	0.78**	0.03	0.10	0.09	-0.02	0.19**	0.22	0.05	0.17**	0.03	0.00	0.00	0.12*	1.00	0.13	0.01	-0.16*
Screen-detected breast cancer	0.06	-0.04	-0.06	-0.12	-0.21**	-0.23**	0.00	0.19**	0.07	-0.05	0.04	-0.13	0.02	0.28	-0.05	-0.06	-0.09	-0.15*	-0.15*	-0.09	0.13	1.00	0.06	0.26**
Premature mortality, all causes	-0.71**	0.63**	0.69**	0.63**	0.48**	0.49**	0.62**	0.16**	0.58**	0.56**	0.46**	0.63**	0.58**	0.35**	0.35**	0.67**	0.68**	0.67**	0.48**	0.66**	0.01	0.06	1.00	0.56**
Premature mortality from suicide and self-inflicted injury	-0.42**	0.42**	0.47**	0.38**	0.14*	0.29**	0.57**	0.08	0.44**	0.47**	0.48**	0.32**	0.41**	0.25*	0.34**	0.35**	0.41**	0.44**	0.17**	0.35**	-0.16*	0.26**	0.56**	1.00

Legend

- No, or weak, correlation: ± 0.30
- Moderate: ± 0.30 to ± 0.49
- Strong: ± 0.50 to ± 0.70
- Very strong: $\geq \pm 0.71$
- Not applicable: 1.00

Notes:
 Inverse correlations shown as negative (-)
 * Correlation is significant at the 0.05 level (2-tailed)
 ** Correlation is significant at the 0.01 level (2-tailed)

Table 63: Correlations matrix of the indicator data at the Statistical Local Area level in the non-metropolitan areas, Australia

Indicators	Estimated prevalence																			Breast screening		Premature mortality		
	IRSD	Children living in jobless families	Long-term unemployment	Children in low income, welfare-dependent families	Children in families where mother has low educational achievement	AEDI - children developmentally vulnerable on one or more domains	Women smoking during pregnancy	Homelessness	Dwellings rented from government housing authorities	People with a profound or severe disability and not employed	Estimated number of people with long-term mental health problems, & unemployed	Estimated prevalence of high/ very high psychological distress	Aboriginal and Torres Strait Islander population	Indigenous participation in full-time secondary education at age 16	circulatory system diseases	diabetes type 2	male smokers	female smokers	obesity: males	obesity: females	participation	screen-detected breast cancer	all causes	suicide and self-inflicted injury
IRSD	1.00	-0.61**	-0.75**	-0.41**	-0.64**	-0.71**	-0.50**	-0.27**	-0.35**	-0.02	-0.36**	-0.61**	-0.94**	0.11	-0.31**	-0.64**	-0.74**	-0.68**	-0.62**	-0.64**	-0.04	0.28**	-0.81**	-0.07
Children living in jobless families	-0.61**	1.00	0.69**	0.36**	0.65**	0.53**	0.36**	0.30**	0.09*	0.33**	0.30**	0.74**	0.51**	0.17*	0.23**	0.55**	0.61**	0.48**	0.55**	0.49**	0.00	0.09	0.55**	0.19**
Long-term unemployment	-0.75**	0.69**	1.00	0.68**	0.60**	0.53**	0.43**	0.38**	0.27**	0.17**	0.34**	0.69**	0.72**	-0.03	0.20**	0.55**	0.60**	0.56**	0.44**	0.38**	-0.16**	-0.25**	0.64**	0.04
Children in low income, welfare-dependent families	-0.41**	0.36**	0.68**	1.00	0.32**	0.49**	0.32**	0.30**	0.15**	0.04	0.30**	0.64**	0.38**	0.02	0.10*	0.59**	0.55**	0.52**	0.5**	0.40**	-0.21**	-0.17**	0.43**	-0.03
Children in families where mother has low educational achievement	-0.64**	0.65**	0.6**	0.32**	1.00	0.50**	0.39**	0.25**	0.04	0.15**	-0.21**	0.28**	0.59**	0.17*	-0.08	0.21**	0.44**	0.34**	0.45**	0.30**	-0.08	-0.11	0.58**	0.15**
AEDI - children developmentally vulnerable on one or more domains	-0.71**	0.53**	0.53**	0.49**	0.50**	1.00	0.42**	0.39**	0.40**	0.00	0.07	0.24**	0.73**	0.01	-0.11*	0.41**	0.38**	0.41**	0.32**	0.25**	0.15**	-0.16*	0.61**	0.29**
Women smoking during pregnancy	-0.50**	0.36**	0.43**	0.32**	0.39**	0.42**	1.00	0.29**	0.21**	0.20**	0.05	0.37**	0.44**	-0.04	0.17**	0.30**	0.58**	0.53**	0.33**	0.35**	-0.28**	-0.05	0.44**	0.08
Homelessness	-0.27**	0.30**	0.38**	0.30**	0.25**	0.39**	0.29**	1.00	0.03	-0.09*	0.21**	0.20**	0.28**	-0.16*	-0.27**	0.42**	0.41**	0.42**	0.16**	0.15**	-0.18**	-0.10	0.19**	0.02
Dwellings rented from government housing authorities	-0.35**	0.09*	0.27**	0.15**	0.04	0.4**	0.21**	0.03	1.00	-0.20**	0.04	0.17**	0.39**	0.04	-0.02	0.38**	0.26**	0.39**	0.22**	0.25**	0.12**	-0.16**	0.24**	-0.06
People with a profound or severe disability and not employed	-0.02	0.33**	0.17**	0.04	0.15**	0.00	0.20**	-0.09*	-0.20**	1.00	0.36**	0.59**	-0.25**	0.09	0.42**	0.23**	0.45**	0.24**	0.36**	0.46**	0.01	0.20**	-0.07	0.11*
Estimated number of people with long-term mental health problems, & unemployed	-0.36**	0.30**	0.34**	0.30**	-0.21**	0.07	0.05	0.21**	0.04	0.36**	1.00	0.36**	0.05	-0.05	0.24**	0.30**	0.48**	0.21**	0.06	0.29**	0.02	0.10	0.08	0.16**
Estimated prevalence of high/ very high psychological distress	-0.61**	0.74**	0.69**	0.64**	0.28**	0.24**	0.37**	0.20**	0.17**	0.59**	0.36**	1.00	0.19**	0.38**	0.26**	0.61**	0.61**	0.38**	0.52**	0.45**	0.09	0.28**	0.31**	0.25**
Aboriginal and Torres Strait Islander population	-0.94**	0.51**	0.72**	0.38**	0.59**	0.73**	0.44**	0.28**	0.39**	-0.25**	0.05	0.19**	1.00	-0.13	-0.31**	0.70**	0.48**	0.65**	0.35**	0.17**	0.02	-0.33**	0.84**	0.05
Indigenous participation in full-time secondary education at age 16	0.11	0.17*	-0.03	0.02	0.17*	0.01	-0.04	-0.16*	0.04	0.09	-0.05	0.38**	-0.13	1.00	-0.14	0.31**	0.18*	0.24**	0.3**	0.08	-0.06	0.45**	-0.14	0.05
Estimated prevalence of circulatory system diseases	-0.31**	0.23**	0.20**	0.10*	-0.08	-0.11*	0.17**	-0.27**	-0.02	0.42**	0.24**	0.26**	-0.31**	-0.14	1.00	-0.14**	0.21**	0.00	-0.07	0.35**	0.12*	0.15*	-0.05	0.24**
Estimated prevalence of diabetes type 2	-0.64**	0.55**	0.55**	0.59**	0.21**	0.41**	0.30**	0.42**	0.38**	0.23**	0.30**	0.61**	0.70**	0.31**	-0.14**	1.00	0.51**	0.55**	0.56**	0.36**	0.11*	0.21**	0.57**	0.10
Estimated prevalence of male smokers	-0.74**	0.61**	0.60**	0.55**	0.44**	0.38**	0.58**	0.41**	0.26**	0.45**	0.48**	0.61**	0.48**	0.18*	0.21**	0.51**	1.00	0.63**	0.41**	0.50**	-0.04	0.20**	0.44**	0.28**
Estimated prevalence of female smokers	-0.68**	0.48**	0.56**	0.52**	0.34**	0.41**	0.53**	0.42**	0.39**	0.24**	0.21**	0.38**	0.65**	0.24**	0.00	0.55**	0.63**	1.00	0.51**	0.44**	0.06	-0.09	0.58**	0.14**
Estimated prevalence of obesity: males	-0.62**	0.55**	0.44**	0.50**	0.45**	0.32**	0.33**	0.16**	0.22**	0.36**	0.06	0.52**	0.35**	0.30**	-0.07	0.56**	0.41**	0.51**	1.00	0.39**	0.09	-0.04	0.44**	0.04
Estimated prevalence of obesity: females	-0.64**	0.49**	0.38**	0.40**	0.30**	0.25**	0.35**	0.15**	0.25**	0.46**	0.29**	0.45**	0.17**	0.08	0.35**	0.36**	0.50**	0.44**	0.39**	1.00	0.14**	0.06	0.35**	0.12*
Breast screening participation	-0.04	0.00	-0.16**	-0.21**	-0.08	0.15**	-0.28**	-0.18**	0.12**	0.01	0.02	0.09	0.02	-0.06	0.12*	0.11*	-0.04	0.06	0.09	0.14**	1.00	0.12*	0.01	0.00
Screen-detected breast cancer	0.28**	0.09	-0.25**	-0.17**	-0.11	-0.16*	-0.05	-0.10	-0.16**	0.20**	0.10	0.28**	-0.33**	0.45**	0.15*	0.21**	0.20**	-0.09	-0.04	0.06	0.12*	1.00	-0.26**	0.20**
Premature mortality, all causes	-0.81**	0.55**	0.64**	0.43**	0.58**	0.61**	0.44**	0.19**	0.24**	-0.07	0.08	0.31**	0.84**	-0.14	-0.05	0.57**	0.44**	0.58**	0.44**	0.35**	0.01	-0.26**	1.00	0.34**
Premature mortality from suicide and self-inflicted injury	-0.07	0.19**	0.04	-0.03	0.15**	0.29**	0.08	0.02	-0.06	0.11*	0.16**	0.25**	0.05	0.05	0.24**	0.10	0.28**	0.14**	0.04	0.12*	0.00	0.20**	0.34**	1.00

Legend

- No, or weak, correlation: ± 0.30
- Moderate: ± 0.30 to ± 0.49
- Strong: ± 0.50 to ± 0.70
- Very strong: $\geq \pm 0.71$
- Not applicable: 1.00

Notes:
 Inverse correlations shown as negative (-)
 * Correlation is significant at the 0.05 level (2-tailed)
 ** Correlation is significant at the 0.01 level (2-tailed)