



Better Internet for Rural, Regional & Remote Australia

RTIRC Submission

5th August, 2018



TABLE OF CONTENTS

TABLE OF CONTENTS	1
1. BACKGROUND & OVERVIEW	3
2. CURRENT ISSUES IN RRR COMMUNICATIONS	4
3. KEY AREAS OF INTEREST	9
Q1. What are the main barriers to people in regional communities increasing their use of digital technologies?	9
Q2. How are people in regional communities currently using their broadband services & how might they increase the benefits of using this technology?	10
<i>Figure 1: BIRRR Facebook Poll on how people in Regional Communities Use broadband services.</i>	10
Q3. What data intensive activities are occurring in RRR Australia ? What digital technologies are needed for these? eg what order of magnitude increases in data capabilities will be needed to provide quality education, health & social services in the bush?	13
<i>Figure 2: BIRRR Facebook Poll on Data Intensive Activities occurring in Regional Areas.</i>	14
Q4. How can regional businesses better utilise digital technologies to maximise economic benefits?	15
<i>Figure 3: Number of Urban Residences mapped for Sky Muster (Terlato, 2017)</i>	16
<i>Figure 4 : BI Intelligence Amount of Data Generated per average farm per day (Meola, 2016 & Data Farming, 2018)</i>	18
Q5. What can be done to improve access to and uptake of telecommunications services in remote Indigenous communities?	19
Q6. Are there practical examples of how communications services can improve the well-being of people in remote indigenous communities?	19
Q7. What skills do people need to get the most from their digital technologies and where can they learn these skills?	19
Q8. Are you connected to nbn™ Fixed Wireless or nbn™ Sky Muster, have you ever had issues with your connection? If yes how have you overcome the issues, who assisted you?	20
<i>Figure 5: Map of BIRRR Troubleshooting Locations, July 2018</i>	21
<i>Figure 6: BIRRR Facebook Poll on who has assisted with issues.</i>	22
Q9. If you are in an area with access to the nbn™ Sky Muster Satellite service and you have not taken it up, why not?	23
<i>Figure 7: BIRRR Facebook Poll on what other services are used instead of nbn™ Sky Muster.</i>	24
Q10. What economic or social indicators could be used to guide investment to further improve mobile coverage ?	25
Q11. Is information readily available regarding how to use devices to improve mobile reception in areas with poor coverage? e.g. information about external antenna equipment?	25

Q12 What emerging digital services will be of most benefit to regional businesses and what are the data needs of these services ?	27
Q13. What broadband services are people using other than those available through the nbnTM ?	28
<i>Figure 8: BIRRR Map of Alternate (non nbnTM) Fixed Wireless Map</i>	29
<i>Figure 9: BIRRR Facebook Poll on what internet services people use other than Telstra</i>	30
Q14. How can more competition be encouraged in the provision of broadband services in regional Australia? Do we need more competition ?	30
4. SOLUTIONS	32
RECOMMENDATION 1 - REGIONAL TECH HUB	32
RECOMMENDATION 2 - DIGITAL LITERACY PROGRAM	33
RECOMMENDATION 3 - DIGITAL CAPACITY BUILDING CENTRE	33
RECOMMENDATION 4 - ENHANCEMENT of nbnTM SKY MUSTER SATELLITE SERVICE	33
RECOMMENDATION 5 - TRANSPARENCY & FLEXIBILITY of nbnTM FIXED WIRELESS	34
RECOMMENDATION 6 - MAPPING & SHARING EXISTING TELECOMMUNICATIONS INFRASTRUCTURE	34
RECOMMENDATION 7 - REGIONAL MOBILE COVERAGE IMPROVEMENTS	35
RECOMMENDATION 8 - FORWARD PLANNING of VOICE & BROADBAND SERVICES	35
RECOMMENDATION 9 - ENCOURAGING STATE BASED SOLUTIONS	35
RECOMMENDATION 10 - DEVELOPMENT OF A UNIVERSAL SERVICE GUARANTEE	36
REFERENCES	37
APPENDICES	38
Appendix 1: Reasons Why RRR Users Aren't Signing Up to nbn Sky Muster	38
Appendix 2: What people want in an Internet Connection ?	41
<i>BIRRR Facebook Group Polls highlighting needs of regional internet connections.</i>	41
Appendix 3: Links to Previous Submissions made by the BIRRR Team	42
Appendix 4: WA Nationals Regional Telecommunications Policy	43
Appendix 5: Results of BIRRR Landline Survey 2018	45

1. BACKGROUND & OVERVIEW

The Better Internet for Rural, Regional & Remote Australia (BIRRR) group was founded in 2014 due to a lack of information, advocacy and support for bush broadband consumers. In particular, those requiring equitable telecommunications for their businesses and education of their children. There are now almost 11,000 active, engaged BIRRR members from every state and territory of Australia. BIRRR are a volunteer based advocacy group which operates entirely on the goodwill of its members. Rural, Regional & Remote (RRR) consumers are extremely reliant on effective communications, due to the nature of their geography, and this also heightens the need for effective representation. The BIRRR team has undertaken extensive large-scale research on regional telecommunication needs. Previously there have been few studies and limited research into this specific consumer group.

BIRRR appreciates the opportunity to submit to the **Regional Telecommunications Independent Review Committee (RTIRC)**. Equity of service is essential for RRR consumers, irrespective of where they choose to work and live. The contribution to the Australian economy made by RRR residents and businesses far outweighs the current infrastructure expenditure on telecommunications for these regions. To highlight, each person in the Quilpie Shire, Queensland contributes \$250,000 to the economy, compared to Brisbane's \$70,000 per person (RAPAD, 2016). To ensure RRR productivity and growth and to keep people living in RRR areas, voice and broadband services must be accessible, affordable, reliable and equitable. Essential services such as health, in RRR areas are already lacking. Mental and physical health, education, business productivity, tourism, economic growth and innovation would all benefit from improved telecommunications in our regions.

The BIRRR team is on the ground in RRR areas every day, troubleshooting thousands of cases. The team is made up of six volunteers who are all rural women that have dedicated countless volunteer hours to ensure RRR telecommunications issues are resolved. The very reason for the existence of the BIRRR group is the reluctance of communication stakeholders to offer reliable services with efficient customer service and transparent information to RRR consumers. With over 250,000 website hits and hundreds of requests for help each month, BIRRR highlights the need for RRR consumers to be able to access user friendly telecommunications services that meet their specific needs. Every Australian, irrespective of where they live or work, should be confident they can access quality, reliable, accessible and affordable voice and broadband services with customer support guarantees. Numerous enquiries, reference groups and research have already been undertaken. BIRRR urges RTIRC to acknowledge that now it is the time to be proactive and solve the telecommunications issues raised in these reports, with a serious commitment policy and action, to ensure that RRR areas are not disadvantaged due to their population and postcode.

BIRRR encourages the RTIRC Committee to look at our **previous submissions** on telecommunications (Refer to **Appendix 3**).

2. CURRENT ISSUES IN RRR COMMUNICATIONS

Even after the roll-out of the nbn™ and a significant amount of funding directed to the Mobile Blackspot Program (MBSP), there remains a regional dimension to the digital divide. The closure of banks, amalgamation of local government offices and the removal of government services from country areas, have ignited further concerns amongst those in regional Australia about being left behind in the new globalised and Internet-connected world. With this has come an anxiety that uneven distribution in access to reliable, affordable and accessible voice and broadband services may further separate the country from the city. The BIRRR Team has developed a comprehensive list of the issues current in the regional telecommunications space.

RELIABILITY OF CONNECTIONS:

- Reliability of regional connections, and often no 'back-up' or alternative options for consumers during outages and downtime.
- Dropouts and outages - both with mobile broadband and satellite services.
- Rain fade on satellite services.
- Power outages and no power backup, leaving nbn™ connections offline.
- Landline services declining over time or being impacted by weather, lack of available parts for repairs, lack of available technicians.
- Delayed repairs of voice and broadband services due to location.

DIGITAL LITERACY & CONFUSION/ ACCESSIBILITY:

- Lack of consumer digital knowledge and independent advice on how to get connected and stay connected.
- Confusion with telecommunications in the current climate, in particular surrounding what is valued/needed in a connection.
- Mapping and addressing issues with nbn™ and providers.
- Many areas do not have a local technician they can utilise for advice or services, and telco call centre staff are often not across RRR issues and products.
- Confusion over the nbn™ rollout and how to get a nbn™ connection.
- Lack of information on the future of landline phones, in particular non -copper landlines such as High Capacity Radio Concentrator (HCRC) Next G Wireless Link (NGWL).
- Consumers unaware of their rights under the existing Universal Service Obligation (USO) and how to get compensated and issues resolved.

- Lack of information on antennas, boosters and equipment to improve signal reception.
- Lack of information on nbn™ non standard installations, and unwillingness of nbn™ to make this information readily available, flexible and facilitate this option
- Lack of ports for Asymmetric Digital Subscriber Line (ADSL) in Sky Muster mapped areas.
- nbn™ Sky Muster is not a 'mobile' technology so can only be used in office and not on surrounding property

AFFORDABILITY OF CONNECTIONS:

- High costs of data when compared to metropolitan connections.
- Inability to bundle plans due to limited, smaller providers on nbn™ Sky Muster.
- High cost of mobile broadband due to only one carrier in many areas.
- No business plans on nbn™ Sky Muster or ability to purchase more data due to the Fair Use Policy (FUP).
- High costs of antennas and boosting equipment, no subsidies available.
- Costs of non standard nbn™ fixed wireless installs are expensive - high costs to achieve a better connection.
- Lack of competition for technology choices in RRR areas with the lower cost providers less likely to offer a RRR service.

DATA RESTRICTIONS:

- Data limits on both mobile broadband and satellite significantly smaller than other technology options.
- Data restrictions - Off peak data on nbn™ Satellite connections (1am - 7am), further restricting limited data allowances.
- nbn™ Fair Use Policy for Sky Muster.
- Lack of advice/knowledge on how to use off peak data.
- Inability for **all** students on nbn™ satellite to access low cost educational data packs based on level or mode of study.
- No recognition of RRR premises being 'multi use' with data needs - having to use one limited connection for business, education, health and social needs.

LATENCY:

- High latency of satellite connection, causing issues for consumers when they require cloud and remote desktop programs or applications requiring low latency (e.g., VoIP, Skype (with potential telehealth implications) share trading, online gaming including gaming software development, and applications with high security restrictions).

CUSTOMER SERVICE:

- Poor customer service and misinformation given by providers and nbn™ marketing.
- Lack of community engagement on issues such as Mobile Black Spot (MBSP) tower locations, small cell versus full tower & nbn™ roll-out.
- Not all providers offer good customer service or a good end user experience. There is little information assisting consumers when it comes to assessing providers (to help them choose a good provider).
- Time off work, spent on the phone etc to troubleshoot a connection e.g. getting a landline connected or getting a nbn™ installation.
- Inability of consumers to get issues addressed quickly and without many attempts to contact their provider.
- Immense frustration at dealing with offshore call centres who are not familiar with the specific nature of communications in RRR areas.
- Boosters, antennas for mobile broadband and equipment for non standard nbn™ fixed wireless is often difficult to order and lack of support given to install

SPEED:

- Speeds, in particular upload speeds (nbn™ Sky Muster has a maximum available upload speed of 5 Mbps which can have implications for a number of business users).
- Shaped speeds when data limit has been reached (on NGWL & nbn™ Sky Muster shaped speeds render the service unuseable).
- nbn™ Sky Muster download speeds capped at a maximum of 25Mbps.

MOBILE NETWORK COVERAGE:

- No mobile coverage and / or declining mobile coverage.
- Inability for regional consumers to access and adopt innovative developments that require mobile connectivity.
- Many mobile towers still only 3G, which offers poor speeds. Lack of information regarding upgrade pathways for 3G.
- Small cell MBSP funding - very little impact on increasing coverage footprint and has created confusion with consumers who were led to believe they were getting a 'full tower'.
- Footprint when tower is upgraded from 3G to 4G reportedly lessens, reducing the number of consumers that are able to access that tower. BIRRR have asked Telstra to explain if this is a 'myth' and why consumers are having difficulties after tower upgrades.

- Focus by providers on upgrading metropolitan areas to 5G, further impacting the upgrade in RRR areas.
- Illegal repeaters affecting mobile coverage.
- Limited battery life at towers, further exacerbated by the often unreliable electricity connections in RRR areas.

LANDLINE PHONES:

- Future of HCRC and NGWL Landlines, lack of parts and few technicians to service these.
- Issues maintaining landline infrastructure and subsequent impact of cost of connection on a declining customer base.
- Consumers unsure of rights under the USO, lack of monitoring of USO guarantees.

nbn™ ROLLOUT IN RRR AUSTRALIA:

- Communities being '**underserved**' by nbn™, currently using ADSL but mapped for nbn™ Sky Muster.
- nbn™ **distrust and confusion** - e.g. nbn™ marketing "*switch now or you could lose your landline*" campaigns, media articles such as The Financial Review using language such as "*unaware that once the new network arrives their existing phone and internet connections will be switched off.*" (Yoo, 2017) and providers marketing call centres, and web pages using language such as "*The nbn™ network is replacing the old phone and broadband network, and services will be progressively disconnected from the old network after the nbn™ network is rolled out across Australia. To continue having a fixed home phone and broadband service, you'll need to switch to phone and broadband services on the nbn™ network.*" (Telstra)
- End users on metropolitan fringes and large regional centre fringes having to use nbn™ Sky Muster due to terrain or difficult to install nbn™ Fixed Wireless / Fixed Line.
- Lack of **transparency re congestion** and upgrade pathways on nbn™ Fixed Wireless Towers.
- Poor planning and expectations of take up of nbn™ Fixed Wireless.
- Lack of information on **non standard installs**, extra costs of non standard installs and amount of effort required from end user to be successful.
- nbn™ Sky Muster not a 'mobile' technology so can only be used in office and not on surrounding property and currently no business plans.

GENERAL:

- Under utilised fibre across regional Australia. e.g. Alpha, QLD has optic fibre yet mapped for nbn™ Sky Muster.
- Simultaneous reviews, submissions and enquiries with limited action and policy.
- Lack of current mapping of fibre, towers and a comprehensive report on telecommunications infrastructure.
- Government Funding, programs and education curriculum being directed to helping those in regional areas, without understanding if regional consumers have the connectivity tools to participate. e.g Drought funding announcements for mental health programs delivered online (rely on telehealth platforms being able to be used on bush connections), new education curriculum being implemented without a full understanding of the connectivity tools students are able to access

“The government will also tip \$11.4m into mental health so farmers can access all 10 counselling sessions covered by Medicare over Skype, scrapping a rule the first appointment must be in person.” “This recognises the long distances and the cost of travel in money and time for rural people,” Agriculture Minister David Littleproud said. (Morphet, 2018)

- Poor planning coordination between infrastructure services

(there is) “no coordination between bodies e.g. Powercor putting underground power to every house in my rural area under a government-funded bushfire reduction program, but no usage of the process to put NBN fibre in the same trench or conduit.” (Colin, Victoria)

BIRRR has collected responses from members, via Facebook polls and comments to the RTIRC key areas of interest.



3. KEY AREAS OF INTEREST

Regional Australians rely on reliable, needs based connectivity to meet their business, education, health and social needs.

Q1. What are the main barriers to people in regional communities increasing their use of digital technologies?

There are many obstacles and barriers to accessing digital technologies, for those living in regional communities. Please refer to Section 2 of this submission for a comprehensive analysis of current issues, these issues all impact the way regional consumers engage and use digital technology.

Comments from BIRRR members:

Jeanette (Sale, Victoria): Satellite has low data limits, especially when most Government forms can only be accessed via internet. High latency, means it is too hard to watch a video as it always buffers. High cost of plans, considering what is offered in the cities or those on FW. Off-peak times are user unfriendly - would like to see the morning time changed from 7.00am to 9.00am. I always thought that the nbn was to bring regional and rural people's internet to be comparable with those in the city. Clearly this will not happen.

Libby (Moree, NSW): Reliability and cost. Suitable people to advise on service when something is wrong or how to improve reception at reasonable cost. Fault reporting seems to mean little to some suppliers. Latency is a definite issue using Sky Muster affecting using certain programs that are becoming more important as time goes on. eg ATO business portal.

Michelle (Fryerstown, Victoria): Unreliability of internet services, speed, latency etc, for those who are trying to work from home. The ridiculous expectation for us all to know and understand what we need and to comprehend all the technical requirements.

Karen (Caragabal NSW): Many farmers around here are delaying anything Internet related in the hope that either a fixed wireless or non-telstra mobile broadband solution will emerge. For example, not investing in aerials or cel-fi to improve service and not considering technology such as remote sensing or cloud reporting because we doubt it will work!

Jenny (Longreach, QLD): No mobile coverage, data limits & cost, in some cases lack of digital knowledge or maybe more overwhelmed by information.

Q2. How are people in regional communities currently using their broadband services & how might they increase the benefits of using this technology?

The below poll (*Figure 1*) highlights ways in which people in regional communities use broadband services currently.

RTIRC QUESTION

2. How are people in regional communities currently using their broadband services & how might they increase the benefits of using this technology?

Comments welcome

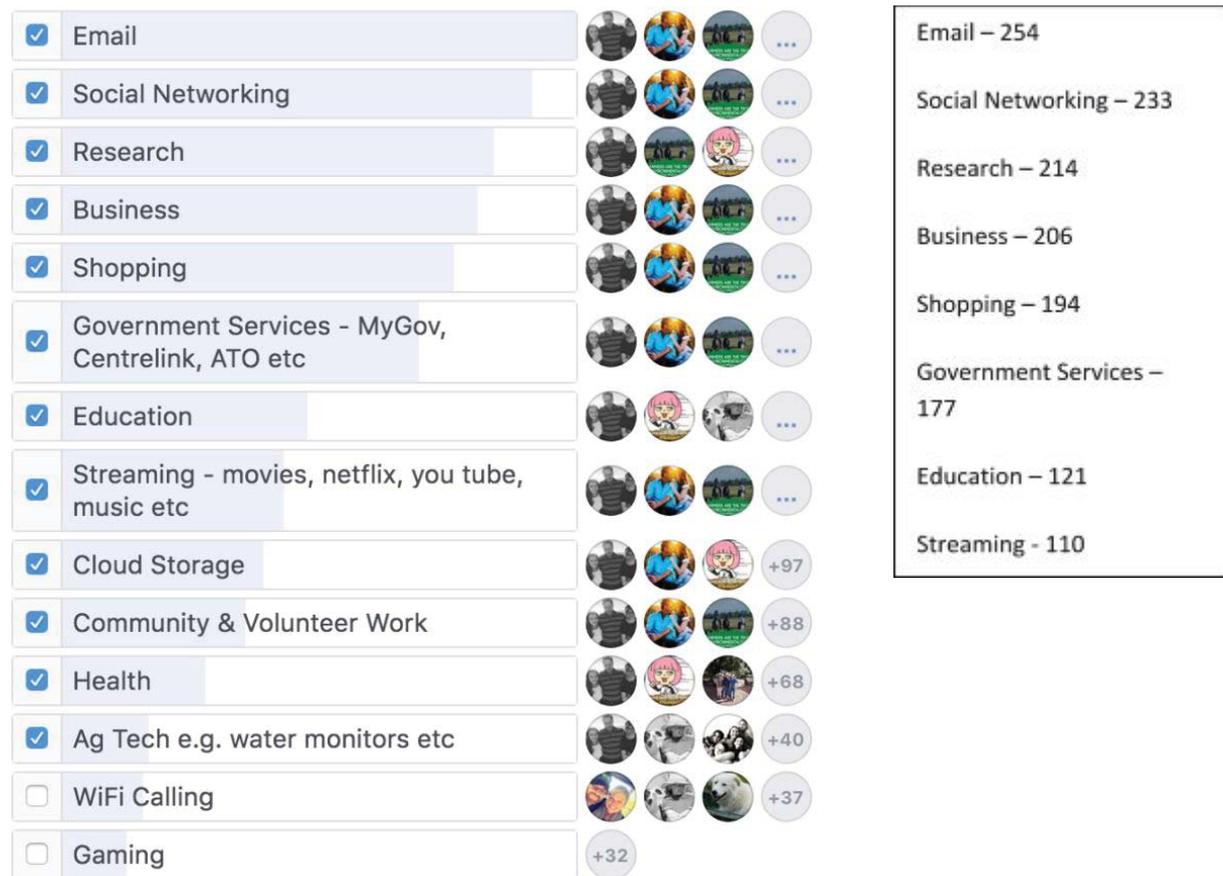


Figure 1: BIRRR Facebook Poll on how people in Regional Communities Use broadband services.

To increase technology usage regional areas need to see improvements in the current issues discussed in detail in Section 2 of this submission.

- **RELIABILITY:** Increased reliability would allow business growth in RRR areas, given the importance of a stable internet connection for so many basic business operations e.g. stable reliable connections are needed for remote video monitoring equipment of livestock and weather conditions.

- **DIGITAL LITERACY & CONFUSION:** Providing more Australians with the skills and information that allow them to access good connections will increase their economic productivity, access to basic services such as health and education, and social interaction would also be improved. It is essential that regional communities become skilled in how to help themselves prosper and grow in the new digital world.
- **AFFORDABILITY:** Providing connections and data at a comparable price to urban locations would allow RRR people to more effectively participate in the modern, digital world and access technology that they may not otherwise be able to afford e.g. if data plans were not as expensive the consumer may have more funds for extending wifi around a property, thus enabling them to work “in the field”.
- **DATA RESTRICTIONS:** One example of the benefits of improving RRR access to increased data limits is agtech innovation. Farmers would be able to invest in modern technology that requires significant data, such as drone usage, crop sensors, weather sensors, remote cameras, robotic machinery, and additionally be able to keep farm machinery software updated. Data restrictions also currently inhibit telehealth and education in areas such as video conference tutorials, speech therapy and mental health consultations. External tertiary education is also limited due to the high data needs for participation in lessons and research. Additional data is not only required for business purposes, but social and lifestyle technology usage also has important wellbeing and recreation purposes.
- **LATENCY:** Reducing the latency of regional connections, or providing alternate low latency internet options would allow RRR users of cloud-based software to run the systems their businesses require and keep up to date with innovative developments in business tools such as online mapping and graphic programs. It would allow more regional consumers to work from home in employment that requires low latency connections. Software that works on high latency connections could also be developed to reduce these issues.
- **CUSTOMER SERVICE:** The recent moves by nbn™ and Telstra to have RRR specific call centres is a very welcome example of how a simple solution like improved customer service can have very positive outcomes. Regional consumers have very different and limited connectivity to metropolitan consumers, and as such their support and customer service needs should be tailored to meet these differences.
- **SPEED:** Upload speed is hampering some regional business who need to send large amounts of data. While speed may not be a significant factor in current connections, it must be considered in forward planning.
- **MOBILE NETWORK COVERAGE:** Improved coverage will have obvious advantages in emergencies, as well as for business and tourism. It also offers a low latency connectivity option for regional users who are mapped for nbn™ Sky Muster. Increased mobile coverage would allow for innovative agtech developments to be utilised away from the office or homestead. Water monitors, fence monitors and robotics are just some examples of solutions that need a mobile technology to work.

Comments from BIRRR members:

Nicholla (Port Macquarie, NSW): I used to make art for computer games I had full confidence that I could continue my job out of town. The digital divide of sky muster and fixed wireless was too much. The lag issue alone means I could not even test half of the games I am trying to work on. With 7 people in my house all with their own needs eg. kids with school work, disabled mother who loved to watch I view and Netflix to fill her long days on lying her back. I now have to lecture her like one of my children over using too much data. I also have two dyslexic children who access to Nessy learning programs is a main part of their learning program. An elder daughter who wants to be in digital editing all trying to use the knowledge the internet has. 170 dollars for 200 gig is a terrible price on top of the fact I have lost my contracts and we are down to one wage. It is unbelievable that anyone should say sky muster is great and I am sorry that rural communities have such low expectations of a service that should be equal no matter where you live.

Kristy (Alpha, QLD): A low latency internet option might encourage me to use more remote desktop type programs in my business and improved mobile coverage on my property would enable me to use new innovative ag technology such as water and fence monitors.

Monica (Eurobin, Victoria): Would love to be able to watch iView etc but latency issues with Sky Muster means I have had to stick with my mobile broadband data and the limits on Sky Muster plans aren't enough for iview, Netflix etc I regularly have to go to town and use the library when doing certain activities so I don't blow my monthly limit. As an IT consultant trying to work from a rural location I'm tearing my hair out.

Lee (Narranderra, NSW): It is important to remember that many bush connections are multi-use, therefore limited data has to be rationed to cover educational, business, health & social needs.

Noeline (Limpinwood, NSW): Limited data and latency issues prevents me having Netflix etc. Trying to FaceTime/Skype with my family overseas can be a frustrating exercise also.

Tam (Leyburn, QLD): Benefits would be increased if we had higher data and lower latency I find a lot of online programs I use tend to not accept the delay in sending or receiving info and either log me out or make me start again .. usually I head to town with laptop to access some of these programs and complete my requirements .

Sharon (Coonamble, NSW): We use it for everything. The software platform for laying out and filing stories with Fairfax is cloud based, as are the Google suite used for file sharing, organising and emailing. I video conference for at least one hour a day and rely on WiFi calling for the work phone as it is contracted to Optus (the farm business and my personal phone are Telstra so we got the CelFi for that and we can't run two of them). For the farm, we use data for internet banking, communications and for cloud based precision agriculture software. It is also used for learning, research and communications linked to T's role on the GRDC funded Grain Orana Alliance research project. As we are over two hours from a movie theatre we also use it for entertainment, streaming Netflix, Apple movies and ABC iView.

Having essentially personal use and multiple business use means we go close to the cap if not managed, we also have not invested/considered certain precision agriculture technologies as they would be too bandwidth heavy (For instance yield monitor data layering, live telemetry, video surveillance security.)

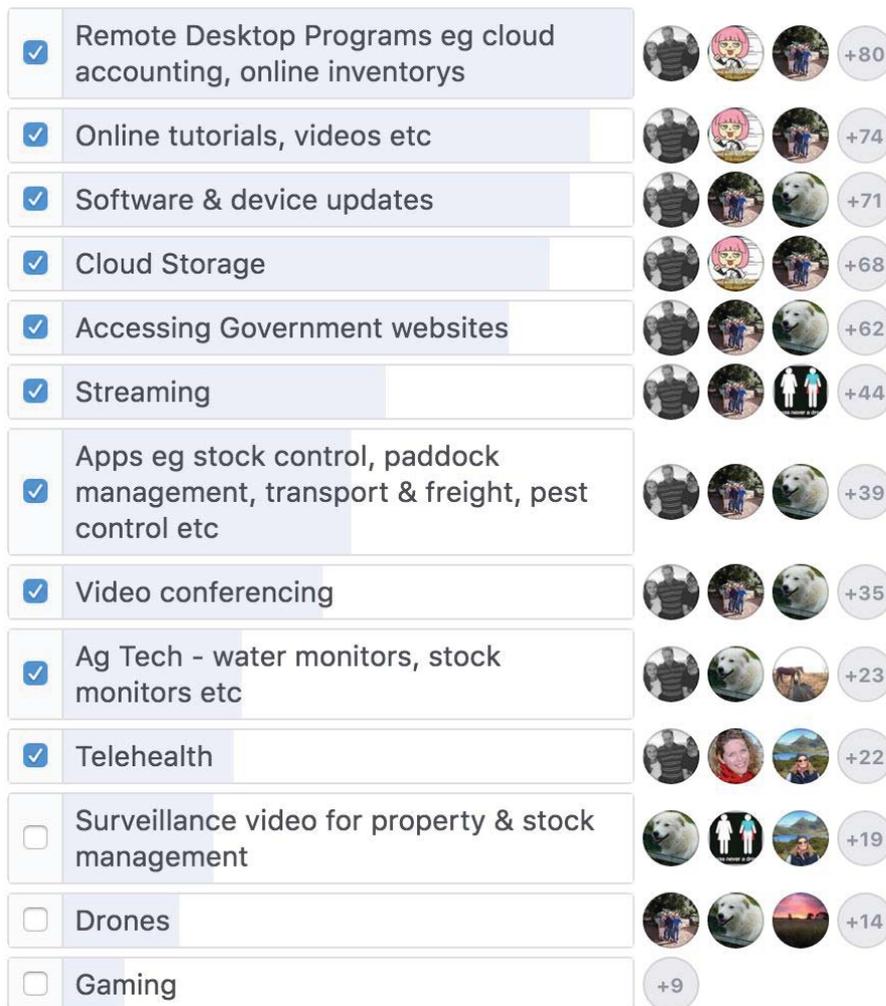
Colin (Trentham, Victoria): My wife uses the internet extensively to run a course for an undergraduate program at a regional university, using a Moodle shell. The whole course is online: readings, blog, student interaction, videos, assignment submission, assessment and student feedback. The students can be hundreds of kilometres from the university, we live 80 kilometres from the university campus ourselves. It is only use of the internet that a. allows such a course to be easily offered to students, and b. gives my wife employment. Recent improvements to our internet connection, including Sky Muster, have been a huge benefit.

Q3. What data intensive activities are occurring in RRR Australia ? What digital technologies are needed for these? eg what order of magnitude increases in data capabilities will be needed to provide quality education, health & social services in the bush?

RRR communities require internet connections free from the barriers explained in Question 1 (such as small data allowances, unreliable connections, high latency, and high cost) to better make use of the many modern technologies and services that require significant internet data. For example 32% of rural children in NSW are unable to access the health services they need (Royal Far West). The Royal Far West Service advocacy platform includes a national target to reduce developmental vulnerability in rural and remote Australia from 22% to 10% by 2025 by increasing investment in early identification and intervention, funding and scaling of innovation service models, telecare capacity building and support, and increasing use of telecare models. To support them in these aims the current barriers to accessing reliable, needs based voice and data services need to be removed.

The poll responses below indicate the data-intensive activities BIRRR members are using.

Figure 2: BIRRR Facebook Poll on Data Intensive Activities occurring in Regional Areas.



Comments from BIRRR members:

Krista (Hay, NSW): We use Online accounting programs, Government websites (business use e.g. BAS or personal e.g. MyGov) and streaming for entertainment, we also have a HSC student, we run out of data every month on Sky Muster.

Monica (Eurobin, Victoria): Designing promotional materials and web sites as these days it's easier to use online services with good templates and you are uploading photos and downloading stock images, proofs etc. Examples - Canva, Vistaprint, Squarespace. I can use my monthly allowance in 3 days easily.

Daryl (Far North QLD): I run an art and graphics business... I find it very difficult to upload and transfer graphics..large files for children's book publication, images for card and print reproduction...it takes so long, often fails and publishers and printers in the city find it difficult to understand as their services are so good, stable and fast.

Ania (Griffith, NSW): Online learning (virtual classrooms, video conferencing, downloading learning materials) , software and device updates, video calls.

Wendy (Bell, QLD): I have attended several sessions on PMAV¹ mapping using Queensland Globe. I found the website clunky to use while in good service in town and have not used it on Sky Muster as yet for fear of latency making it very difficult to use. It was funny that in the session I specifically asked how the site would run on satellite. The presenters were unaware of Sky Muster.

Alex (Alpha QLD): We are using technology more and more in our business each year. Many of the required reporting paperwork for our business is now online, we also use a cloud accounting program and would like to use a mapping program however the latency on Sky Muster makes the software very unfriendly. We currently use water monitors on several tanks and would like to explore do more agri-tech like this. Our family volunteers regularly in our local community and a significant proportion of our data usage is used in networking, volunteering and data storage for volunteer committees. Having a recent diagnosis of cancer and living in a remote area with no access to specialists, I believe telehealth could play a much larger role in providing services to regional communities.

Q4. How can regional businesses better utilise digital technologies to maximise economic benefits?

Regional businesses need guidance and support in establishing internet connections that meet their needs. There also needs to be a greater emphasis on ensuring that regional townships are not underserved by nbn™ connections. Across Australia there are numerous examples where townships on existing ADSL connections have been mapped for nbn™ Sky Muster, a backwards step in connectivity for these businesses. Examples include Kaniva (Victoria), Urana (NSW), Richmond (QLD) & Halls Creek (WA) (Kidman, 2016). Many of these locations also have under-utilised optic fibre running through or close to the township. Furthermore, there are also numerous cases of nbn™ Sky Muster being used in city suburbs when connections have been harder or more costly to install, such as the Adelaide Hills, SA and outskirts of Queanbeyan, NSW (Terlato, 2017). This makes it extremely difficult for regionally based businesses and those on urban fringes to compete on the same economic platform as businesses located in metropolitan areas. For businesses in regional communities to grow, connectivity needs to meet their data allowance, speed (both upload & download), latency, affordability and reliability needs or the digital divide will grow wider and opportunities will be lost for the maximisation of economic growth.

¹ PMAV Mapping = Property map of assessable vegetation

Urban area	Premises
Perth	1,416
Melbourne	746
Sydney	548
Brisbane	444
Canberra	357
Adelaide	292
Hobart	176
Darwin	34

Figure 3: Number of Urban Residences mapped for Sky Muster (Terlato, 2017)

The “AgTech” example - If farmers could access improved telecommunications, how would they better utilise digital technologies to maximise economic performance?

Agtech is seen as providing the next big productivity gain in agriculture. Just some of the example of agtech are: drone photometry, autonomous farm machinery, blockchain (along the supply chain and in contracting, insurance and finance), sensors (for crops, soil, pasture, environmental conditions, weather, high resolution remote sensing), remote cameras, geofencing, livestock tags, big data analytics to aid farmer decision making, and machine learning (for example using Google Machine Learning to identify pests using an Android app).

The productivity gains from Agtech will come from the saving of resources such as time, water and chemicals. For example, the use of digital sensors and monitoring software (enabled by a good internet connection) means the farmer can create alerts for conditions that are favourable for disease. They can then use this information to take preventative action, saving on the chemicals that would have been required if the disease had developed. This provides savings in costs and prevents yields losses. Agtech can also be used for watering efficiency and many other applications. Agtech allows farmers to do more with less resources, therefore increasing profitability and their competitiveness in the global market.

A good publicly available reference for more details on the potential benefits of agtech in Australia is available from the Farm Institute online. (Australian Farm Institute, 2017)

All of this technology requires a reliable internet connection coming into at least one point on a farm, with adequate data allowances. Without reliable needs based telecommunications services, Australian farmers will be placed at a competitive disadvantage globally. Agtech can help to reduce the cost of production, and the resulting increase in profit will come back into RRR businesses and communities, improving their economic performance.

Data needs: An example is a Victorian grain farmer who set up sensors in all his paddocks, he keeps his farm machinery updated, and uses precision ag technology. He can access nbn™ Fixed Wireless, and uses 300GB per month on his farming business activities. Many farms are limited to nbn™ Sky Muster, with the biggest publicly available plans at around 200GB per month.

Figure 4 predicts that the amount of data generated by the average farm per day will increase to over 4 million data points by 2050 (up from 190,000 in 2014). Examples of data points currently collected on farms includes GPS for autosteer machinery, weather records, yield maps, and combinations of these such as combining rainfall and yield data to calculate water use efficiency for benchmarking purposes to identify practices to improve the yield achieved from a given rainfall amount. If farms can become more connected, more data points can be added (for example sensors), allowing farms to become more efficient. One simple example of this that Onfarm (who provided the estimate for this graph) give is that the average connected farm reduced water use for irrigation by 8%. (Meola, 2016 & Data Farming, 2018)

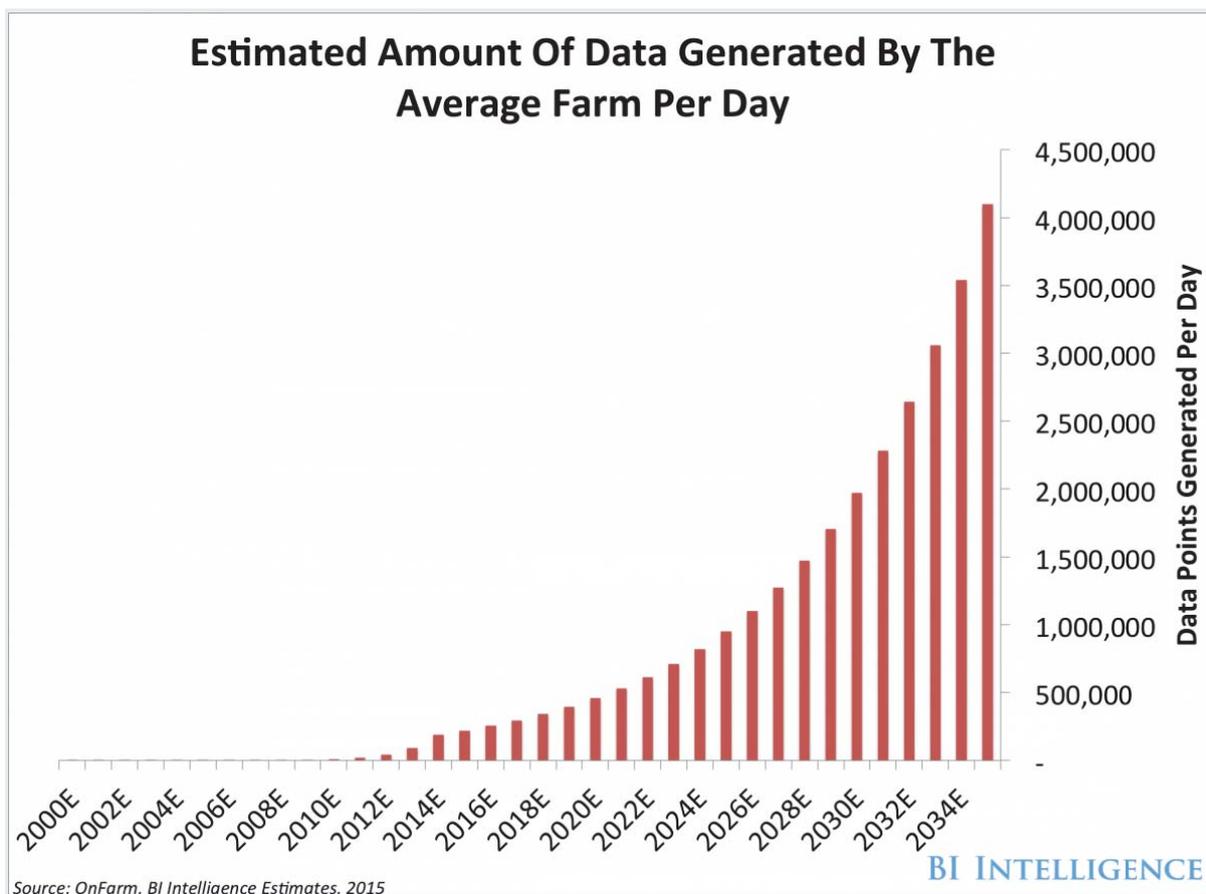


Figure 4 : BI Intelligence Amount of Data Generated per average farm per day (Meola, 2016 & Data Farming, 2018)

Comments from BIRRR members:

Grant (Ballarat, Victoria): Certainly would like to see some funding made available for combined regional technology talent. People in rural areas with great skills are leaving for the city.

Steve (Coonabarabran, NSW): Digital hubs where local talent can teach other locals. I get sick of the constant rounds of city-based experts getting heavily-subsidised trips to the country to tell everyone how things are done. I think we could teach each other if we were given more access and means to reach each other. Am sick of the millions going to city consultants that could be better spent on regional solutions. And I still think we need better digital infrastructure -- encouragement and/or funding to allow small WISPs greater access to backhaul networks and the ability to build local connectivity solutions that suit local areas. If that means money too, then why not? I keep telling people we'd build more for less cost than they're wearing now.

Kristy (Alpha, QLD): I would like to see funding for innovation/tech hubs as well as digital capacity building to let bush businesses know what technology developments are out there

and what technologies can be used to help in rural businesses. So many new developments but no one really pulling it all together.

Christian (Dubbo, NSW): Comparative expectations are not unreasonable by rural and remote businesses. Building in slower speeds and reliability effects the economic competitiveness of rural and remote businesses. Building self reliance in telecommunications lifts the overall costs of operating in rural and remote areas. Not for profit businesses are not interested in tax deductibility as a mechanism for promoting investment in telecommunications. It's unreasonable to expect a business with 500 staff in Dubbo, with slower internet speeds than in Sydney, to be able to operate in a level playing field. Communications are slower and much less reliable. We have to be much more clever about how we operate to stay competitive because poor telecommunications hamper our competitiveness. Retaining and attracting young tertiary qualified professionals to Dubbo is made more difficult when telecommunication speeds, data limits, quality of connectivity, and reliability of provision, are all much worse than normally available in Sydney. Rural Australia is being further hampered in its international competitiveness by a lack of investment in world best practice telecommunications infrastructure.

Q5. What can be done to improve access to and uptake of telecommunications services in remote Indigenous communities?

BIRRR do not have specific Indigenous representation and therefore feel that we are unable to make suggestions or recommendations on behalf of the diverse Indigenous community needs. We would encourage RITRC to specifically seek feedback from Indigenous organisations to appropriately answer this question.

Q6. Are there practical examples of how communications services can improve the well-being of people in remote indigenous communities?

BIRRR do not have specific Indigenous representation and therefore feel that we are unable to make suggestions or recommendations on behalf of the diverse Indigenous community needs. We would encourage RITRC to specifically seek feedback from Indigenous organisations to appropriately answer this question.

Q7. What skills do people need to get the most from their digital technologies and where can they learn these skills?

There is a huge gap in digital literacy in regional Australia. Improving digital literacy and educating people on how to get connected and stay connected, and how to troubleshoot their connections would be of great benefit to regional Australians. The Good Things Foundation in the UK has successfully implemented a program of digital inclusion which has led to social change. Digital innovation is another area that lacks an organisation or body to

educate consumers on available technologies (The Good Things Foundation). See Section 4 of this submission for ideas on engaging and educating regional Australians on digital technologies. Some of the skills needed by regional consumers include:

- How to find the best connection for their needs - Where to go to find plan comparison information for the different technologies and where a consumer can highlight what they need from a connection eg do they value affordability or low latency ?
- How to stay connected - How to troubleshoot a connection, how to help themselves
- How to use off peak data and monitor data usage
- How to use social media as a marketing tool
- How to set up a generic email account
- How to conserve data
- What equipment does a consumer need including electricity supply / use
- How to use cloud based services

Comments from BIRRR members:

Joe (Victoria): Why should I and how do I use "cloud software services". What types and models of TV, desktop, laptop, tablet, smartphones, printers and routers should I buy to make my life as easy as possible, while spending the least dollars. How do I connect my devices around the home, office, shed and farm. Do I use Ethernet cables, wifi, fibre, Ethernet over power, or directional wireless.

Louise (WA): In WA our Community Resource Centre's are a hub for practical learning and information exchange, but alas our state government thinks not and are planning on cutting funding further to CRC's just can't take A Trick in the country .

Graham (Pemberton, WA): Good computer security practices, which in fact teach you a lot about using your system. eg. checking your list of installed programs for dodgy entries. Making sure your system and software is updating properly. Learning how to research an email, piece of software, webpage or seller you are uncertain about. Learning to identify and check a url matches the place you thought you were.

Q8. Are you connected to nbn™ Fixed Wireless or nbn™ Sky Muster, have you ever had issues with your connection? If yes how have you overcome the issues, who assisted you?

BIRRR spends a large proportion of time in troubleshooting specific members connections. Our team believe it should not be the role of a volunteer group to assist people in escalating or solving their issues. There is a real need for providers to solve their customers connection issues and for independent technology advice for regional consumers.

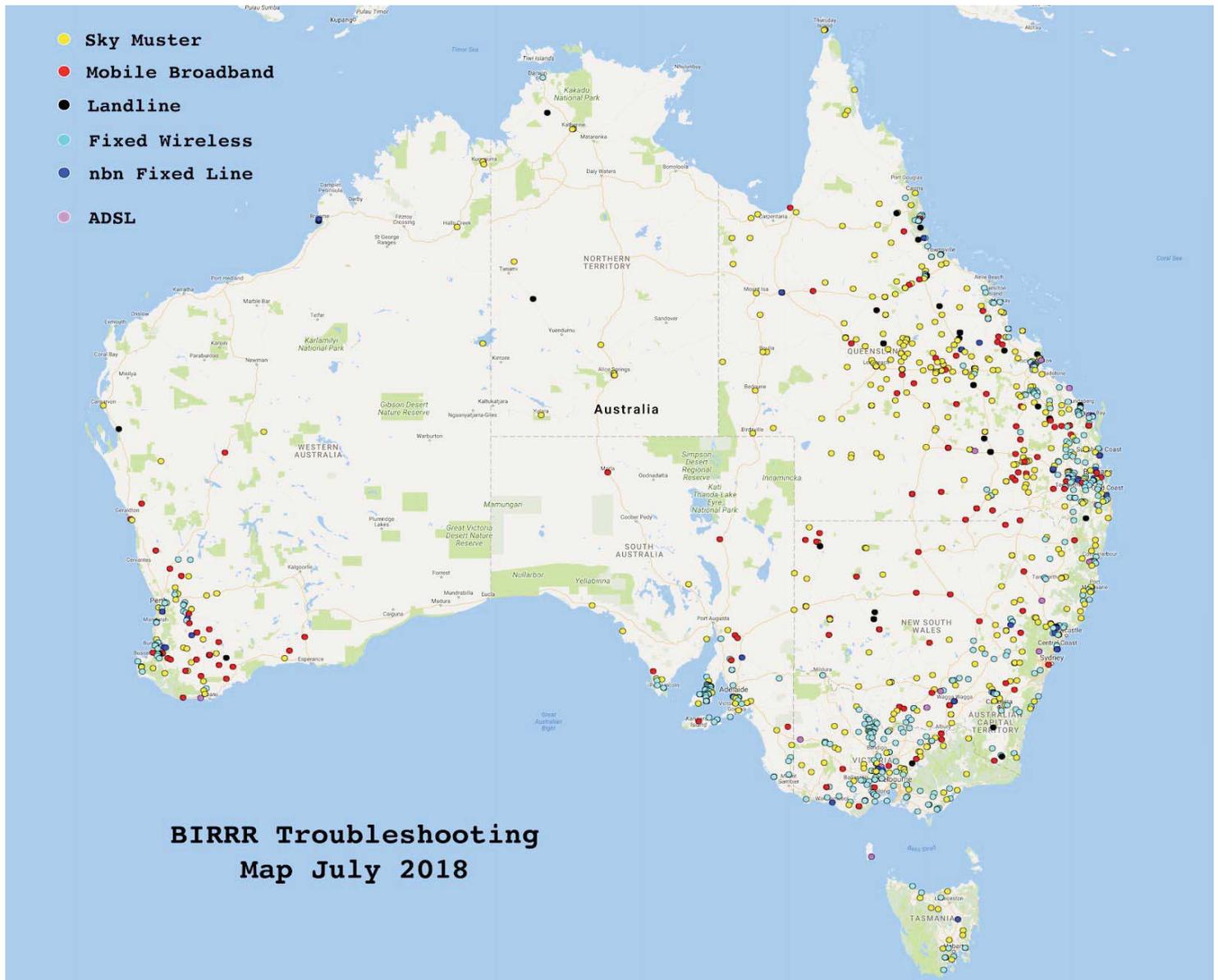


Figure 5: Map of BIRRR Troubleshooting Locations, July 2018

RTIRC QUESTION

8. Are you connected to nbn Fixed Wireless or nbn Sky Muster, have you ever had issues with your connection ? If yes how have you overcome the issues, who assisted you ?

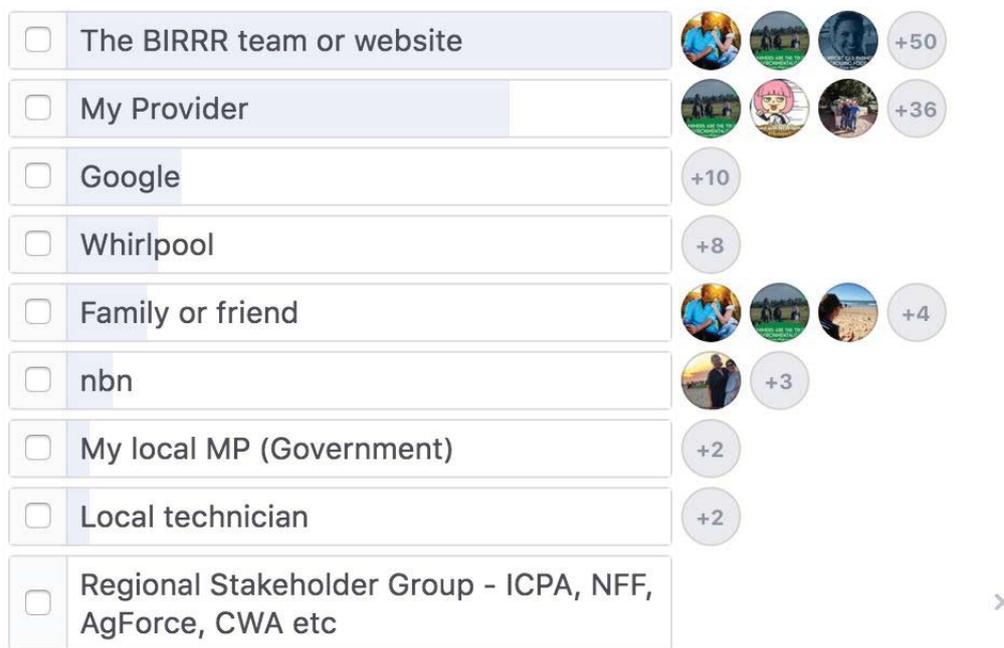


Figure 6: BIRRR Facebook Poll on who has assisted with issues.

Comments from BIRRR members:

Contessa (Fryerstown, Victoria): Firstly, I want to thank you for all the work you do for us struggling consumers. Secondly, I have been thinking about feedback you can provide to the government on our behalf. One of the biggest issues around this entire issue, is the amount of TIME it takes us to get our heads around...what we need, what we are entitled to, what's available, who to approach, what to ask for, how to ensure we get it, how much to pay etc etc. EACH of these steps takes so much time - hours of research, hours and hours and HOURS on the phone - TIME which most of us just don't have. Not taking no for an answer, chasing up services and technicians and trying to get the best advice and assistance and SERVICE. When people like you at BIRRR offer such a helpful and amazing service to us, I think because your knowledge is immense and that you are immersed in this all day, every day, you might lose site of how overwhelmingly confusing and time consuming this is for us, who don't have your skills and knowledge of the issues and quite frankly shouldn't have to.

Why has this all fallen to the consumer? Why is there not a one stop shop for us to contact who just gets things done? Thanks again for your tireless efforts.

Denise (Tasmania): So true, without the help of this group I would still be trying to navigate it all. Phoning Telstra to discuss no signal was one of the most frustrating experiences! They couldn't understand NO SIGNAL and kept insisting I must have two bars, or even SOS, they

asked me to phone them when I was home so they could do some tests. I wasn't until I spoke to you guys that you directed me who to talk to and it all happened from there.

Alan (North QLD): Thanks to Kristy Sparrow and BIRRR, my family now has nbn Fixed Wireless. Cannot thank you more than enough. Originally outside the 'purple' area with my only option looking forward was Sky Muster, but ended up with a signal strength of 87db two foot off my roof peak. BIRRR opened doors to the nbn that my phone calls couldn't.

Juliet (Jericho, QLD): Thank you BIRRR team & Kristy Sparrow, who recommended I contact my service provider after numerous dropouts with Sky Muster through Skymesh. A technician came out yesterday & found bolts missing from the dish which would have been causing the issue since install. Here's to less drop outs from now on.

Dani (Clare, SA): Just want to say a big thank you to the BIRRR team!!! We were listed as Satellite and i wasn't happy with that (we were just out of the purple zone), so contacted the BIRRR team and they put a case forward to nbn for us and we got changed to Fixed Wireless (nbn said we probably wouldn't get signal from our house, but maybe from nearby, so we were looking at a non standard install). I've just had the nbn installer here and he just installed the antenna on our roof, standard installation!!!!

Q9. If you are in an area with access to the nbn™ Sky Muster Satellite service and you have not taken it up, why not?

Refer to **Appendix 1** for a comprehensive analysis of why regional consumers are choosing not to sign up to Sky Muster. The below BIRRR Facebook Poll highlights some of the reasons consumers are not choosing a Sky Muster installation.

In addition, BIRRR are aware there are a number of members who have or had an *nbn™ Sky Muster* installation who have sought or who are actively seeking an alternative service provision where possible. Specific reasons for this have not been captured in a separate response for this submission, but are considered consistent with the themes identified in the issues raised above.

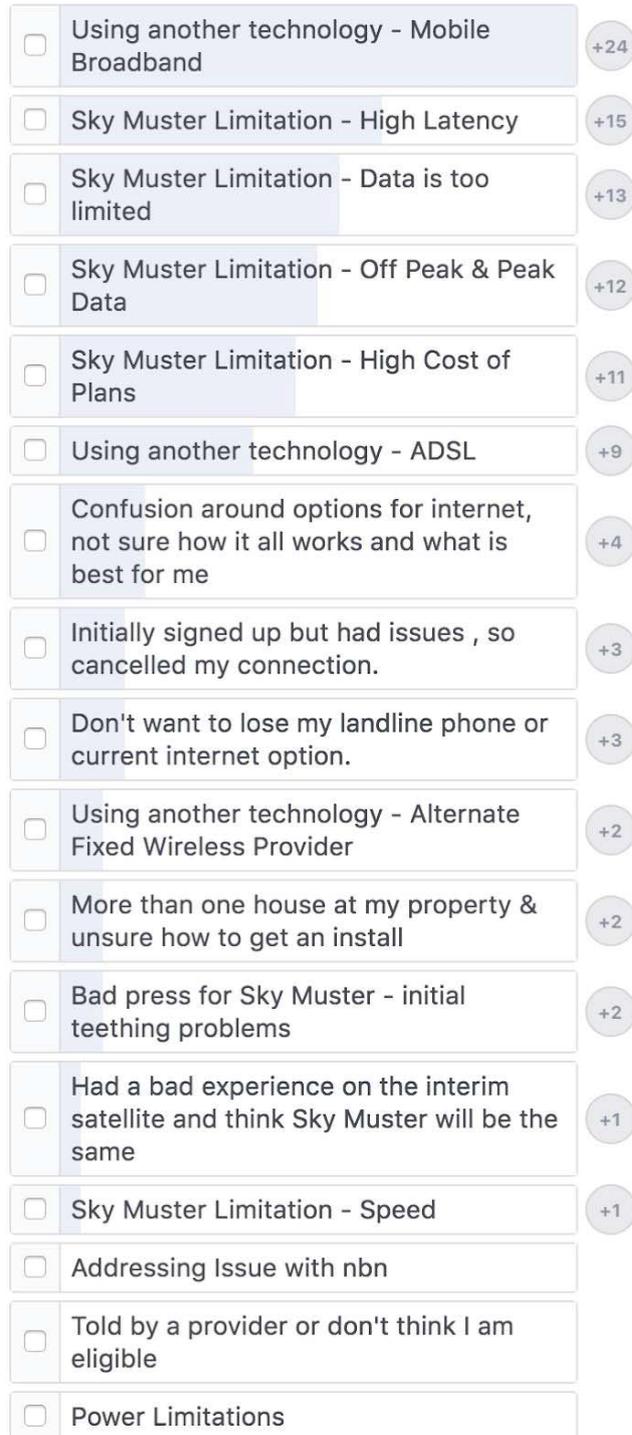


Figure 7: BIRRR Facebook Poll on what other services are used instead of nbn™ Sky Muster.

Q10. What economic or social indicators could be used to guide investment to further improve mobile coverage ?

- The Regional Inequality in Australia Review Submissions could be an effective tool to guide funding and for ideas on encouraging co-investment in mobile coverage in regional areas. (Regional Inequality Enquiry 2018)
- Business, state government, local government and community groups that are willing to co-contribute to MBSP funding where no coverage currently exists, should be prioritised.
- MBSP funding priority should be given to locations such as small schools, health centres and emergency service centres who have no existing mobile coverage.
- New infrastructure builds such as solar farms, mining, gas, wind turbines etc should be required to contribute to mobile infrastructure funding in the communities they are active in during and after the project commences.
- Rural and regional areas identified as areas of population and/or economic growth, and /or areas with proportionally greater younger populations as a mechanism to encourage retention of the younger population in these areas.
- Regional areas with a lack of face to face services such as education, health and business advice and support (e.g. communities with no school or bank) could be prioritised so that these services can be accessed online.

Q11. Is information readily available regarding how to use devices to improve mobile reception in areas with poor coverage? e.g. information about external antenna equipment?

BIRRR regularly find members asking for information on boosting equipment. Although we have dedicated a section of our website to this information, it does change rapidly and needs constant updating. There is a lack of independent advice on which equipment is necessary and how to install this equipment. Boosting equipment is also often expensive, those who can't afford it often purchase 'illegal' boosters, which results in degraded service for neighbours. There needs to be very clear fact sheets developed by providers of equipment, that state:

- How to order
- Costs
- How to Install
- What antennas are suited/matched to the booster
- How to troubleshoot

Comments from BIRRR members:

Geoff (NSW): How would the average person know what is legal or not given you can unknowingly illegal devices from Aust supplier. It is not illegal to manufacture, import, export or sell illegally or non approved device it's only illegal to turn it on. Point 2 I bought a 4G LTE router from a large online outlet given its connected to the network is it legal what has the old Austell or ACMA ✓ Does this router comply with the carrier? How is this different than a booster that is illegal? And because it only affects a small percentage of users would this information be important enough to spend advertising money on. If I wasn't a member of BIRRR I would not have any idea that I may have broken the law.

Paul: There is increasingly more misleading information available regarding the sale of illegal devices such as mobile repeaters. There is misleading information available on many internet sales platforms including ebay, and Amazon. The Government has not reduced the prevalence of such misleading information from dodgy sellers which has engulfed genuine information. Government agencies have not worked collaboratively enough with Companies such as Google to remove such content from its search engines. Google is still accepting money from misleading/dodgy sellers to advertise on its Google Ads which are listed at the top of a search query of mobile repeaters. A typical response from ACMA was that its not illegal for a business to sell such repeaters to end users, and the onus is on the user. However where there was evidence of these companies selling such repeaters to end users for the purpose of operation, I don't believe there has been any recourse for the seller. Legislative changes such as labelling arrangements to place the A-Tick mark on repeaters is just a small step in making positive changes. A compliance register of approved repeaters maintained by the ACMA would be best practice that the industry and public could refer to would be a good start. Mobile devices such as modems, routers and and telephones carry the A-Tick mark. However the argument about mobile repeaters is that they are network equipment therefore not captured by the relevant Labelling notices. The Labelling Notices need to be amended to include special provisions to include such devices.

Graham: I'd like to see the information broken down and presented in different case studies for some common situations where a certain technology is known to work and how much that solution cost in that situation.

Alex: I had no idea the mobile boosters found on eBay or from other websites were illegal this page was only place I found that information

Michelle: We shouldn't have to know, whatever we need, to get service. It should be provided by the service providers or by the owners of the infrastructure.

Marcelle (Barcaldine, QLD): I don't believe it is readily available. Govt need to have a website that outlines what's legal or not. (or do they and we don't know?)

Q12 What emerging digital services will be of most benefit to regional businesses and what are the data needs of these services ?

By their very location regional Australians need to be able to access emerging digital services, not just for business but also for health, education and social needs. More and more services are moving online and regional communications need to keep up with connectivity needs to ensure that the digital divide does not grow any wider. Some of the emerging digital services that would benefit regional Australia include:

- Telehealth - including remote health monitors (such as heart & blood pressure), video conferencing with specialists who are traditionally unavailable in many regional areas etc
- Education - video tutorials, webinars, online learning platforms
- Agtech - mapping, monitoring services, drones, auction sites
- Cloud Programs - accountancy and stock monitoring
- Remote Desktop Platforms
- Video Surveillance Systems

Comments from BIRRR members:

Mark Barba Roja: I'd imagine data driven ag/precision ag would have to be one. But that is one that is perhaps specific to regional businesses. There are of course plenty of digital services that are of benefit to regional businesses and non-rural businesses alike (cloud based accounting, business to businesses services for supplies etc).

In terms of precision ag, some of the data sets are not too large, as they are often raw text based data (e.g. cotton picker data, water pumping telemetry). But you need to be able to reliably transfer them, sometimes in a time sensitive manner. Of course some of the data sets could be huge - but that is more of a chicken and egg issue. Without being able to access large data allowances, people aren't going to adopt tools that benefit from shifting a lot of data (e.g. large scale drone photography based leaf disease analysis, detailed field variability spatial maps, telemetry data). Sometimes it's possible to do more of the processing locally - but then you may need to maintain servers on-premise and miss out on the benefits of letting someone else run them efficiently in a data centre.

I think this is more of a question of having the capability, so that the applications can be developed.

Amanda (Monto, QLD): Maybe point out that it is hard to know what emerging services are available to us... in fact there may be many opportunities that we are missing (or could be adapted for our businesses) because either A) we don't know WHAT is applicable to our business, B) where to look to find them, or C) they are marketed in channels not normally/easily accessible by RRR customers.

Richard: We've heard mention of individual farm groups & regions putting up infrastructure (for individual wireless networks) But I'm with Amanda above.

Graham: 1. Improved telepresence and real time collaboration tools, including hi Def video conferencing, VR spaces, haptic feedback enabled applications, and remote creative collaboration environments (think practicing in a band, and composing and recording music with others, across the internet.) Many of these are going to need upload speeds of 10-20 Mbs for a single user. On domestic/ small office shared connections 50-100Mbs upload speed is a fair bandwidth range to achieve this.

2. AI cloud platforms. There's a very broad scope for what these could look like and potential bandwidth requirements.

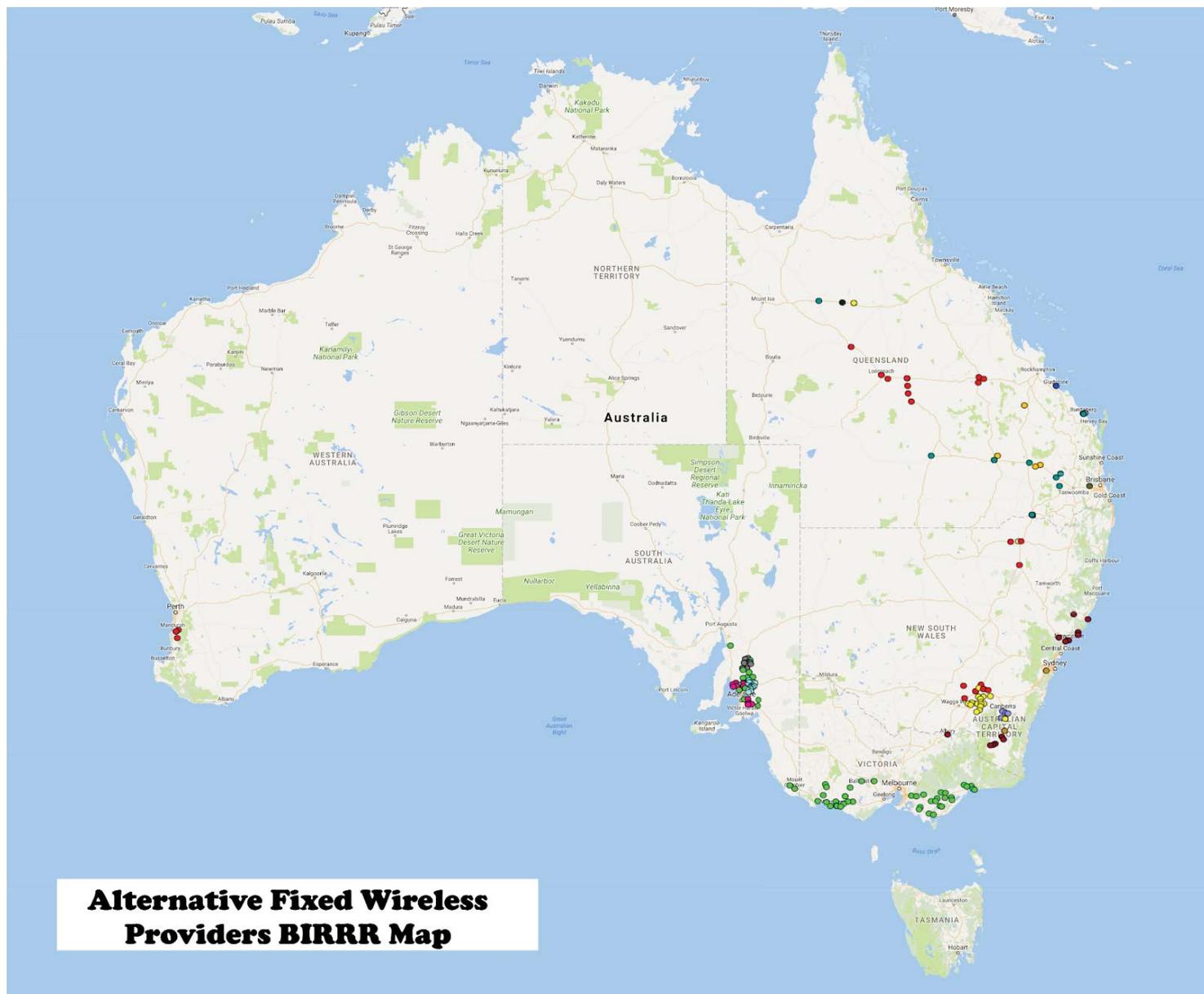
Q13. What broadband services are people using other than those available through the nbn™ ?

BIRRR has found through surveys, facebook discussions and polls that regional users not connected or using an nbn™ service use one or more of the following:

- Mobile Broadband - with Telstra being the main carrier used - see Appendix 5
- Alternative nbn™ Fixed Wireless Provider - see Figure 8
- ADSL
- Alternative nbn™ Fixed Line Provider
- Alternative nbn™ Satellite Provider e.g. Optus Satellite, ANT Mobile Sat, Pivotel

This happens more often in a community that has been underserved by nbn™, and is mapped for nbn™ Sky Muster when it was already or has since received a better technology choice.

Figure 8: BIRRR Map of Alternate (non nbn™) Fixed Wireless Map



RTIRC Question

13. What broadband services are people using at their homes and businesses other than those available through nbn ?

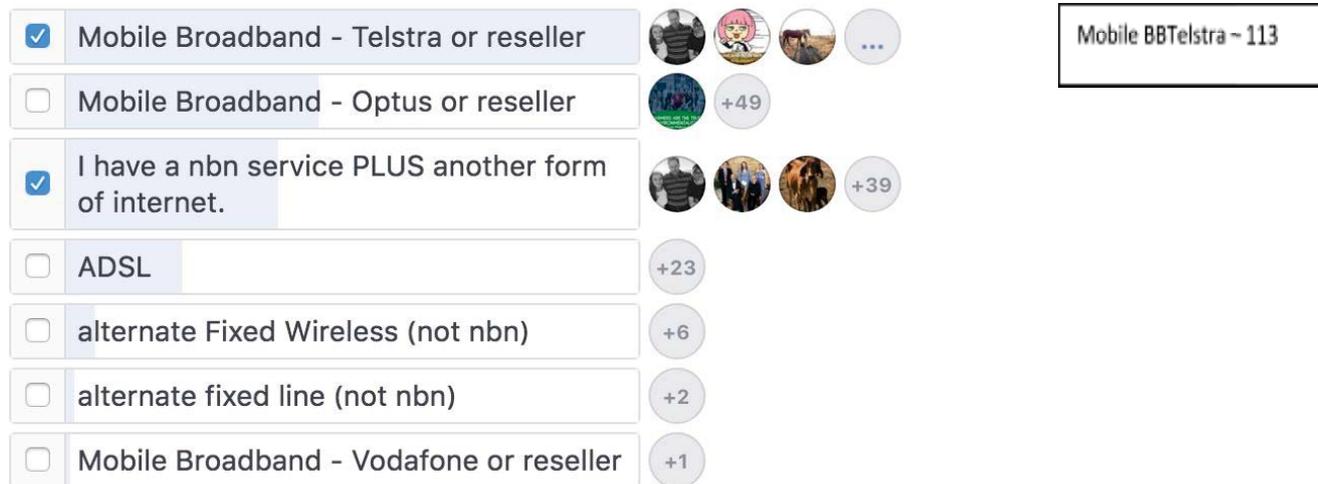


Figure 9: BIRRR Facebook Poll on what internet services people use other than Telstra

Comments from BIRRR members:

Jo: We have satellite plus have forked out for mobile phone signal booster as well, which enables us to also buy some mobile broadband each month to bolster the meagre (and expensive) satellite data!! Wish we didn't have to spend time learning and researching just how to get internet; would rather just get on with using internet to carry out business / or for our kids to use like their peers.

Sue: None..Satellite is my only broadband service.

Skye: Telstra is our only mobile coverage. I use that mostly (over adsl, that's for the kids). Had satellite, but we went back to adsl as soon as we could get a port.

Zelda: nbn Sat only - too far from exchange for ADSL, and very minimal/no reception in the house for mobile. I could get reception if I had a booster Cel Fi set up, but I don't want it.

Aaron: I created my own fixed wireless internet company. I buy wholesale bandwidth and then have a tower on mountain using ubiquiti networks gear have point to point links and point to multi-point.

Q14. How can more competition be encouraged in the provision of broadband services in regional Australia? Do we need more competition ?

Competition is critical for improved connectivity in rural and regional areas. The lack of infrastructure, and therefore competition, is one of the driving factors for poor service and feelings of frustration by community members, leaving nbn™ connections often the “only”

option, despite dissatisfaction with the service provided (e.g., congestion issues, dissatisfaction with technology type available). Competition could be encouraged by reporting on the state of play of current infrastructure and by supporting extensions, upgrades and enhancements to this infrastructure which service providers can then all utilise. An investigation into the sharing of spectrum and mapping the existing fibre across Australia would be beneficial in encouraging competition.

Comments from BIRRR members:

Nick: Cheaper more easily accessible backhaul, and perhaps relaxed radio power limits on class licensed radio spectrum in rural and remote areas for fixed point to point and point to multipoint applications. Perhaps this could be limited to licensed carriers

Mae (WA): Getting access to backhaul would allow for a lot more competition. From experience it is impossible to get access at any cost to build off existing big player infrastructure. Might be as simple as getting the ACCC to take a look?

David: No, we don't need competition. What we need is the most comprehensive possible coverage. Competition will deliver coverage where it's most profitable. In retail service delivery, more competition might be good. That could be encouraged by ensuring equitable and economical access to the wholesale infrastructure.

Steve (Coonabarabran, NSW): Agree with some of the other comments above -- backhaul is the most important component to get some other alternatives to what the nbn has "provided" in so many parts of the country. Backhaul is inconsistent in placement like service is inconsistent. Better access and better affordability would do so much for service provision.

John: The removal of the 3.6 spectrum that WISPS could afford to deliver interference free services on. Now being auctioned for 5G use - in the bush??? The big carriers aren't using all their 4G spectrum yet but this locks up more spectrum, prevents competition and deprives the regions of services

4. SOLUTIONS

Real tangible solutions to telecommunication barriers need to start occurring in regional Australia now. There has been a swag of reviews, submissions, consultations and forums, but a lack of policy, action and funding to address the issues raised. The BIRRR team urge the RTIRC committee to be very vocal in the solutions needed to improve regional voice and broadband services. Improvements in connectivity will result not just in improvements in agriculture, exports, economy, health and education but also help create social change and equitable services for those living in our regions.

BIRRR recommends the following urgent actions to address the issues outlined in this (and many other government enquiry submissions completed by our group). Please note this is not an exhaustive list, but rather suggested ideas after discussions with relevant stakeholders and experience on the ground in regional areas.

RECOMMENDATION 1 - REGIONAL TECH HUB

The government to fund an independent **REGIONAL TECH HUB** to support, advise and provide relevant information to regional consumers. Using levy funding from telecommunication providers, the Regional Tech Hub could be funded and structured on a similar basis to Australian Communications Consumer Action Network (ACCAN). Other funding options include state funding, local government funding, federal growth and infrastructure funding for regions.

The Tech Hub could also be supported by government departments that expect their users to use the internet to conduct business with them, like Centrelink, MyGov, Health, etc. (Department of Finance, 2011). The tech hub could be modelled on the services and techniques already utilised with success by BIRRR, and should include the following components:

- **call centre**
- **online forum**
- **chat or online support**
- **website**
- **development of an online tool** to help regional users review plans & choose a connection based on their needs for reliability, data, speed and customer service. For example the Canstar Tool for electricity consumers (Canstar Blue 2018), Whistle Out broadband comparisons. This tool needs to specifically encompass regional connections including nbn™ satellite, mobile broadband and alternate fixed wireless providers.
- this hub could, where appropriate, interact with and pass on customers to regional providers (who will be encouraged to establish regionally focused support centres).

RECOMMENDATION 2 - DIGITAL LITERACY PROGRAM

A funded **digital literacy program** for regional areas, which includes a focus on helping people get connected and stay connected. This kind of education would enable consumers to help themselves more and potentially solve their own issues. For example the development of podcasts, videos and fact sheets to assist with:

- how to set up a generic email account.
- how to install a VOiP phone.
- how to power cycle your broadband equipment.
- how to be safe online.
- how to use off peak data.
- what to do if you think you've been hacked.

The above is just a sample of information that regional consumers need to be easily accessible and user-friendly, so that they can participate in the digital age.

RECOMMENDATION 3 - DIGITAL CAPACITY BUILDING CENTRE

A Digital Capacity Building Centre - *development of a Centre for Digital Innovation, that can research and educate on digital tools and advancements in regional Australia.*

See the Victorian State Government proposal as an example (Miller, 2018). The centre would pull together new developments and tools that regional Australians could use in their lives and businesses as well as offer training and education on digital innovation. This needs to **also** focus beyond agriculture, and should also include innovation in education, health and regional business. It should include research into software that work on regional connections e.g. mapping programs that cope with high latency, online educational platforms for distance education, multicast technology for streaming, platforms for delivering mental health and specialist health services to those currently without access.

RECOMMENDATION 4 - ENHANCEMENT of nbn™ SKY MUSTER SATELLITE SERVICE

Further enhancement of nbn™ Sky Muster Satellite service in conjunction with nbn™ and providers of the service:

- **unmetering** of key sites such as weather, fire, government sites.
- investigation into **shaped speeds** of Sky Muster & ideas on how this could be improved.
- investigation into **off peak time frames**.
- further increases to **peak time data limits**.
- Sky Muster **mobile** solution.
- **education** for consumers on how to use off peak data, with software that works on high latency connections.

- development of **desktop data usage app**.
- **development of a router** that can manage data on devices, must be plug-and-play
- **business plans**
- **education data pack add ons** for all students using nbn™ Sky Muster - tertiary, rural secondary & primary students (irrespective of mode of education delivery or location), students needing online tutorials and special needs such as speech therapy and mental health.
- improved **marketing** of the service, with a specific focus on better-targeted regional marketing.
- further investigation of **multicast technology** to reduce data usage for streaming services.

RECOMMENDATION 5 - TRANSPARENCY & FLEXIBILITY of nbn™ FIXED WIRELESS

Further **transparency and information surrounding nbn™ Fixed Wireless**.

- tower upgrade pathways in areas of congestion.
- a clear definition of what constitutes congestion.
- flexibility regarding non standard install information.
- community engagement in nbn™ Fixed Wireless areas.
- further roll out of fixed wireless towers in areas with a large number of Sky Muster connections.

RECOMMENDATION 6 - MAPPING & SHARING EXISTING TELECOMMUNICATIONS INFRASTRUCTURE

- Infrastructure Australia to **map existing fibre** and present a report on existing telecommunications infrastructure in regional Australia and who owns it. This needs to be a comprehensive report that clearly highlights the state of play of bush telecommunications infrastructure.
- Australian Communications and Media Authority (ACMA) and Australian Competition and Consumer Commission (ACCC) examine options to promote the sharing of spectrum in regional Australia to ensure that alternate fixed wireless service providers continue to bring competition to regional broadband markets.

RECOMMENDATION 7 - REGIONAL MOBILE COVERAGE IMPROVEMENTS

A continual program of investment in **regional mobile infrastructure** and coverage improvements:

- **MBSP priority** to be given to locations such as: small schools, health centres, emergency centres, evacuation points in remote areas with no existing coverage.
- Further encouragement of **co-investment in MBSP funding** to maximise mobile coverage.
- **Subsidies and rebates** for mobile boosting equipment.
- Carriers to provide clear pathways and timelines of plans to **upgrade** from 3G to 4G.
- Providers to fund **specialists** who can advise on boosting equipment needs and visit sites to advise on equipment needed e.g. **Telstra new Regional Network Advisors**
- **Clear fact sheets** on what is needed, how to order and install boosting equipment
- All **new infrastructure projects** should be required to partner with telecommunications infrastructure providers to share infrastructure and improve mobile technology for communities.

RECOMMENDATION 8 - FORWARD PLANNING of VOICE & BROADBAND SERVICES

A **clear directive and plan** from the Federal Government and providers / carriers that offers tangible solutions and planning on how to move forward to meet future data growth and the need for reliable voice and broadband services in regional areas.

- Research and planning into a **replacement for the HCRC system**, research into satellite small cell and NGWL technology for remote landline services.
- Further roll out of **NGWL technology** in areas with new mobile coverage.
- Improved **fixed line services for regional communities** where fibre is available, less reliance on satellite for townships and urban fringe areas.
- Offer incentives and grants to providers that are willing to service 'hard to reach' and 'difficult to install' areas, award innovative thinking in solving the barriers to accessing telecommunications.
- Encourage private Wireless Internet Services Providers (WISP) to service areas that have been 'underserved' by nbn™

RECOMMENDATION 9 - ENCOURAGING STATE BASED SOLUTIONS

Encourage '**state based solutions**' within each state and territory, with funding to develop specific targeted infrastructure and resources for solving telecommunications issues, such as

the Telecommunications Policy developed during the last Western Australia election by The National Party. (See Appendix 5)

RECOMMENDATION 10 - DEVELOPMENT OF A UNIVERSAL SERVICE GUARANTEE

Development of a **Universal Service Guarantee (USG)** that ensures regional Australians have access to a reliable voice and broadband service.

- Clear and transparent **customer service and reliability guarantees** for voice and broadband services that protect consumers. It is imperative that there are clear standards, targets and accountability in regards to connection and repair times, performance levels, reliability and safety nets for vulnerable consumers for both voice and broadband.
- Sees a clear recommendation for the development of a **Regional Tech Hub** to ensure RRR Australians are able to fully utilise the services they can access.
- Encouraging all regional providers to establish **regionally focused support centres and fact sheets/information** on equipment provided by providers (e.g. routers, wi-fi extenders, boosters).
- If the **mobile network** is to be used to replace existing USO requirements it needs to be subjected to baseline quality voice service guarantees that ensure accessibility, affordability, upload/download speeds, reliability, repair times and data allowances. In RRR areas, factors such as distance and travel need to be factored into repair times, with redundancies built into the system to cover this in times of outage given the greater impact of outages on rural and regional areas (e.g., potentially unable to access an alternative during outage).
- Assurance that **traditional landlines are fully maintained and serviced**.
- The USG should continue to ensure that RRR Australian consumers and businesses have **baseline voice services** that are at least equivalent to the standard offered under the existing TUSO. Standard telephone services must be maintained until such a time that baseline service needs are exceeded using alternate Broadband technology. There should be **no degradation** in the current voice service that users receive. The USO should be technology neutral and updatable to ensure ongoing needs are met.
- That the **USG is fully monitored** to ensure that providers are meeting the requirements of the guarantee, with clear consequences for when these guarantees are not met.
- The **Telecommunications Industry Ombudsman (TIO)** to collect data on regional connectivity issues and length of time taken to resolve issues in regional areas.
- Extend the **Broadband Performance Monitoring Program** across all nbn™ technologies, to aid consumers in selecting providers.

REFERENCES

- Australian Farm Institute (2017).** “Harvesting the Benefits of Digital Agriculture 2017 – Videos and Presentations.” *What Is the Future of Australian Agricultural Extension?*, farminstitute.org.au/news-and-events/upcoming-events/harvesting-the-benefits-of-digital-agriculture/conference_videos.html.
- Canstar Blue (2018)** “Compare Electricity Providers | Prices From 22 Providers.” *Canstar Blue*, www.canstarblue.com.au/electricity/.
- Data Farming (2018).** *DataFarming*, www.datafarming.com.au/.
- Department of Finance (2011)** “Interacting with Government.” *Department of Finance*, Department of Finance, www.finance.gov.au/publications/interacting-with-government-2011/.
- Kidman, Alex (2016).** “NBN: Who Gets the Most Sky Muster Satellite Coverage?” *Finder.com.au*, 15 Sept. 2016, www.finder.com.au/nbn-who-gets-the-most-sky-muster-satellite-coverage.
- Miller, Andrew (2018).** “State Government Undertakes Global IoT Search.” *The Standard*, 1 Aug. 2018, www.standard.net.au/story/5560638/state-government-undertakes-global-iot-search/?cs=72.
- Meola, Andrew (2016).** “Why IoT, Big Data & Smart Farming Are the Future of Agriculture.” *Business Insider*, Business Insider, 20 Dec. 2016, www.businessinsider.com/internet-of-things-smart-agriculture-2016-10/?r=AU&IR=T.
- Morphet, Jack (2018)** “PM Gives \$12K to Each Struggling Farmer Hit by Nightmare Drought.” *NewsComAu*, 5 Aug. 2018, www.news.com.au/national/nsw-act/12000-lumpsum-payments-for-farming-families/news-story/e0ed30f75d4599a8fc04bfbe17c640a
- Regional Inequality Enquiry (2018)** Commonwealth Parliament, and Parliament House. “Regional Inequality in Australia.” *Home – Parliament of Australia*, CorporateName=Commonwealth Parliament; Address=Parliament House, Canberra, ACT, 2600; Contact= 61 2 6277 7111, 19 June 2018, www.aph.gov.au/Parliamentary_Business/Committees/Senate/Economics/Regional_Inequality_in_Australia.
- RAPAD (2016) Remote Area Planning And Development** www.rapad.com.au/.
- Royal Far West** “Research & Advocacy.” *Royal Far West*, www.royalfarwest.org.au/research-advocacy/.
- Telstra** “Do I have to Switch to the nbn network”, www.telstra.com.au/support/category/broadband/nbn/do-i-have-to-switch-to-the-nbn-network.
- Terlato, Peter (2017).** “NBN Satellite to Service Urban Areas of Australia.” *Finder.com.au*, 5 Apr. 2017, www.finder.com.au/nbn-satellite-to-service-urban-areas-of-australia.
- The Good Things Foundation** “Our Vision Is a World Where Everyone Benefits from Digital.” *Our Vision Is a World Where Everyone Benefits from Digital | Good Things Foundation*, www.goodthingsfoundation.org/.
- Yoo, Tony (2017).** “6 Million Australians Are about to Get a Rude Shock When They Find out the NBN Is Compulsory.” *Financial Review*, Financial Review, 6 Apr. 2017, www.afr.com/technology/web/nbn/the-nbn-is-compulsory-but-at-least-6-million-australians-

APPENDICES

Appendix 1: Reasons Why RRR Users Aren't Signing Up to nbn Sky Muster

OTHER INTERNET OPTIONS

- * Better mobile broadband plans (if available to end-user) eg Optus 200GB anytime plans, no peak/off peak, lower latency and often faster speeds.
- * Already on an ADSL plan, which whilst sometimes slower they typically offer more anytime data, are cheaper and have lower latency.
- * Alternate fixed wireless provider in the area.

LACK OF MARKETING / POOR MARKETING

- * nbn marketing eg nbn ISS satellite was not available to end users who had mobile broadband, NGWL or ADSL – this belief still exists.
- * Many people do not realise it is a free installation and no lock in contract plans are available.
- * Bad press for Sky Muster – when initially launched it was plagued with 'teething problems'
- * Marketing around landline phones needs attention – both nbn marketing & providers (especially providers who don't offer Sky Muster)
- * Marketing not targeted to right areas.

CONFUSION

- * Belief by many that '**nbn is not coming to them**' – may have been told this by a provider, or tried to check their address and been mapped incorrectly.
- * Addressing issues in the nbn portal, people not aware of how to get these sorted or the right language to use to get their addressing problem fixed
- * Confusion over best internet connection for the residence.

- * End User had a bad experience on ISS and believes Sky Muster will be the same.
- * No big name providers (eg Telstra & Optus) – providers who don't offer Sky Muster telling end users things like “you are not mapped for nbn”, “nbn is not coming to you”, “you can't get nbn”, etc
- * Confusion over “you have to switch” or you “will lose your landline”
- * Confusion on how to pick a provider
- * Stakeholder organisations & end users confused around congestion, address issues & landline phones. Belief that because areas/towns are mapped for nbn Sky Muster that it means nbn is not coming to them.
- * Belief that only one residence on a property with several residences is entitled to a connection.

SKY MUSTER LIMITATIONS

- * Word of mouth from people who have had issues – negative feedback in community
- * End users having difficulty getting nbn™ Sky Muster issues sorted – long complex train to get issue resolved, some give up.
- * Limited data at a higher cost than other nbn technologies.
- * High latency.
- * Speed limited to 25/5 Mbps
- * Needs power to work
- * Off Peak & Peak Times
- * Shaped speeds

COMPARISON OF SKY MUSTER VERSUS ALTERNATE INTERNET TECHNOLOGIES

Technology Type	Speed	Data	Cost	Contract	Latency	Installation Costs & Further Info
NBN Sky Muster #	Up to 25/5 Mbps	300GB (200 Peak/100 Off Peak)	\$160/mth	<ul style="list-style-type: none"> Most Providers have month to month plans available 	HIGH	<ul style="list-style-type: none"> FREE INSTALLATION (If Wifi is required cost to purchase router)
ADSL^	Up to 8/1 Mbps	Unlimited	\$120	<ul style="list-style-type: none"> No Contract 	LOW	<ul style="list-style-type: none"> ADSL Often difficult to get a port. Installation/modem fees vary between providers. Usually bundled to include fixed line phone calls \$99 for same plan with a 12mth contract
ADSL2+^	Up to 24/1 Mbps					
Optus Mobile Broadband 4G/3G	12/1 Mbps	200GB Home Wireless Broadband	\$80	<ul style="list-style-type: none"> Month - Month 	LOW	<ul style="list-style-type: none"> \$240 Modem Cost Available in Limited Locations On 700mhz frequencies speed is only 5/1 Mbps
		150GB OVO	\$89.95	<ul style="list-style-type: none"> Prepaid – Month to 	LOW	<ul style="list-style-type: none"> Available in locations with
Telstra Mobile Broadband (3G & 4G) @	3G 2/0.3 Mbps	50GB Home	\$160	<ul style="list-style-type: none"> Month to Month Casual \$10 less for 12 month contract 	LOW	<ul style="list-style-type: none"> BYO Modem 24mth Plan with modem 80GB for \$99 plans for small business – with an ABN
	4G 8/1 Mbps	Wireless Broadband				
Vodafone 4G	8/1 Mbps	90GB	\$60	<ul style="list-style-type: none"> 12 months 	LOW	<ul style="list-style-type: none"> BYO Modem
Non NBN Fixed Wireless Providers *	50/20Mbps	Unlimited	\$199	<ul style="list-style-type: none"> Usually contracted, varies between providers 	LOW	<ul style="list-style-type: none"> Varies, eg \$299 Installation Fee for Just ISP + modem costs
	25/19 Mbps	Unlimited	\$149			

Comparison Table Notes

Highest + cheapest available Sky Muster Plan (based on Peak Data ONLY, across all Sky Muster providers)

* Based on Just ISP Alternate Fixed Wireless Plans

^ADSL Speeds can be higher or lower depending on location, line length, line quality, end user equipment, internal wiring and network capability.

@ 4G speeds are typically up to 50/50 Mbps, near metropolitan centres, with 3G speeds typically up to 10/5 Mbps

Appendix 2: What people want in an Internet Connection ?

- Reliability
- Data
- Cost
- Latency
- Speed - upload and download
- Customer Service

If you could only choose one of the below options for your internet connection, what would you chose ? ie What do you value the most ?



What do you value most in an internet connection ? Please select THREE options only. Chose your top THREE !



BIRRR Facebook Group Polls highlighting needs of regional internet connections.

Appendix 3: Links to Previous Submissions made by the BIRRR Team

The following Submissions can be found at: <https://birrraus.com/press-releases/>

- **[BIRRR NBN Joint Standing Committee Submission NBN Rollout RRR \(2018\)](#)**
- **[BIRRR NBN Joint Standing Committee Submission \(2017\)](#)**
- **[PC USO submission \(2017\)](#)**
- **[Telecommunications Review submission \(2017\)](#)**
- **[RTIRC Review Submission \(2015\)](#)**

Appendix 4: WA Nationals Regional Telecommunications Policy

Regional Telecommunications

Proper telecommunication in regional WA is essential for community, business and emergency services. The Nationals want regional people to have faster, more reliable and more affordable access to telecommunications.



Our Commitments

Rollout broadband solutions in regional WA	\$42 million
Continue the Regional Telecommunications Project	\$20 million
Local Government Wi-Fi Fund	\$5 million
Combat the rise of illegal repeaters by offering a subsidy for legal equipment	\$1.5 million
'State Fibre Taskforce', to advise on new and existing fibre opportunities	\$500,000

Background

Access to reliable telecommunications is a vital issue for regional areas. Quality, affordable and reliable mobile reception and internet access is vital for business, emergency services, tourism and education.

In recognition of the need for reliable telecommunications, Royalties for Regions has invested \$105 million into funding mobile phone base stations through the successful Regional Mobile Communications Project (RMCP) and Regional Telecommunications Project (RTP). Combined, these two projects will see 344 phone towers built or upgraded across the State, with the RMCP alone increasing coverage by more than 30 per cent.

Whilst responsibility for telecommunications largely rests with the Federal Government, The Nationals WA's proactive investment lead these developments because our Party understands the importance of adequate service and will continue to build on this significant Royalties for Regions investment.

Our Commitment

Regional Broadband Strategy

Providing broadband to regional WA is a significant task. Due to the size of Western Australia and the costs associated with service provision in remote and regional areas, the NBN and other providers won't provide adequate broadband coverage to many in regional WA.

The Nationals WA are not satisfied with this situation and don't believe regional people should be disadvantaged because of where they live. WA's businesses and communities require access to fast, reliable internet to remain competitive in a modern economy.

Through the Royalties for Regions-funded Seizing the Opportunity in Agriculture, The Nationals have funded the State Agricultural Telecommunications Infrastructure Improvement Fund. This \$22 million fund will create the opportunity for high-priority innovative agricultural telecommunications infrastructure and technology to be constructed in regional areas of Western Australia.

The Nationals believe the NBN should provide at least fixed wireless technology to all towns in regional WA, with greater than 100 potential connections. Recently a decision was taken to move a number of WA towns from fixed wireless technology to satellite. The Nationals WA are not satisfied at the choice of technology being rolled out across these areas in Western Australia, and as such if elected The Nationals will invest \$20 million to ensure these communities are no longer disadvantaged by the growing digital divide between urban and rural areas.

The deployment of technology could be undertaken through the NBN's technology choice program or through alternative service providers with expertise in this field.

The Nationals WA commit to \$42 million to develop broadband technologies in regional WA.



www.buildyourwa.com.au



Regional Telecommunications

Regional Telecommunications Project

The Regional Telecommunications Project and Regional Mobile Communications Project have delivered and are delivering 344 new phone towers across regional WA.

The Nationals understand how important mobile phone coverage is in regional WA. This is why we intend to continue our support for projects that deliver increased coverage.

To continue the good work of the RMCP and RTP, The Nationals WA commit an additional \$20 million to this program.

Local Government Wi-Fi Fund

Accessing the internet on the go is important and in some cases vital to business and individuals alike. A number of Local Governments have deployed or are considering local wireless networks in their CBD's or perhaps at a local tourist attraction or related infrastructure.

These networks support tourism, education and help grow and sustain the patronage of local businesses. A number of innovative e-tourism products are being developed across the State which rely on connectivity and present significant opportunities to deliver tourism information differently.

The Nationals WA commit \$5 million to a contestable fund to allow Local Governments to deploy local wireless networks in our regions.

Mobile Repeater Rebate

Mobile repeaters can play an important role in securing or improving mobile coverage in fringe reception areas.

Currently these devices are expensive, and as a result a prevalence of illegal imported versions are common. These illegal devices have significant network impacts and results in the loss of coverage to other users.

In keeping with our current investment to expand the mobile phone networks outside of Perth, we will provide a \$500 rebate to those living in our regions when a legal repeater is purchased.

The Nationals commit \$1.5 million to fund a rebate for legal mobile phone repeaters to combat the rise of illegal repeaters.

State Fibre Taskforce

The Nationals WA will also investigate options to use existing fibre optic networks to deliver high quality connectivity to regional and remote areas of our State.

At present the State has a significantly underutilised network of fibre optic cables. The first step to delivering broadband through fibre optics in WA is understanding current availability and potential use for internet service providers.

The Nationals WA will establish a 'State Fibre Taskforce' to determine which fibre optic cables exist in the current network and their capacity. This logistical exercise will provide a clear picture for internet service providers as well as governments as they consider the deployment of future technology and bandwidth.

The Nationals WA will invest \$500,000 to report on the State's existing fibre network to ensure WA is efficiently using its present fibre optic capacity.

The Nationals will invest \$69 million over five years to improve regional mobile telecommunications.



The Nationals WA welcome your feedback on this policy:

Ph: 1300 628 792

Email: info@nationalswa.com

www.facebook.com/TheNationalsWA

www.nationalswa.com

Appendix 5: Results of BIRRR Landline Survey 2018



LANDLINE & CONNECTIVITY SURVEY 2018



65.23% of respondents use a traditional **LANDLINE** as their main voice communication

48.26% of survey participants do not receive enough coverage inside their house to make a mobile phone call




Of the **51.74%** who receive some mobile coverage, **23.04%** have had to purchase boosting equipment and almost **half** of those have had to spend over **\$1000**

Voice Services = Poor or Extremely Poor
Fault Rectification (39.9%) & Customer Service (34.81%) were the 2 worst performing indicators



TYPES OF INTERNET CONNECTIONS

- 45.45%** Sky Muster
- 35.53%** Mobile BB
- 18.70%** ADSL



Current voice services work during a power outage, **69.03%** of existing voice services **do not** require power to work



41.75% of respondents said their primary voice service stops working more than 3 times / year



42.11% of respondents say that their landline can take more than one week to be repaired



Primary Voice Service Providers
 Vodafone= 0.24%

13.44% of survey takers have had difficulty in ordering a landline service



49.40% of survey participants rated their current landline about the same when compared to 10 years ago. **34.63%** stated it was worse or much worse.



MOBILE NETWORKS USED

- 86.20%** Telstra
- 10.23%** Optus
- 1.25%** Vodafone



81.66% of survey participants have not used a payphone in the past 12 months **N=2403**