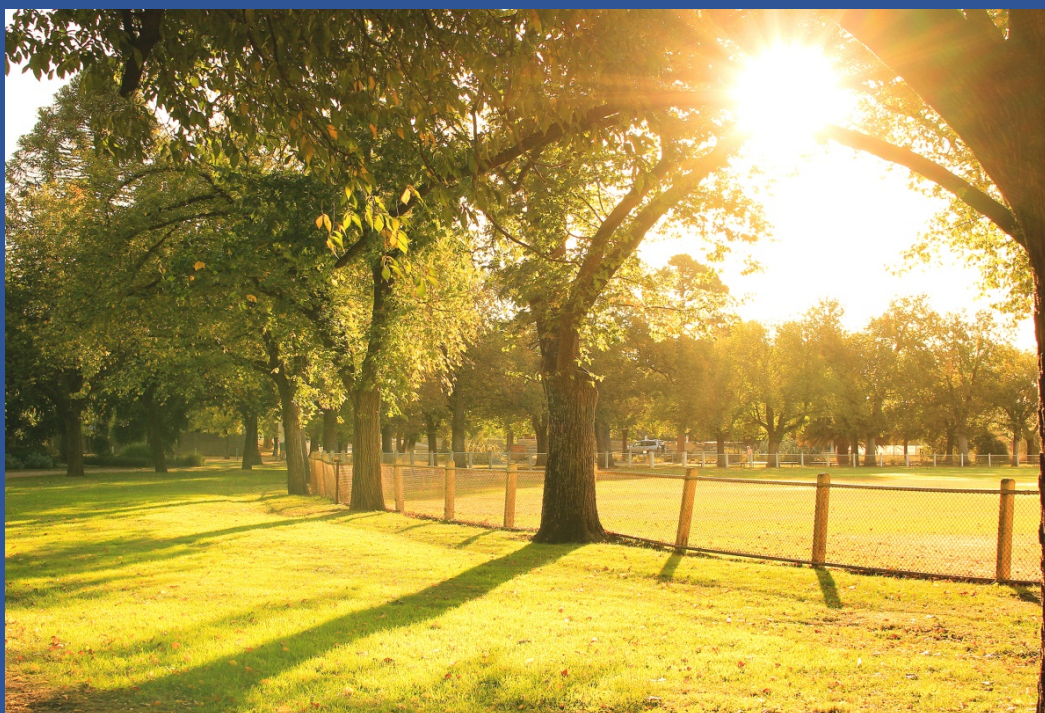


2019



Benalla

Crossroads II study report

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EXECUTIVE SUMMARY

The Crossroads II study was a population health study that repeated the original Crossroads I study undertaken in 2001-2003. Like the previous study, Crossroads II aimed to identify the health of residents of Benalla as well as their service use, access to services and rates of undiagnosed disease. Crossroads II was undertaken in partnership with nine local health services and local governments, including Benalla Health.

The study randomly selected households in the township of Benalla and all adults in these households were asked to complete a detailed health questionnaire. Adults were asked to complete questionnaires on behalf of those under 16. In Benalla, questionnaires were completed for 471 adults and 123 children from 346 households, for a household response rate of 68%. At the household, one adult was randomly selected and invited to attend a free 2-hour health screening clinic where a series of health assessments were conducted, including the Oral Glucose Tolerance Test, cholesterol test, blood pressure, liver disease, height and weight, atrial fibrillation screening, hearing test, cognitive function, lung function and dental health. A total of 159 adults completed the screening clinics in Benalla. Together these results provide an overview of health, access to and use of services and rates of undiagnosed disease with comparison to the same results 15 years earlier.

While an older sample and more female, this study has gathered detailed information about the health of residents of Benalla. In this large, randomly selected study sample, self-rated measures of happiness were high and most people would be sorry to leave Benalla. Respondents were happy with their GPs and generally happy with most service providers but were concerned about the costs of health care. Key health issues identified were obesity, hypertension and mental illness. Findings suggest that respondents could improve their vegetable intake, physical exercise and consume fewer takeaway meals to improve health outcomes. Access issues were also identified, primarily associated with cost and waiting times. Residents of Benalla were accessing health services in Benalla, Shepparton, Wangaratta and Melbourne.

The results of Crossroads II are consistent with the key health concerns and access issues recognised by local health services. The results provide evidence for many anecdotal observations. The key findings include:

- Residents of Benalla rate their own health lower than the state average and this was also found in Crossroads I
- Rates of smoking have declined since Crossroads I and are equivalent to the state average

- Study participants were similarly happy to 15 years earlier, although self-reported prevalence of depression (previous or current diagnosis) was high. Satisfaction with mental health services was high.
- 91% of respondents reported visiting a GP in the past 12 months which was less than in the earlier Crossroads I study.
- Satisfaction with GPs increased from the previous study.
- Use of and satisfaction with medical specialists has increased over the past 15 years.
- Healthy eating could be improved, however, like the consumption of alcohol, remained similar to eating and drinking patterns 15 years earlier. Further, levels of physical activity have increased while rates of obesity had also increased.
- The self-reported prevalence of chronic and long-term conditions increased over the past 15 years, including high blood pressure, arthritis, depression, respiratory problems, heart conditions, cancer and diabetes.

It is hoped this information can be utilised when needed to support projects, health interventions and access to funding to address the key issues.

STUDY BACKGROUND

ABOUT BENALLA

Benalla is a township of 10,330 residents⁽¹⁾ located 180 kilometres north-east of Melbourne. The area is the traditional land of the Bangerang people, Taungurung clan and Yorta Yorta Nation, and the word Benalla is derived from the Aboriginal word *Benalta* meaning water holes. In more recent history, Benalla has been known as a rich pastoral district. The largest employers in Benalla encompass the manufacturing, retail, health and agriculture sectors. Benalla's economy is growing with new industry in the town.

Recreation:

Lake Benalla was created in 1974-1975 with the damming of the Broken River. Nearby, the Botanic gardens (established in 1887) and the Rose Gardens (established in 1959) give rise to the fond nick name '*Rose City*'. Benalla is home to the Gliding Club of Victoria, the largest gliding club in Australia.

The Arts:

Benalla has continually strengthened its reputation for the Arts, with the Benalla Regional Art Gallery, Performing arts, a convention centre and the Benalla Street Art Wall-to-Wall festival (since 2015).

Health and Health services:

Benalla Health encompasses the 24 bed acute care hospital, community health, residential aged care and maternity services. Emergency presentations to the Benalla Urgent Care Centre are treated by Registered Nurses with support from local General Practitioners and incur out of pocket expenses. The rate of Emergency Department/Urgent Care Centre presentations in Benalla (142 per 1000 population) is lower than the Victorian average (259 per 1000 population).⁽²⁾ In 2012, Benalla had 1.0 General Practitioners per 1000 population, lower than the Victorian average of 1.2 per 1000 population⁽²⁾ and had lower than the state average rate of bulk billing for GP services⁽²⁾. The Cooina Aged Care facility is not-for-profit facility which is home to 82 residents. Benalla's rate of registered mental health clients is double the Victorian average (24 per 1000 population compared with 11 per 1000)⁽²⁾.

Benalla has been chosen as one of the place-based suicide prevention trial sites in a Victorian government-Murray Primary Health Network (MPHN) initiative. Benalla hosts an annual White Ribbon march in response to concern about family violence in the area. Some mental health services are provided in Benalla, although the majority of services are provided from Wangaratta. The rate of self-reported fair/poor dental health is higher in Benalla than the Victorian average⁽³⁾.

THE CROSSROADS II STUDY

What was the study about?

While it is well known that rural residents have less access to health services, lower rates of health service utilisation and poorer health outcomes, there is little accurate health data about specific rural places and populations⁽⁴⁾. This study was undertaken to identify the health of the residents of Benalla as well as their service use, access to services and rates of undiagnosed disease. This project was undertaken in partnership with local services so as to provide these services with improved understanding of their local population, the health needs of local residents, and information for health service planning in Benalla.

Named Crossroads II, this study was undertaken in 2016 – 2018 and is a follow up from a baseline study conducted 2001-2003. The original study (Crossroads I) investigated residents of Shepparton and Mooroopna along with the 6 shire capitals of the region at that time. Crossroads II revisited the towns of Shepparton and Mooroopna, Benalla, Cobram and Seymour to determine service use, access to services, health and wellbeing. This report contains responses from Benalla participants.

HOW WAS THE STUDY UNDERTAKEN?

A total of 600 households within the Benalla township were randomly selected from a council list which included 84% of households that participated in the original study plus 16% of households selected from those built since 2001. Of the 600 selected households, 507 were residential addresses eligible to participate. Ineligible addresses included those that were no longer residential, were vacant or occupied by residents who had lived in Benalla for less than six months. Trained research assistants approached each household in pairs to ask all adults for their participation in the study. Where residents were not home or the time was inconvenient, multiple follow up visits were made to contact all adults in the household. Adults were asked to complete an additional questionnaire for children under the age of 16 years living with them. Interviewers asked a set of questions about health conditions, service use, concerns about health care and other wellbeing, social participation and demographic questions. Using this method, 346 of the 507 eligible households participated in the questionnaire for a response rate of 68%. In these 346 households, 471 adults completed a questionnaire and a further 56 families completed children's questionnaires for 123 children.

Within households completing the questionnaire, a randomly selected person (using a random number generator at the household) was also invited to a health screening clinic. People under the age of 18 or pregnant women were ineligible to participate. The clinics were held at Benalla Health. The clinics were timed around the Oral Glucose Tolerance Test, in which a fasting blood-test is taken, 75g of glucose is consumed and a second blood test is taken two hours later. A series of health assessments were conducted within the 2-hour period, including cholesterol test, blood pressure, liver disease, height, weight, atrial fibrillation screening, hearing impairment, cognitive function, lung function and dental health. Individuals attending were asked to fast the night before the clinic. At the conclusion of the clinic, participants were offered breakfast. A total of 271 participants were invited to the clinic and 159 attended and completed the clinic, resulting in a response rate of 59%. Both the household questionnaire and the clinic measures were based on the original study which was conducted in 2001-2003. Data for this study were collected between September 2017 and October 2018.

Data were recorded into a large dataset and then cleaned and coded. Analysis of each question has been undertaken and an overview of findings is presented in this report. Results were also compared to the earlier study and national or state averages where possible.

BENEFITS OF THE STUDY TO PARTICIPANTS

Participants identified a range of benefits from participation in the research. They told researchers that the study had enabled them to access screening tests that they would have been otherwise unable to access, avoid duplication of tests, check up on a health condition that had been diagnosed some time previously, check up on a health condition that was common among their family members, check up on their pre-diabetes or have a dental check-up that they had been avoiding for some time. At the clinics, participants regularly reconnected with friends and acquaintances and the breakfast at the conclusion of the clinic was often very social. Some participants also commented that the Research Assistants were very professional, an invaluable asset to the study or they would have liked them to work in their local businesses. On occasion, researchers assisted participants with trouble-shooting electronic devices or completion of health paperwork. At other times research assistants connected participants with services if they expressed a certain need, such as social isolation, mental health concerns or lack of transport.



RESULTS

RESULTS – DEMOGRAPHICS

A total of 471 people over the age of 16 completed the household survey, representing a 68% response rate. Of these participants, 41% were male, lower than the percentage in the Crossroads I study and the state average. Respondents had lived in Benalla for an average of 27 years. A greater percentage of participants were retired or working part-time compared with Crossroads I. Respondents primarily spoke English as their first language. The percentage of people working either full-time or part-time was lower than the Victorian average. The characteristics of the participants are summarised in Table 1.

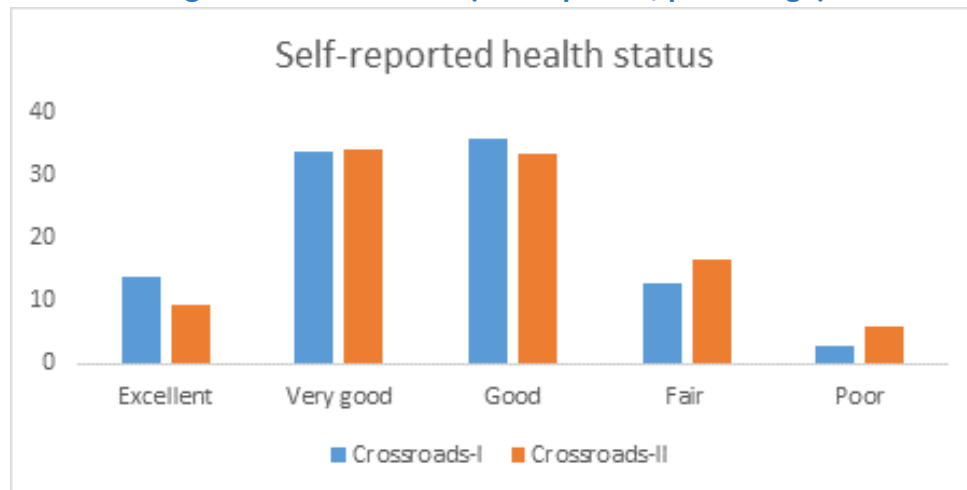
Table 1: Demographic characteristics of Benalla participants

Characteristics	Crossroads II	Crossroads I	Australian or Victorian comparison
n	471	528	-
Males	41%	44%	49% Australia ⁽¹⁾
Age (average)	56.1 ± 19.6 (range 16-93)	47.6 ± 18.1 (range 15-94)	Australia 37.3 years ⁽¹⁾
Born in Australia	91%	91%	72% ⁽²⁾
Employment			
• Full time	26%	32%	58% ⁽⁵⁾
• Part time	17%	13%	34% ⁽⁵⁾
• Retired	44%	32%	Not available
• Not working but not retired	6%	3%	Not available
Highest level of education			
• Partial secondary school	38%	53%	44% ⁽²⁾
• Completed secondary school	10%	36%	64% completed secondary school ⁽²⁾ 46% completed higher education ⁽²⁾ .
• TAFE or trade school	23%		
• University/part University	20%	11%	
Private health insurance (minimal coverage)	9%	35%	48% ⁽²⁾
Private health insurance (higher coverage)	23%		
Married or de facto	62%	70%	61% ⁽⁶⁾
Access to a car on a daily basis	94%	92%	NA

RESULTS – HEALTH and WELLBEING

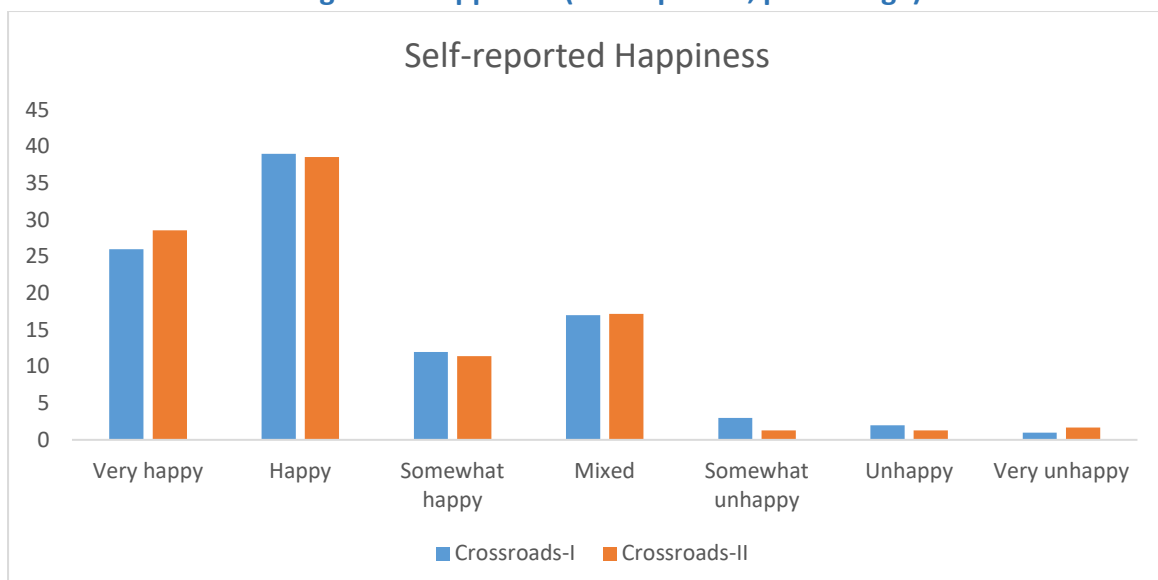
44% of participants rated their health as very good or excellent, as presented in Figure 1. This percentage is lower than the Crossroads I study (48%) and the Victorian average (56%).⁽⁷⁾

Figure 1: Health status (self-reported, percentage)



The percentage of participants reporting that they were very happy, happy or somewhat happy (79%) is outlined in Figure 2 and was similar to Crossroads I (77%).

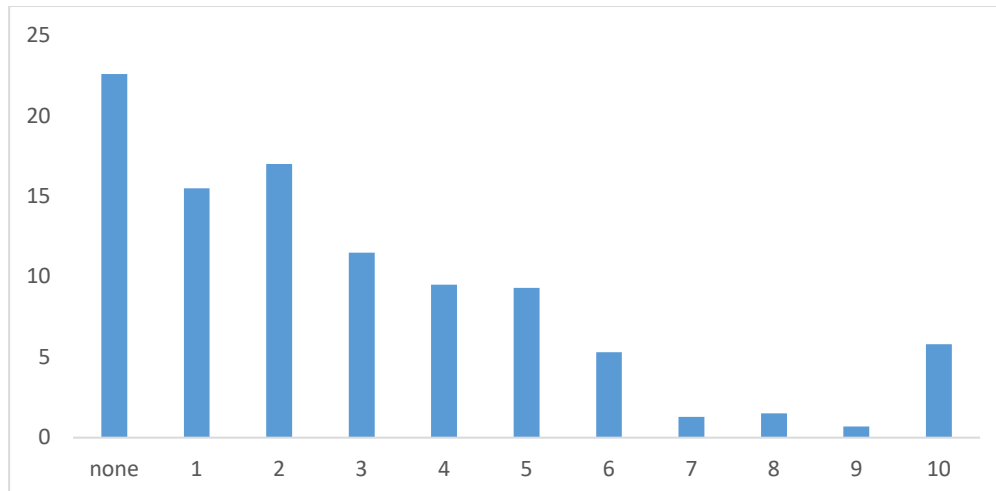
Figure 2: Happiness (self-reported, percentage)



RESULTS – SOCIAL PARTICIPATION

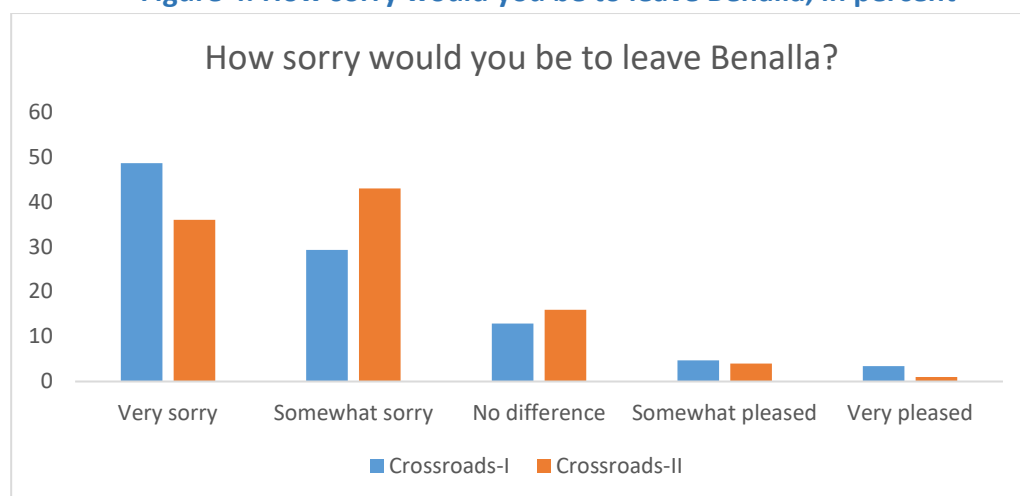
Participants were asked how many of the ten closest houses they had been inside and the results are presented as percentages in Figure 3 below.

Figure 3. Of the 10 houses closest to your home, how many have you been in?



Participants were asked how sorry they would be to leave Benalla and the results are presented below (Figure 4). Most respondents would be sorry to leave Benalla.

Figure 4. How sorry would you be to leave Benalla, in percent



Of those surveyed, 56% of participants in Benalla said they belonged to clubs, sporting groups or other local organisations (61% in Crossroads I). Half of these people identified formal, voluntary roles within these groups. Respondents reported spending more time participating in their club in Crossroads II than in Crossroads I. Among Crossroads II participants, 63% spent more than 10 hours per month, 22% spent 5-10 hours per month and 13% 1-4 hours per month compared to 34% (>10 hours), 14% (5-10 hours) and 11% (1-4 hours per month) in Crossroads I. Therefore, while slightly fewer people are involved in local groups, of those who are involved, they are spending more time volunteering.

RESULTS – PREVENTATIVE HEALTH

Participants' self-reported history of screening tests varied, with some screening tests having high rates, some increasing between Crossroads I and II and others decreasing over time (see Table 2). Self-reported childhood immunisation rates were higher than the state average.

Table 2: Preventative health measures undertaken by participants (self-reported)

	Crossroads II	Crossroads I	National comparison
Blood pressure check*	91%	90%	
Cholesterol check*	67%	59%	
Diabetes check*	63%	57%	
Bowel examination*	40%	24%	37% Bowel cancer check Victoria ⁽²⁾
Skin check*	42%	37%	
Mammograms (female aged ≥50 only)*	55%	68%	88% (ever) 70% in past 2 years ⁽⁸⁾ .
Pap test (female only)*	50%	60%	60% cervical cancer check Victoria ⁽²⁾
Prostate check (males aged 50+ only)*	43%	54%	Not available
Immunisation (childhood illnesses)	89%	84%	53-75% ⁽⁹⁾
Influenza vaccination	59%	38%	Adults <65 years 23%, ≥65 years 75% ⁽¹⁰⁾
Pneumovax	26%	24%	Adults <65 years 8%, ≥65 years 59% ⁽¹⁰⁾
Tetanus booster	57%	66%	Not available

*Within the last two years

RESULTS – CHRONIC HEALTH CONDITIONS

The percentage of participants reporting chronic health conditions increased from Crossroads I to II, and many conditions were more prevalent in Benalla than the state average (see Table 3). The most prevalent conditions identified were high blood pressure, arthritis, heart disease, respiratory conditions and cancer. One in five indicated they had a disability and 83% of those with a disability agreed that their disability affected everyday activities.

Table 3: Major health conditions and disability

	Crossroads II	Crossroads I	Victorian comparison
Heart condition	19%	11%	7% heart disease ⁽²⁾
Circulatory problems	9%	5%	
Respiratory condition	19%	8%	11% asthma ⁽²⁾
Digestive issue	21%	11%	
Kidney disease	5%	5%	
Liver disease	3%	1%	
Cancer	18%	11%	
Diabetes	11%	7%	5% ⁽²⁾
High blood pressure	36%	27%	25% ⁽²⁾
Arthritis	35%	23%	
Stroke	5%	3%	
Chronic obstructive pulmonary disease	4%	1%	
Disability:			
Disability	20%	Not available	5% need for assistance with core activity ⁽²⁾
Major types of disability:			
Physical disability (legs or feet)	59%	Not available	Not available
Chronic pain	55%		
Physical disability (other than arms/legs)	48%		
Physical disability (arms or fingers)	34%		
Hearing difficulty	25%		
Satisfaction with disability services (% Very/satisfied)	63%	Not available	Not available
Comments regarding possible improvements for disability services in the region:			
Affordability of supports and services for patients and carers			
Decreased waiting times for services			
Increased awareness of local services			
Improved access to mental health services			
Mobility improvements (footpaths, ramps to shops, gutters)			

RESULTS – CHRONIC PAIN

Chronic pain was reported by 21% of participants. People reporting chronic pain used a variety of pharmacological and non-pharmacological therapies to manage their pain (see Table 4).

Table 4: Chronic pain

	Crossroads II
Chronic pain (self-reported, %)	21%
Major cause of pain	Arthritis Musculoskeletal, often from previous injuries Neuropathy Osteoporosis Post cancer
Treatment for chronic pain	
Prescription medication	62%
Over the counter medication	55%
Physiotherapy	30%
Massage	23%
Chiropractic therapy	23%
Other exercise	21%
Acupuncture	18%
Supplements	18%
Pain clinic	7%
Chronic Pain is well managed?	
Yes	70%
No	30%
Satisfaction with care for chronic pain (% satisfied or very satisfied)	70%
Ways to improve care for Chronic Pain in region?	
Reduced cost for allied health, GP and specialist visits, reduced cost for gyms, hydrotherapy pools	
Holistic approach to chronic pain, inclusive of mental health, exercise, non-pharmacological treatments	
Reduced waiting time for specialist care or surgery, better access to specialists	
Local chronic pain clinic	
Better information about chronic pain and awareness of local treatment options	

RESULTS – MENTAL HEALTH

Mental health was a key issue raised by local health services. Depression (either current diagnosis or history of previous depression) was reported by 31% of participants, representing an increase from Crossroads I. Some participants had seen a psychologist in the past 12 months, primarily in Benalla and/or Wangaratta. One quarter of participants with depression had seen a psychologist, psychiatrist or other mental health professional in the past 12 months.

Table 5: Mental health issues and treatment

	Crossroads II	Crossroads I
Depression (self-reported, ever)	31%	13%
Medication for anxiety, depression or nervous tension	14%	8%
Seen psychiatrist or psychologist or other MH professional	25%	
Psychologist (seen in past 12 months)	7%	4% *
Psychologist (seen in past 12 months by people with depression)	14%	21% *
Psychologist (waiting time)	1-120 days, if not pre-booked	Range 7-90 days if not pre-booked *
Psychologist location	13/31 Benalla, 10/31 Wangaratta	5/20 Benalla, 5/20 Wangaratta, 7/20 Melbourne*
Psychologist (satisfied or very satisfied)	74%	60% *
Psychiatrist (seen in past 12 months)	2%	4% *
Psychiatrist (seen in past 12 months by people with depression)	7%	21% *
Psychiatrist (waiting time)	Range 7-30 days if not pre-booked.	Range 7-90 days if not pre-booked *
Psychiatrist location	1/11 Benalla	5/20 Benalla, 5/20 Wangaratta, 7/20 Melbourne*
Psychiatrist (satisfied or very satisfied)	9/11	60% *
Other mental health professional (seen in past 12 months)	4%	2%
Other mental health professional (seen in past 12 months by people with depression)	10%	15%
Other mental health professional (satisfied or very satisfied)	18/19	Not available

*Psychologist and psychiatrist combined

RESULTS – GENERAL PRACTICE

Use of GP services was identified to have decreased over the past 15 years, with 91% of participants reporting visiting a GP in the past 12 months in Crossroads II, a decline from 98% in Crossroads I. The frequency of visits decreased from 7 visits, on average, in Crossroads I to 5 visits in the previous 12 months in Crossroads II (Table 5). Bulk billing was lower than the national average. There was a high level of confidence in GPs (84% excellent or very good), as presented in Figure 5. Most participants reported that they accessed GP services within Benalla, but this percentage was lower than during Crossroads I. The percentage of people waiting times less than 7 days for a GP appointment had decreased from Crossroads I. This suggest that use of and timely access to GPs in Benalla has declined over the past 15 years.

Figure 5: Confidence in GP

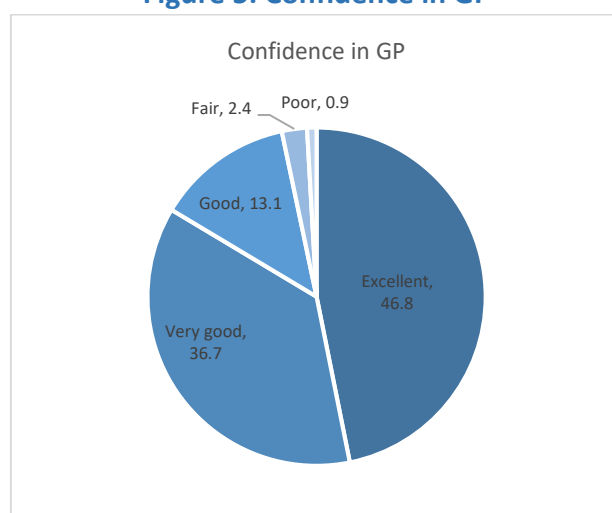


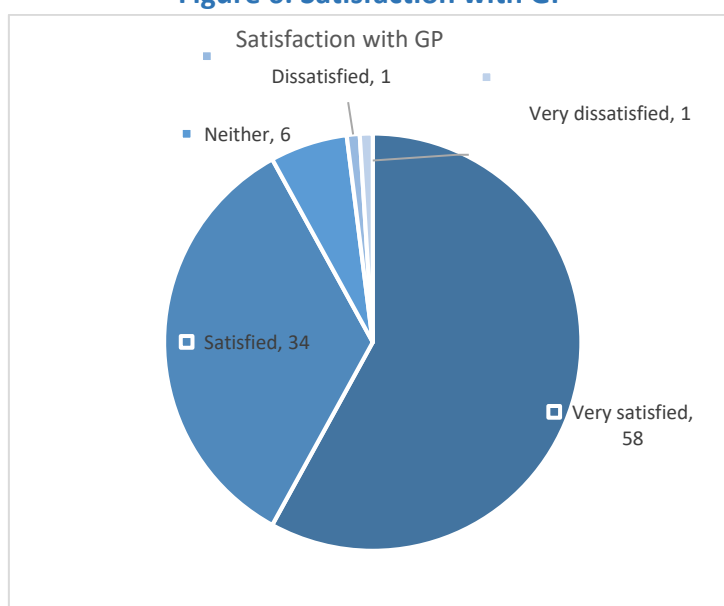
Table 6: General Practitioner services

	Crossroads II	Crossroads I	Victorian comparison
% visiting GP in previous 12 months	91%	98%	83% ⁽¹¹⁾
Mean (average) GP visits in previous 12 months	5.4 (range 0-52)	7	5.4 ⁽²⁾
Bulk billed on most recent visit	36%	Not available	65% bulk billed for all visits in past financial year ⁽¹²⁾
Location of GP:			
Benalla	81%	95%	NA
Wangaratta	3%	<1%	NA
Shepparton	2%	<1%	NA
Waiting time for GP appointment:			
Less than 7 days or pre-booked	50%	88%	

7-14 days	27%	11%	
15-21 days	9%	<1%	
>21 days	14%	<1%	

Despite less use and longer waiting times, satisfaction with GP has increased slightly since Crossroads I, with 92% of participants in Crossroads II being satisfied or very satisfied with their GP (88% in Crossroads I) as presented in Figure 6. In Crossroads I, 51% were very satisfied, 37% were satisfied, 5% were neither dissatisfied nor satisfied, 5% were dissatisfied and 2% were very dissatisfied.

Figure 6: Satisfaction with GP



RESULTS – HEALTH SERVICE UTILISATION

Use of allied health services and complementary and alternate therapy was reported to have increased from Crossroads I to II. Utilisation of dental services has increased since the Crossroads I study, but remains lower than the national average. Participants identified the key barriers to dental care as cost, health insurance gap, time and issues regarding choice or quality of dental care. Although the percentage of participants accessing specialists has increased and the percentage being hospitalised in the past 12 months is similar, the location of these services has changed and fewer participants report accessing these services within Benalla than in Crossroads I.

Table 7: Health service utilisation

	Crossroads II	Crossroads I
Medical specialists:		
Visited in past 12 months	39%	31%
Average number of visits in past 12 months	2.4 ± 2.2	2.4 ± 2.4
Location (primary specialist):		
Benalla	12%	36%
Wangaratta	42%	36%
Melbourne	28%	14%
Satisfaction with primary specialist (% satisfied or very satisfied):	94%	84%
Hospitalisation:		
Hospitalised in past 12 months	14%	16%
Number of hospitalisations in past 12 months (mean)	1.0	1.5
Location of hospital		
Benalla	36%	63%
Wangaratta	44%	21%
Melbourne	23%	11%
Concerns re medical care:		
No concerns or positive comment	75%	81%
	Bulk billing 7%	Lack of staff 3%
	Waiting times 6%	Quality of nursing 3%
Concerns re inpatient hospital care:		
No concerns or positive comment	79%	86%
	Quality of care (lack of empathy, poor patient care/concern) 4%	Lack of staff 3%
	Negative comment about a hospital in another town 2%	Lack of specialist services 1%
Allied health:		
Speech therapy	1%	0%
Physiotherapy	16%	9%
Chiropractor	16%	12%
Osteopathy	3%	
Social worker	3%	3%
Optometrist	47%	27%
Exercise physiologist	2%	Not available
Audiologist	15%	4%
Complementary and alternative therapy:		
Acupuncture	6%	5%
Naturopathy	3%	

Oral Health:		
Dentist visited in past 12 months	51%	37%
Barriers to visiting dentist:	Health fund gap or cost	No need
	Time	Cost
	Choice of dentist or quality of dentist	Fear

The proportion of participants travelling 50km or more for GP services has increased, as has the proportion of people travelling over 100km for specialist services, since Crossroads I.

Table 8: Distance travelled to key health services (%)

		<5km	5-10km	11-50km	50-100km	>100km
GP	Crossroads I	99			0	1
		89	0	6	2	2
	Crossroads II	(95% ≤ 50km)				
Dentist	Crossroads I	87			9	4
		76	1	12	5.6	5.8
	Crossroads II	(89% ≤ 50km)				
Hospital	Crossroads I	97			1	2
		79	0	16	4	2
	Crossroads II	(95% ≤ 50km)				
Specialist	Crossroads I	53			27	20
		18	1	33	16	32
	Crossroads II	51% ≤ 50km)				

RESULTS – EMERGENCY PRESENTATIONS

105 (23%) of respondents said they had visited an ED or Urgent Care Centre (UCC) in the previous 12 months. 74% of these respondents were treated in Benalla, 9% in Benalla/Wangaratta combined and 17% in Wangaratta. Waiting time to see a doctor at their most recent ED/UCC presentation were reported as: 63% waited less than one hour, 26% waited 1-3 hours, 10% waited 3-6 hours and 2% waited more than 6 hours. 67% said they were provided with follow-up information after their presentation.

In Crossroads I, 84 respondents (16%) had attended ED in the previous 12 months, and 56 (67%) of these did so in Benalla. 73% waited less than one hour, 23% waited 1-3 hours, 4% waited 3-6 hours and only one person waited more than 6 hours. The major concerns at this time were: waiting times for emergency care and/or surgery and lack of resident doctors. 19% of respondents had positive comments.

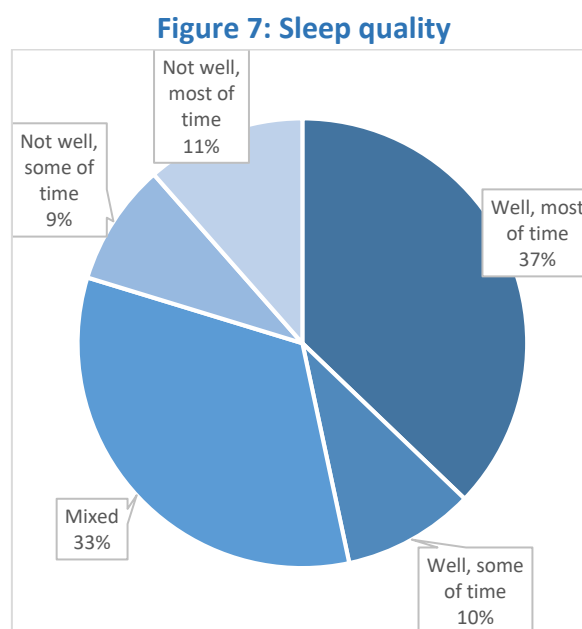
Crossroads II: Concerns about Emergency Department/Urgent Care Centre:

- out of pocket expenses,
- issue with not having a doctor on site,
- having to go to Wangaratta to avoid fees or to see a doctor or for specific treatment (eg. cardiology, fractures),
- centre being understaffed,
- long waiting times,
- lack of specialised staff (mental health, paediatrics),
- poor staff attitude,
- lack of pain relief while waiting,
- issues with patient transport/ambulance transfer to Wangaratta.

In addition to the many issues raised, there were also many positive comments (n=79 (17%)), particularly about the nursing staff.

RESULTS – HEALTH BEHAVIOURS

Almost half, 47%, of participants agreed that they slept well most or some of the time (Figure 7).



Although smoking rates have decreased from Crossroads I to II, other health behaviours were reported to have increased. For example, the percentage of participants reporting consuming insufficient fruit and vegetables increased from Crossroads I to II, as has the consumption of takeaway food (Table 7). However, 94% of clinic participants rated their diet

as very healthy or quite healthy. Risky alcohol consumption appeared to be common, and 30% of participants indicated consuming 5 or more standard drinks in a few hours on at least one occasion in the past month. Self-reported prevalence of overweight and obesity were higher in Crossroads II than Crossroads I and the state average.

Table 9: Health behaviours

	Crossroads II	Crossroads I	National comparison
Smoking	16%	18%	16% ⁽²⁾
Insufficient exercise per week (<150minutes per week)	36%	58%	32% ⁽²⁾
Alcohol drinkers	65%	66%	78% ⁽⁴⁾
Alcoholic drinks per week	8.1 ± 14.2	5.4 ± 8.6	1-2 drinks on 1.6 days per week ⁽¹⁵⁾
Binge drinking at least once in past month (5 drinks within a few hours)	30%	28%	26% more than 4 standard drinks at least monthly ⁽⁴⁾
Soft drink/sugar sweetened beverage consumption yesterday	37%	Not available	9% daily ⁽¹⁶⁾
Television per week (average)	13 hours	Not available	1095 minutes (18 hours) ⁽¹⁷⁾
Insufficient vegetable serves per day	81%	71%	51% Victoria ^(2, 18)
Insufficient fruit serves per day	45%	41%	
Takeaway food as a main meal (at least one meal per week)	31%	25%	Not available
Perception of own diet (clinic participants):			
Very healthy	24%		
Quite healthy	71%		
Not very healthy	6%		
Not at all healthy	0%		
Overweight (calculated from self-reported height and weight)	33%	30%	36% ⁽¹⁸⁾
Obesity (calculated from self-reported height and weight)	28%	15%	28% ⁽¹⁸⁾

RESULTS – CHILDREN’S HEALTH BEHAVIOURS

Parents or guardians provided information regarding the health and health service utilisation for 123 children in Benalla. Children ranged in age from 0 to 15 years. 53% of children identified as male, 46% as female and one child as non-binary. It was reported that children were typically eating lower than the recommended servings of daily vegetables and exercising for insufficient time per week (see Table 10).

Table 10: Children’s health behaviours

	Crossroads II	Crossroads I	Victorian or Australian comparison
number	56 families, 123 children	93	
Males	53%	50%	
Average age	8.2 years range 0-15	8.0 years range 0-16	
Childhood immunisation	96% families	99%	95% of 5 years old ⁽²⁸⁾
Exposed to secondary smoke	5% families	Not available	4% ⁽²⁹⁾
Insufficient exercise per week (60+ minutes exercise per day)	85% families	88%	67% ⁽¹⁹⁾
Soft drink/sugar sweetened beverage consumption yesterday	30 families (46% had some)	Not available	47% ⁽³⁰⁾
Insufficient vegetable serves per day	61 families (92%) (<5 serves)	88% (< 4 serves)	95% ⁽³⁰⁾
Insufficient fruit serves per day	18 families (27%)	29%	32% ⁽³⁰⁾
Takeaway food as a main meal (at least one meal per week)	44% families	39%	69% ⁽³¹⁾

RESULTS – CHILDREN’S HEALTH CONDITIONS and HEALTH SERVICE UTILISATION

Many of these children were reported to have health conditions; allergies and asthma were common (see Table 11). Most, 84%, of families said they had taken their children to the GP in the past 12 months. 40% of families also indicated accessing a specialist for their children’s health, many in Wangaratta. Equal numbers of families reported accessing emergency care for their children in Benalla and Wangaratta.

Table 11: Children's health conditions and health service utilisation

	Crossroads II (n (%))	Crossroads I (%)	Victorian comparison (%)
Asthma	19 families (28%)	22%	21% ⁽³²⁾
Skin conditions	17 families (25%)	14%	31% atopic dermatitis ⁽³³⁾
Allergies	14 families (21%)	11%	Food allergies 11% ⁽¹⁹⁾
ADHD	7 families (10%)	3%	5% ⁽³⁴⁾
Disability	5 families (8%)	3%	7% ⁽³⁵⁾
GP (seen in past 12 months)	56 families (84%)	76%	83% ⁽³⁶⁾
Specialist (seen in past 12 months)	27 families (40%)	4%	
Location of specialist			
Shepparton	1%	33%	
Melbourne	16%	50%	
Wangaratta	47% (Benalla 24%)	17%	
Satisfaction with specialist (% satisfied or very satisfied)	96%	71%	
Psychologist (seen in past 12 months)	12 families (18%)	2%	
Speech therapist (seen in past 12 months)	20 families (30%)	7%	
ED/UCC (in past 12 months)	27 families (42%)	17%	
ED/UCC (location)			
Benalla	14 families	92%	
Wangaratta	14 families	4%	
Melbourne	2 families		

RESULTS – CROSSROADS II CLINIC

159 of the adults from the household survey also attended a free, comprehensive health check-up at the Crossroads II clinic. These clinics were held at the Day Procedure Unit at Benalla Health. Participants had a series of blood tests, an oral glucose tolerance test for diabetes and a series of other screening tests for undiagnosed disease. No new cases of diabetes were detected but 9% of participants showed impaired glucose tolerance, commonly known as pre-diabetes, higher than in a national study (3% ⁽⁷⁾). Percentage of clinic participants with a BMI (calculated from height and weight measured in the clinic) in the overweight or obese range was higher than the Victorian average, and higher than calculated among household participants from self-reported height and weight. Mental distress as screened by the K10 was similar to that previously reported at a national level.

Table 12: Crossroads II clinic

	Crossroads II	Crossroads I	National comparison
n	159	118	
Male	43%	46%	
Female	57%	54%	
age	60.5 ± 16.2 (range 18-86)	56.6 ± 15.5 (range 25-85)	
High cholesterol ≥ 5.5mmol/L	32%	27%	32.8% ⁽¹⁹⁾
New diabetes	0	4%	0.9% newly diagnosed ⁽¹⁹⁾
Impaired glucose tolerance	9%	9%	3% ⁽¹⁹⁾
High blood pressure (>160mm systolic, >100 diastolic)	27%	15%	34%(20)
Poor cognitive function	27% abnormal Average score 27	NA	People aged 65+ 37% scores abnormal ⁽²¹⁾ . Average score 26 ⁽²²⁾
Liver dysfunction	Elevated ALT: 15% Elevated GGT: 14%	13% (liver enzymes)	11% elevated ALT, 12% elevated GGT ⁽²³⁾
Kidney dysfunction	eGFR <60 10% ACR 7%	15% (serum creatinine, excluding diabetes)	4% impaired eGFR, 8% abnormal ACR ⁽²³⁾
Hearing impairment	52%	11%, 5% hearing aids	22% ⁽²⁴⁾
Mental health conditions:			
K10 well (<20)	86%	Not available	Well: 87% Mild-moderate-severe 13% ⁽²⁵⁾
K10 mild (20-24)	5%		
K10 moderate (25-29)	5%		
K10 severe (30+)	3%		
Do you feel lonely or isolated? (clinic participants only)	7% usually 10% often 26% sometimes 57% never	NA	NA
BMI (mean ± SD)	28.0 ± 6.1	28.0 ± 5.6	Not available
Overweight	38%	35%	36% ⁽¹⁸⁾
Obese	29%	29%	28% ⁽¹⁸⁾
Waist circumference:			
Males >94cm	72%	4%	59% ⁽²⁶⁾
Females >80cm	77%	51%	65% ⁽²⁶⁾
Lung dysfunction FEV1/FVC <0.7	27%	14% reduced spirometry	8% (people aged 40+) 29% (aged 75+) ⁽²⁷⁾

RESULTS – ORAL HEALTH CLINIC

Clinic participants (159) were offered a free dental check-up and clean, and 67 participants (42%) agreed to take part. Overall, health of teeth was assessed using the decayed missing filled score (DMFS), which assesses a person's lifetime history of dental caries (tooth decay or cavities). Participants had an average DMFS score of 25.5 tooth surfaces with caries history compared with the Victorian state average of 12.8 surfaces and Australian average outside of capital cities of 14.4 surfaces.¹³ Among the individual components making up the DMFS, participants had an average of 17.6 filled surfaces and 1.7 decayed surfaces. Six participants (9%) were fully edentulous (had no remaining natural teeth), compared to the Victorian average of 8.0% and the Australian average outside of capital cities of 12.9%.¹³ Dental caries and/or missing teeth were significantly more common among older participants compared with younger participants.

The untreated dental health issues (for example the number of teeth requiring fillings) of the participants who had some or all of their teeth (dentate) was assessed. Half of dentate participants had no untreated issues (50%) compared with a Victorian average of 76% and Australian average outside of capital cities of 72%.¹³ Overall, 3% had all of the dental health issues untreated. Untreated dental caries were significantly more common among younger participants than older participants (14% among 25-44 year old participants compared with 7% among participants aged 65 or older).

Forty-two dentate participants showed evidence of tartar above the gum line or between the teeth (supra-gingival calculus) and below the gum line (sub gingival calculus) (40%). Similarly, evidence of periodontal pockets of between >3mm but less than 5mm in depth, a sign of gum disease was present in 24% of participants.

CONCLUSION

The participants of the Crossroads II study in Benalla were, on average, older than the Crossroads I participants, and a greater proportion of females participated in Crossroads II. The results provide very detailed information about the health of participants living in Benalla and their use of health services. Over half of participants rated their health as good or better, although this was lower than Crossroads I. Key health issues identified were obesity, poor mental health and oral health. Participants were typically consuming insufficient vegetables and undertaking insufficient exercise, but smoking rates have decreased since Crossroads I.

Compared with Crossroads I, GP utilisation had decreased and bulk billing was an issue. 39% of participants were seeing at least one specialist, often some distance away from Benalla. Utilisation of allied health services had increased in the time between Crossroads I and II. Participants had a number of concerns about the Urgent Care Centre, including out of pocket expenses, lack of on-site doctors, lack of access to specific treatments and patient transport to Wangaratta.

Self-rated happiness was similar to Crossroads I, with two thirds of people happy or very happy. 79% would be sorry or very sorry to leave Benalla. Participants were generally very satisfied with the care they receive from GPs, specialists and hospitals, and their level of satisfaction had increased since Crossroads I.

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For more information about the Crossroads II study, please see
<https://medicine.unimelb.edu.au/research-groups/rural-health-research>

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