

Self-perceived neighbourhood environment and mental health in Australian adults

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Neighbourhoods may shape daily stress and support

Social ties can provide practical and emotional support

Noise, disorder and perceived crime may add stress

Mental health relates to social and physical surroundings

Australian longitudinal evidence remains limited

Most prior studies used cross-sectional data

Social cohesion, physical conditions and safety are often studied separately

Variation across sub-groups is less well understood

This study examines three dimensions together over six waves.

Two questions guide the analysis

- | Are within-person changes in neighbourhood perceptions associated with mental health?
- | Do associations differ by age, sex, disability, social networks, and mental health status?

The analysis follows 23,546 Unique individuals

23,546

Unique person

93,614

person-year observations

Year: 2012 2014 2016 2018 2020 2022

MHI-5 asks about feelings in the past four weeks

How much of the time have you...

Scoring

felt nervous?

felt so down that nothing could cheer you up?

felt calm and peaceful?

felt down?

been happy?

- Six response levels from all of the time (1) to none of the time (6).
- Positive items are reverse-coded.
- Responses are summed to 5-30.
- The sum is transformed to 0–100.

Higher MHI-5 scores indicate better mental health.

MCS combines responses across the SF-36

- Considered eight domains included in the SF-36
- MCS is standardised using a linear Z-score transformation with a mean of 50 and a standard deviation of 10
- MCS score typically ranges from -1.21 to 76.19

Higher MCS scores indicate better mental health-related quality of life.

Neighbourly interaction and support

- How common are the following things in your local neighbourhood?
neighbours help each other out?
- How common are the following things in your local neighbourhood?
neighbours do things together?
- Scale: 1 [Never happens] – 5 [Very common]. Sum the two responses:
score 2–10

Higher scores mean more frequent neighbourly interaction and support.

Local disamenity captures four conditions

Traffic noise; Noise from aircraft, train or industrial noise

Homes and gardens in bad condition

Rubbish and litter lying around

Sum four 1–5 responses: score 4–20; higher means more disamenity.

Insecurity in the neighbourhood captures perceived local threats

Teenagers hanging around on the streets

People being hostile and aggressive

Vandalism or deliberate damage; and burglary or theft

Sum four 1–5 responses: score 4–20; higher means more insecurity.

The models account for measured characteristics

Demographics: age, sex, partnership, education, income, region, and social networks

Health: BMI category, and disability

Behaviours and roles: smoking, alcohol, physical activity and caregiving

Within-person fixed effects estimate associations

- Fixed-effects GLS with individual and wave effects
- Missing values imputed from adjacent observations of the same person
- Remaining categorical missingness imputed by the mode

TABLE 1

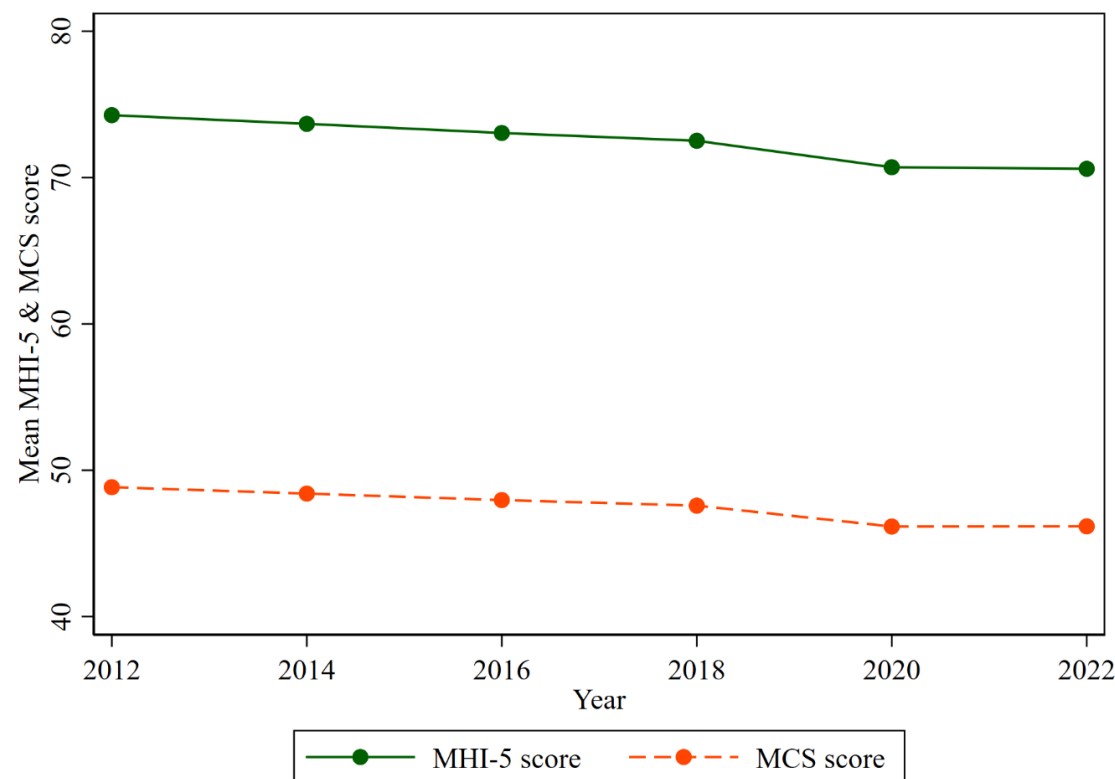


Mental health scores declined by the final wave

Measure	2012	2022	Pooled
MHI-5 mean	74.27	70.60	72.48
MCS mean	48.84	46.17	47.53
Neighbourly support	6.45	6.52	6.49
Local disamenity	10.58	10.67	10.59
Insecurity	9.37	9.10	9.14

FIGURE 1

Mental health scores fell after 2018



Exact means: 2012 → 2022

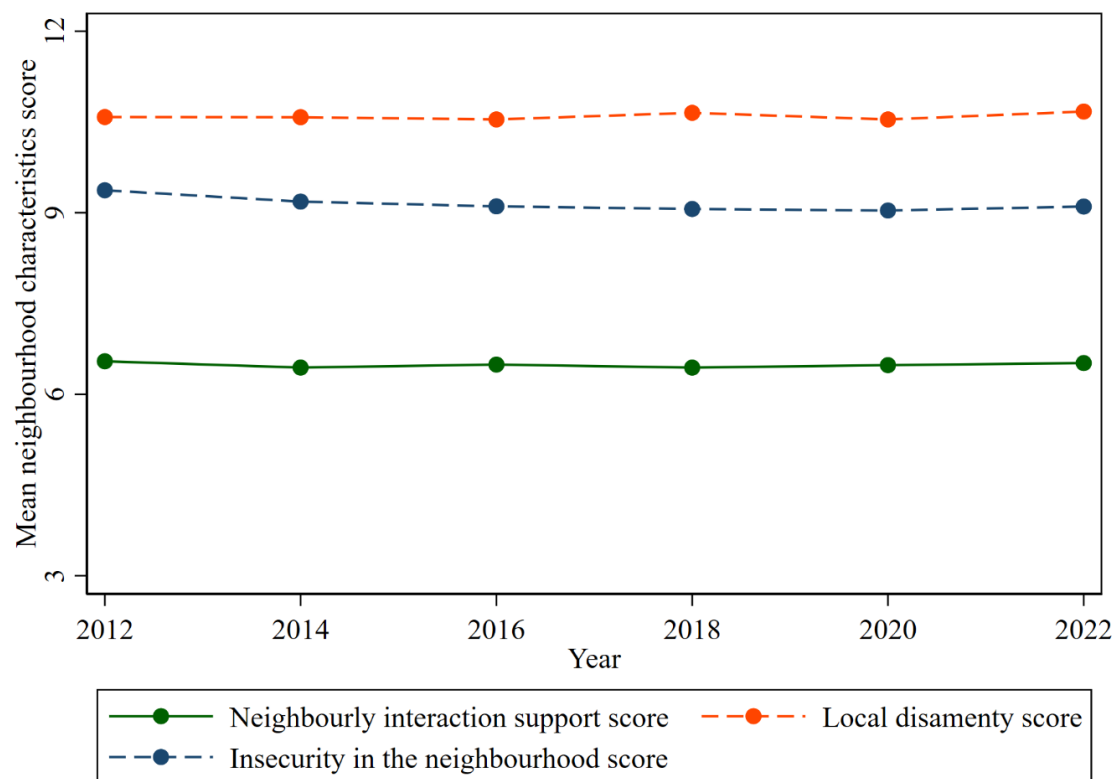
MHI-5: 74.26676 → 70.59894

MCS: 48.84382 → 46.16829

Both MHI-5 and MCS declined between 2018 and 2020, then remained lower in 2022.

FIGURE 2

Neighbourhood scores changed little over time



Exact means: 2012 → 2022

Support: 6.545 → 6.515188

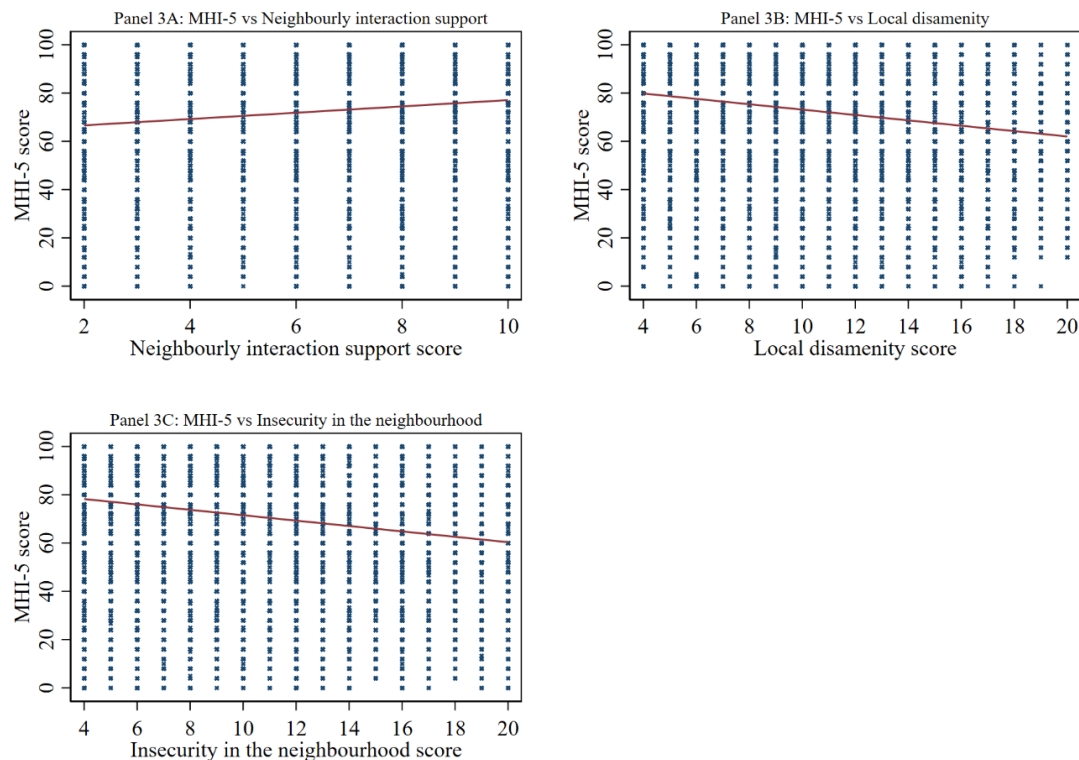
Disamenity: 10.58119 → 10.67254

Insecurity: 9.371499 → 9.102471

Population mean support, disamenity and insecurity scores were broadly stable.

FIGURE 3

Pooled MHI-5 patterns point in opposite directions



Pooled means at score extremes

Support 2 → 10: 65.30899 → 76.71363

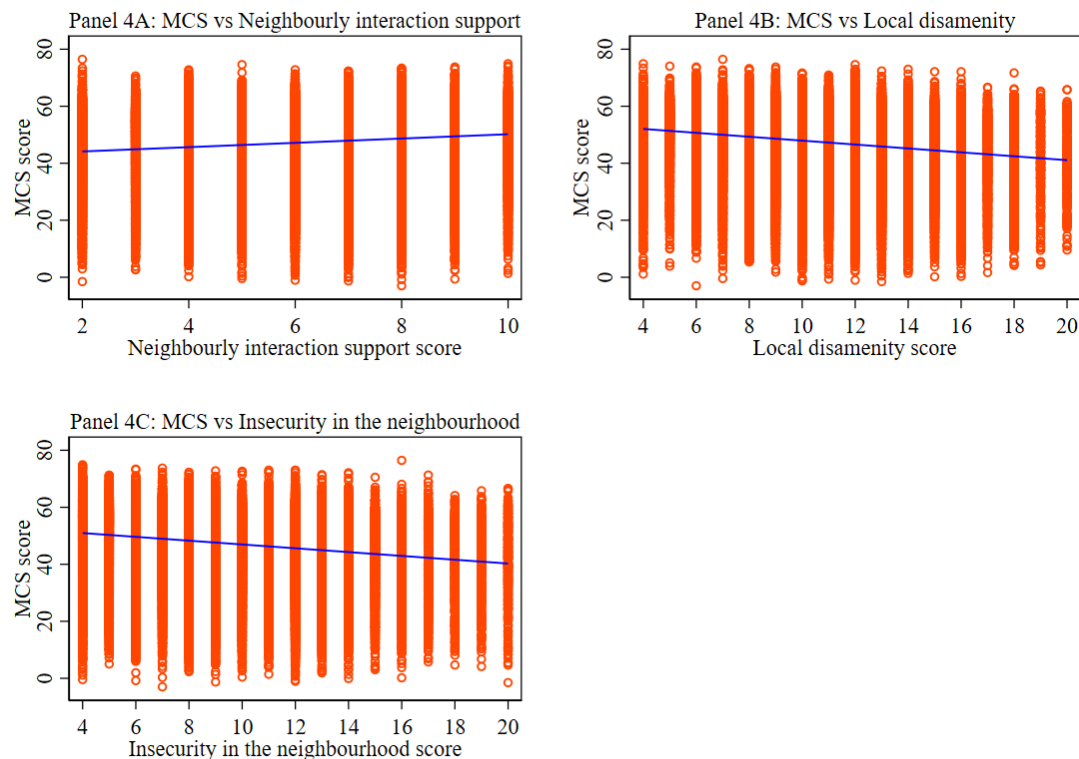
Disamenity 4 → 20: 76.17396 → 59.13024

Insecurity 4 → 20: 75.88740 → 61.37124

More support tracked higher MHI-5; more disamenity or insecurity tracked lower MHI-5.

FIGURE 4

The pooled MCS pattern was similar



Pooled means at score extremes

Support 2 → 10: 43.55843 → 49.96818

Disamenity 4 → 20: 50.18286 → 39.88582

Insecurity 4 → 20: 49.88103 → 40.74523

The three neighbourhood dimensions showed the same directional pattern for MCS.

Insecurity and support had the largest MHI-5 associations

Per one-point increase	MHI-5 β	MCS β
Neighbourly support	+0.24 [0.17, 0.31]	+0.14 [0.10, 0.18]
Local disamenity	-0.10 [-0.15, -0.05]	-0.06 [-0.10, -0.03]
Insecurity	-0.24 [-0.29, -0.20]	-0.13 [-0.15, -0.10]

TABLE 3

Associations followed the same pattern for men and women

MHI-5: β [robust 95% CI]

Exposure	Men	Women
Neighbourly support	+0.29 [0.19, 0.39]	+0.20 [0.11, 0.29]
Local disamenity	-0.08 [-0.15, -0.01]	-0.12 [-0.19, -0.05]
Insecurity	-0.27 [-0.34, -0.20]	-0.23 [-0.29, -0.16]

MCS: β [robust 95% CI]

Exposure	Men	Women
Neighbourly support	+0.16 [0.10, 0.22]	+0.12 [0.06, 0.18]
Local disamenity	-0.05 [-0.09, -0.00]	-0.08 [-0.12, -0.03]
Insecurity	-0.13 [-0.17, -0.08]	-0.13 [-0.17, -0.09]

Each cell reports β [robust 95% CI]. Bold indicates statistical significance at the 5% level.

TABLE 4

Neighbourly support was strongest at age 60 and over

MHI-5: β [robust 95% CI]

Exposure	15–29	30–44	45–59	60+
Neighbourly support	+0.21 [0.07, 0.36]	+0.13 [-0.02, 0.27]	+0.23 [0.08, 0.38]	+0.38 [0.26, 0.50]
Local disamenity	-0.09 [-0.20, 0.02]	-0.03 [-0.14, 0.08]	-0.12 [-0.23, -0.01]	-0.14 [-0.24, -0.05]
Insecurity	-0.22 [-0.32, -0.12]	-0.25 [-0.35, -0.15]	-0.25 [-0.35, -0.14]	-0.23 [-0.31, -0.14]

MCS: β [robust 95% CI]

Exposure	15–29	30–44	45–59	60+
Neighbourly support	+0.11 [0.01, 0.20]	+0.10 [0.00, 0.19]	+0.15 [0.06, 0.25]	+0.21 [0.14, 0.29]
Local disamenity	-0.05 [-0.12, 0.01]	-0.02 [-0.09, 0.05]	-0.08 [-0.14, -0.01]	-0.07 [-0.13, -0.02]
Insecurity	-0.10 [-0.16, -0.03]	-0.13 [-0.19, -0.07]	-0.13 [-0.20, -0.07]	-0.12 [-0.17, -0.07]

Each cell reports β [robust 95% CI]. Bold indicates statistical significance at the 5% level.

Insecurity was negatively associated with both outcomes in every age group.

TABLE 5



Support estimates were larger among people reporting disability

MHI-5: β [robust 95% CI]

Exposure	No disability	With disability
Neighbourly support	+0.15 [0.08, 0.23]	+0.35 [0.20, 0.50]
Local disamenity	-0.10 [-0.16, -0.05]	-0.06 [-0.17, 0.05]
Insecurity	-0.23 [-0.28, -0.17]	-0.27 [-0.37, -0.17]

MCS: β [robust 95% CI]

Exposure	No disability	With disability
Neighbourly support	+0.10 [0.05, 0.15]	+0.18 [0.09, 0.27]
Local disamenity	-0.06 [-0.09, -0.02]	-0.07 [-0.14, -0.00]
Insecurity	-0.11 [-0.15, -0.08]	-0.16 [-0.22, -0.10]

Each cell reports β [robust 95% CI]. Bold indicates statistical significance at the 5% level.

Support estimates were larger with disability for both MHI-5 and MCS.

TABLE 6

Isolation amplified social neighbourhood associations

MHI-5: β [robust 95% CI]

Exposure	Low isolation	High isolation
Neighbourly support	+0.15 [0.06, 0.23]	+0.31 [0.20, 0.43]
Local disamenity	-0.14 [-0.21, -0.08]	-0.04 [-0.12, 0.05]
Insecurity	-0.16 [-0.22, -0.10]	-0.34 [-0.41, -0.26]

MCS: β [robust 95% CI]

Exposure	Low isolation	High isolation
Neighbourly support	+0.08 [0.03, 0.13]	+0.19 [0.12, 0.26]
Local disamenity	-0.07 [-0.11, -0.03]	-0.04 [-0.09, 0.01]
Insecurity	-0.09 [-0.13, -0.06]	-0.17 [-0.21, -0.12]

Each cell reports β [robust 95% CI]. Bold indicates statistical significance at the 5% level.

Support and insecurity estimates were larger in the high-isolation group.

TABLE 7

Social connection showed a complementary pattern

MHI-5: β [robust 95% CI]

Exposure	Low connection	High connection
Neighbourly support	+0.32 [0.21, 0.42]	+0.13 [0.04, 0.23]
Local disamenity	-0.09 [-0.16, -0.01]	-0.12 [-0.19, -0.05]
Insecurity	-0.30 [-0.37, -0.23]	-0.16 [-0.23, -0.10]

MCS: β [robust 95% CI]

Exposure	Low connection	High connection
Neighbourly support	+0.19 [0.13, 0.26]	+0.06 [0.00, 0.12]
Local disamenity	-0.05 [-0.10, -0.00]	-0.06 [-0.10, -0.02]
Insecurity	-0.16 [-0.20, -0.11]	-0.10 [-0.15, -0.06]

Each cell reports β [robust 95% CI]. Bold indicates statistical significance at the 5% level.

Social neighbourhood estimates were larger with low connection.

TABLE 8

Poorer baseline mental health showed larger social estimates



MHI-5: β [robust 95% CI]

Exposure	MHI-5 <60	MHI-5 $\geq$ 60
Neighbourly support	+0.24 [0.10, 0.38]	+0.13 [0.08, 0.18]
Local disamenity	+0.01 [-0.10, 0.12]	-0.08 [-0.12, -0.04]
Insecurity	-0.16 [-0.26, -0.06]	-0.13 [-0.17, -0.10]

MCS: β [robust 95% CI]

Exposure	MHI-5 <60	MHI-5 $\geq$ 60
Neighbourly support	+0.13 [0.03, 0.23]	+0.08 [0.05, 0.12]
Local disamenity	-0.01 [-0.09, 0.07]	-0.05 [-0.07, -0.02]
Insecurity	-0.11 [-0.18, -0.04]	-0.07 [-0.09, -0.04]

Each cell reports β [robust 95% CI]. Bold indicates statistical significance at the 5% level.

Interpret subgroup comparisons cautiously; this is a score-based split.

TABLE 9



The <76 split sharpened the same contrast

MHI-5: β [robust 95% CI]

Exposure	MHI-5 <76	MHI-5 $\geq$ 76
Neighbourly support	+0.30 [0.20, 0.40]	+0.06 [0.02, 0.10]
Local disamenity	+0.02 [-0.06, 0.09]	-0.05 [-0.08, -0.02]
Insecurity	-0.18 [-0.24, -0.11]	-0.08 [-0.11, -0.05]

MCS: β [robust 95% CI]

Exposure	MHI-5 <76	MHI-5 $\geq$ 76
Neighbourly support	+0.16 [0.09, 0.23]	+0.04 [0.01, 0.08]
Local disamenity	-0.01 [-0.06, 0.04]	-0.03 [-0.05, -0.00]
Insecurity	-0.09 [-0.14, -0.04]	-0.04 [-0.06, -0.02]

Each cell reports β [robust 95% CI]. Bold indicates statistical significance at the 5% level.

Support and insecurity estimates were larger below 76 for both outcomes.

The social dimensions stood out

- Support tracked better mental health across both measures
- Insecurity showed a similarly sized negative MHI-5 association
- Socially isolated and less connected groups had larger point estimates

Longitudinal data improve control of stable confounding

Strengths: large HILDA sample, six waves and two mental health measures

Limits: perceptions and outcomes are self-reported

Reverse causation and time-varying confounding remain possible

Thank you

Questions?

For further queries

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