

Supplementary Material

Impact of the COVID-19 pandemic on access and use of health services by middle-aged and older Australians

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Supplementary Table S1: 45 and Up Study COVID-19 Survey questions, response options and aggregation method used for analysis

Variable	Survey question and response options	Aggregation method
Missed or delayed access to health services	<p>As a result of COVID-19, have you missed or delayed any of the following health care services?</p> <ul style="list-style-type: none"> a visit to the GP /a visit to a specialist doctor - hospital care - a blood test - psychological or emotional health care - an aged care service - a vaccination - cancer screening - a dental visit - getting a regular prescription medication - getting non-prescription medication - other health care you need - <p>Response options: Yes/No</p>	N/A
Worse health	<p>If you selected YES to ANY of the above, (i.e. missed or delayed access to any services) - did your health get worse because of missing the health care service?</p> <p>Response options: Yes/ No/ Don't know/ Not applicable</p>	Yes or No responses only included in analysis
Use of telehealth services	<p>Since January 2020, have you used telehealth services (an appointment with a health care provider by video or phone instead of an in-person visit)?</p> <p>Response options: Yes/No</p>	N/A
Acceptability of telehealth services	<p>How did the telehealth services compare to a traditional in-person medical visit?</p> <p>Response options: Better than a traditional visit/ Just as good as a traditional visit/ Worse than a traditional visit/ Not sure</p>	N/A
Recommend	How likely would you be to recommend	

telehealth services	telehealth services to someone else? Response options: not at all/ slightly/ moderately/ very/ extremely	N/A
Perceived usefulness of these services post-COVID-19	How useful do you think it will be to have appointments via telehealth after the COVID-19 emergency is over? Response options: Not at all/ Slightly/ Moderately/ Very /Extremely	N/A
Physical Activity	Compared with 12 months ago, how much time did you spend in the LAST WEEK doing overall physical activity? Response options: less time, similar time, more time	N/A
Watching TV	Compared with 12 months ago, how much time did you spend in the LAST WEEK doing overall physical activity? Response options: less time, similar time, more time	N/A
Sleeping	Compared with 12 months ago, how much time did you spend in the LAST WEEK doing overall physical activity? Response options: less time, similar time, more time	N/A
Overall health	As a result of the COVID-19 outbreak, I feel my overall health has been: Response options: a lot worse, a little worse, the same, a little better, a lot better	Worse: (a lot worse, a little worse); Same: (the same); Better: (a little better, a lot better)
Overall emotional health	As a result of the COVID-19 outbreak, I feel my emotional and psychological health has been: Response options: a lot worse, a little worse, the same, a little better, a lot better	Worse: (a lot worse, a little worse); Same: (the same); Better: (a little better, a lot better)
Change in financial situation	As a result of COVID-19, has your financial situation changed? Response options: Yes/ No/ Don't know	Percentage of Yes responses included in analysis; Financial situation aggregated to: worse (a lot worse, slightly worse);

	If YES, my financial situation is: a lot worse; slightly worse; same; slightly better; a lot better	same; better (slightly better, a lot better)
Social contact	Did you reduce your personal contact with other people because of the COVID-19 outbreak? Response options: Yes/ No If yes, reasons for reduced contact (any): concerns about your own health, concern for others' health; government recommendations; government restrictions;	Percentage of Yes responses included in analysis; and results for concerns about your own health, concern for others' health reported
Age	Derived from age at recruitment and date survey completed	Age groups: 45–64; 65–74; 75+ years
Sex	Gender determined from the questionnaire version completed (men or women)	N/A
Education	What is the highest qualification you have completed? Response options: No school certificate or other qualifications/ School or intermediate certificate (or equivalent)/ Higher school or leaving certificate (or equivalent)/ Trade-apprenticeship (e.g. hairdresser, chef)/ Certificate-diploma (e.g. child care, technician)/ University degree or higher	Year12 or less: No school certificate or other qualifications/ school or intermediate certificate (or equivalent/ higher school or leaving certificate (or equivalent) Trade/Diploma: Trade-apprenticeship (e.g. hairdresser, chef)/ Certificate-diploma (e.g. child care, technician) University: University degree or higher
Marital status	What best describes your current situation? (Choose one only) Response options: Single/Married/ De facto-living with partner/Widowed/ Divorced/ separated	Single/divorced/separated/widowed Married/living with partner
Language background	Do you speak a language other than English at home? Response options: Yes/ No	N/A
Area of residence	Classified using Accessibility/Remoteness Index of Australia [14] and postcode of residence.	Major city, inner regional, outer regional/remote/very remote

Socioeconomic status	Classified into deciles using Index of Relative Socioeconomic Disadvantage [15] and residential postcode information	Deciles converted to quintiles, where 1 = most disadvantaged and quintile 5= least disadvantaged
Disability or illness	<p>Do you regularly need help with daily tasks because of long-term illness or disability (<i>e.g. personal care, getting around, preparing meals</i>)?</p> <p>Response options: Yes/ No</p>	N/A
Psychological distress (K10)	<p>During the past 4 weeks, about how often did you feel:</p> <ul style="list-style-type: none"> - Tired out for no good reason? - So nervous that nothing could calm you down? - Hopeless? - Restless or fidgety? - So restless that you could not sit still? - Depressed? - That everything was an effort? - So sad that nothing could cheer you up? - Worthless? <p>Response options: None of the time/a little of the time/ some of the time/ most of the time/ all of the time</p>	Values on the ten items comprising were summed and total scores were categorised as low psychological distress (total score: 10-15); moderate (total score:16-21), high (total score: 22-29), very high (total score: 30-50) ¹⁷
Cancer/heart disease/ mental health/asthma treatment in past month	<p>In the last month have you been treated for:</p> <ul style="list-style-type: none"> - Cancer - Heart attack or angina - Other heart disease - High blood pressure - High blood cholesterol - Blood clotting problems - Asthma - Osteoarthritis - Thyroid problems - Osteoporosis or low bone density - Depression - Anxiety - None of these <p>Response option: Yes</p>	<p>Heart disease: heart attack or angina/ other heart disease</p> <p>Mental health disorder: anxiety/ depression</p> <p>Cancer: Cancer</p> <p>Asthma: Asthma</p>

Supplementary Table S2: Missed or delayed access to various health care services

Socio-demographic characteristics	Hospital	Blood test	Psych./ emotional care	Aged care	Vaccination	Cancer Screening	Prescription medication	Non-prescription medication	Other
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age(years)									
45 to 64	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
65 to 75	0.94 (0.81, 1.09)	0.72 (0.65, 0.80)	0.62 (0.52, 0.73)	0.91 (0.75, 1.12)	0.80 (0.70, 0.91)	0.84 (0.75, 0.95)	0.63 (0.53, 0.75)	0.62 (0.51, 0.76)	0.80 (0.71, 0.90)
75+	0.81 (0.68, 0.96)	0.37 (0.32, 0.43)	0.43 (0.34, 0.54)	1.38 (1.12, 1.69)	0.70 (0.60, 0.82)	0.60 (0.52, 0.70)	0.60 (0.49, 0.73)	0.51 (0.40, 0.65)	0.57 (0.49, 0.66)
Sex									
Male	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Female	1.01 (0.89, 1.15)	1.15 (1.04, 1.27)	1.79 (1.51, 2.13)	1.73 (1.46, 2.06)	0.97 (0.86, 1.09)	2.33 (2.07, 2.63)	0.88 (0.76, 1.03)	1.21 (1.01, 1.46)	1.58 (1.42, 1.77)
Education									
University	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Trade/diploma	1.01 (0.87, 1.18)	0.95 (0.85, 1.06)	0.78 (0.65, 0.93)	1.24 (1.01, 1.51)	1.21 (1.06, 1.39)	0.84 (0.74, 0.95)	1.13 (0.94, 1.35)	1.15 (0.93, 1.42)	0.82 (0.73, 0.93)
Year 12 or less	0.86 (0.73, 1.01)	0.76 (0.67, 0.86)	0.60 (0.49, 0.73)	1.26 (1.03, 1.54)	1.14 (0.99, 1.31)	0.74 (0.65, 0.85)	0.93 (0.76, 1.13)	0.90 (0.72, 1.13)	0.57 (0.50, 0.65)
Marital status									
Single/divorced/widowed/separated	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Married/defacto/partner	1.07 (0.93, 1.24)	1.13 (1.01, 1.27)	1.39 (1.18, 1.63)	1.22 (1.03, 1.44)	1.08 (0.95, 1.23)	1.07 (0.95, 1.20)	1.38 (1.17, 1.63)	1.54 (1.28, 1.86)	1.29 (1.16, 1.45)
Language background									
English speaking	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Non-English speaking	1.61 (1.29, 2.02)	1.65 (1.40, 1.94)	1.30 (0.97, 1.73)	1.69 (1.27, 2.23)	1.40 (1.14, 1.72)	0.94 (0.76, 1.18)	2.14 (1.69, 2.70)	1.84 (1.38, 2.45)	1.35 (1.12, 1.63)
Disability or illness									
No disability or illness	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Disability or illness	2.27 (1.88, 2.74)	1.33 (1.10, 1.62)	1.79 (1.44, 2.22)	3.24 (2.66, 3.95)	1.31 (1.07, 1.60)	1.51 (1.25, 1.83)	2.21 (1.77, 2.75)	2.58 (2.02, 3.30)	2.24 (1.90, 2.64)
Psychological distress (K10)									
Low	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Moderate	1.53 (1.30, 1.80)	1.77 (1.56, 2.00)	5.79 (4.78, 7.01)	1.77 (1.46, 2.14)	1.31 (1.13, 1.53)	1.72 (1.51, 1.96)	2.05 (1.70, 2.47)	2.25 (1.82, 2.78)	1.82 (1.60, 2.06)
High	2.12 (1.68, 2.67)	2.10 (1.72, 2.55)	11.63 (9.29, 14.57)	2.38 (1.81, 3.13)	1.73 (1.38, 2.17)	2.06 (1.67, 2.54)	3.21 (2.49, 4.13)	3.47 (2.62, 4.61)	2.17 (1.79, 2.64)
Very high	2.60 (1.81, 3.74)	2.69 (1.95, 3.70)	18.71 (13.91, 25.28)	4.36 (3.01, 6.32)	2.32 (1.63, 3.30)	2.33 (1.63, 3.32)	5.28 (3.69, 7.54)	4.4(2.9-6.7)	2.20 (1.58, 3.06)
Socioeconomic status									
5- Most disadvantaged	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
4	1.15 (0.94, 1.41)	0.85 (0.74, 0.98)	0.91 (0.71, 1.18)	1.11 (0.86, 1.43)	0.87 (0.72, 1.04)	0.95 (0.81, 1.11)	0.86 (0.67, 1.11)	0.97 (0.73, 1.29)	0.97 (0.83, 1.14)

3	1.10 (0.89, 1.35)	1.00 (0.87, 1.16)	1.18 (0.93, 1.51)	1.06 (0.83, 1.37)	0.99 (0.83, 1.18)	0.96 (0.81, 1.13)	0.97 (0.76, 1.24)	1.08 (0.82, 1.43)	1.23 (1.05, 1.43)
2	1.28 (1.05, 1.57)	0.89 (0.76, 1.03)	1.15 (0.90, 1.47)	1.09 (0.85, 1.41)	1.29 (1.08, 1.52)	0.91 (0.77, 1.08)	1.11 (0.87, 1.41)	1.01 (0.76, 1.34)	1.04 (0.88, 1.22)
1- Least disadvantaged	1.21 (0.97, 1.50)	0.83 (0.70, 0.98)	1.19 (0.92, 1.54)	1.04 (0.80, 1.36)	1.29 (1.08, 1.55)	0.96 (0.80, 1.14)	1.44 (1.13, 1.84)	1.30 (0.97, 1.73)	1.05 (0.88, 1.25)
Area of residence									
Major city	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Inner regional	1.08 (0.93, 1.24)	0.78 (0.69, 0.87)	0.99 (0.83, 1.17)	1.04 (0.88, 1.24)	0.88 (0.78, 1.00)	0.80 (0.71, 0.90)	0.89 (0.75, 1.05)	0.96 (0.79, 1.17)	0.95 (0.85, 1.07)
Outer regional/ remote	1.12 (0.91, 1.38)	0.82 (0.69, 0.97)	0.93 (0.71, 1.22)	1.21 (0.94, 1.56)	1.03 (0.86, 1.23)	0.94 (0.78, 1.12)	0.95 (0.74, 1.23)	0.88 (0.65, 1.20)	1.00 (0.84, 1.19)
Health conditions									
Disability or illness									
No disability or illness	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Disability or illness	2.27 (1.88, 2.74)	1.33 (1.10, 1.62)	1.79 (1.44, 2.22)	3.24 (2.66, 3.95)	1.31 (1.07, 1.60)	1.51 (1.25, 1.83)	2.21 (1.77, 2.75)	2.58 (2.02, 3.30)	2.24 (1.90, 2.64)
Psychological distress (K10)									
Low	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Moderate	1.53 (1.30, 1.80)	1.77 (1.56, 2.00)	5.79 (4.78, 7.01)	1.77 (1.46, 2.14)	1.31 (1.13, 1.53)	1.72 (1.51, 1.96)	2.05 (1.70, 2.47)	2.25 (1.82, 2.78)	1.82 (1.60, 2.06)
High	2.12 (1.68, 2.67)	2.10 (1.72, 2.55)	11.63 (9.29, 14.57)	2.38 (1.81, 3.13)	1.73 (1.38, 2.17)	2.06 (1.67, 2.54)	3.21 (2.49, 4.13)	3.47 (2.62, 4.61)	2.17 (1.79, 2.64)
Very high	2.60 (1.81, 3.74)	2.69 (1.95, 3.70)	18.71 (13.91, 25.28)	4.36 (3.01, 6.32)	2.32 (1.63, 3.30)	2.33 (1.63, 3.32)	5.28 (3.69, 7.54)	4.4(2.9-6.7)	2.20 (1.58, 3.06)
Treatment chronic illness									
No cancer treatment	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Cancer treatment	1.02 (0.76, 1.38)	0.57 (0.41, 0.79)	1.42 (1.01, 2.00)	0.99 (0.69, 1.42)	1.12 (0.85, 1.47)	1.26 (0.98, 1.63)	0.63 (0.41, 0.98)	1.05 (0.69, 1.59)	0.85 (0.64, 1.12)
No heart disease treatment	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Heart disease treatment	1.55 (1.23, 1.96)	1.09 (0.86, 1.38)	0.80 (0.56, 1.15)	1.54 (1.17, 2.01)	1.18 (0.93, 1.50)	1.05 (0.81, 1.36)	1.45(1.09, 1.93)	1.34 (0.96, 1.88)	1.52 (1.24, 1.87)
No asthma treatment	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Asthma treatment	1.47 (1.18, 1.83)	1.19 (0.98, 1.45)	1.25 (0.97, 1.60)	1.14 (0.87, 1.50)	1.19 (0.95, 1.48)	1.08 (0.88, 1.34)	1.45(1.11, 1.89)	1.66 (1.25, 2.20)	1.37 (1.14, 1.65)
No mental health treatment	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Mental health treatment	1.34 (1.11, 1.63)	0.87 (0.73, 1.04)	2.64 (2.22, 3.14)	1.34 (1.07, 1.68)	1.10 (0.91, 1.33)	1.03 (0.87, 1.23)	0.96 (0.76, 1.22)	1.11 (0.86, 1.43)	1.14 (0.97, 1.34)