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WINGS

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EXECUTIVE SUMMARY

Children living in rural and remote Australia face significant health inequity when accessing services and treatment. Many health services are only offered in metropolitan areas such as Sydney, and for children living in rural areas who require frequent treatment, travel to and from life saving medical treatment can create significant economic and emotional distress to both the child and their family. Necessary travel for treatment can impact families living in rural and remote New South Wales through additional strains on financial pressures, collective anxiety, inconsistency and absences within the labour force and social isolation as well as deterioration of relationships, sibling's psychological functioning and can cause guilt and anxiety for the child with the illness themselves.

Little Wings addresses the health inequity experienced by children living with illness in rural and remote NSW by providing a free end-to-end medical air and land transportation service to enable families to access the care they need. The Medical Wings program was developed in 2021 to create further positive impact to rural and remote communities as well as the health system by flying specialist clinician teams to regional areas across NSW to provide access to specialist healthcare through pop up clinics to vulnerable children and their families.

Medical Wings delivers clinics in partnership with local hospitals, Aboriginal Medical Centres, primary health clinics and Immigration Centres to ensure families are able to access support in a culturally safe and welcoming environment. In FY22 Medical Wings delivered 129 clinics across regional and remote New South Wales with clinics averaging 25 scheduled pediatric patients a day per visiting doctor which on average per trip is 3 doctors, as well as patients also bringing family members for walk in appointments.

Medical Wings currently supports 3,200 families across regional and remote NSW, and benefits families, communities and the health system through increasing opportunities for treatment through:

- Increased access to services and increased utilisation.
- · Improving family wellbeing through decreased travel and reducing anxiety related to health access and treatment,
- Alleviating economic burden through decreased travel costs, allowing parents and carers to stay within communities to continue working, and
- · Strengthening the healthcare system through building capacity within the health workforce and reducing inappropriate use of paediatric hospital beds in rural and remote NSW

THE ECONOMIC IMPACT OF MEDICAL WINGS

The economic benefits generated by Medical Wings in performing this role are estimated to be \$38m (including \$25.6m in state hospital savings from treating patients in their community, \$7.9m in reduced out of pocket costs for families, and \$4.8m in productivity benefits) which equates to \$295,000 per clinic in FY22. The Medical Wings model currently runs on an average flight cost of \$1,800, with an estimated total cost of \$113,000 in FY21 (including staffing and on-costs). The Medical Wings program has had a significant impact on children, families and the health system across rural and regional NSW, outlined in the figure on the next page.

175 CLINICIANS TRANSPORTED

129 MISSIONS

CONDUCTED

Since 2021, Medical wings has:

WE KNOW IT'S THE

THAT MAKE A

- Increased access to services and increased utilisation,
- health access and treatment,
- carers to stay within communities to continue working, and
- and reducing inappropriate use of paediatric hospital beds in rural and remote NSW

Medical Wings is a key part of the Australian health system, providing access to culturally safe specialist care to rural families.



"It is important to continue [the model] so we can continue to offer specialist services to families in rural and remote regions of NSW who would otherwise be disadvantaged and who would have to carry the burden of poor access to medical care and the financial burden of having to travel." -Specialist traveling with Medical Wings to provide care in regional NSW

IN FY22 MEDICAL WINGS GENERATED \$38 MILLION IN ECONOMIC BENEFITS



3,225 FAMILIES SUPPORTED

Improved family wellbeing through decreased travel and reducing anxiety related to

Alleviated economic burden through decreased travel costs, allowing parents and

Strengthened the healthcare system through building capacity within the health workforce



OUR BACKGROUND

1.1 THE CHALLENGE

CHILDREN IN RURAL AUSTRALIA

Children living in rural and remote Australia experience differential access to health services, and consequently have different development outcomes compared to children who live in or near major cities. The factors that contribute to development outcomes in children who live rurally and remotely include differences in the way children spend their free time, participate in extracurricular activities, navigate the educational system and the safety of their neighbourhood.¹ In 2017, Remote and Very remote areas in Australia had a three percent higher proportion of children aged 0-14 years than Major Cities and Inner regional and Outer regional areas.² A significant portion of the Aboriginal and Torres Strait Islander population reside in rural and remote communities, with 42 percent of the population under a working age.³

Geographic remoteness has a direct correlation on a child's wellbeing, particularly in regards to health outcomes. According to the 2015 Household, Income and Labor Dynamics in Australia (HILDA) survey data, while outcomes of life satisfaction remain relatively similar, there are differences in how a large portion of young people experience health service delivery in regional areas.⁴ While life satisfaction is higher in regional areas, health literacy is lower as is access to health care facilities and healthcare profresionals.⁵ One third of regional Australians state that a lack of access to healthcare professionals is their greatest healthcare concern.⁶

There are three major hospitals that provide oncology, haematology services and specialist medical treatment for children in NSW. These are located in metropolitan NSW:

- The Children's Hospital, Westmead
- Sydney Children's Hospital, Randwick
- · John Hunter Children's Hospital, Newcastle

IMPACT OF ILLNESS ON RURAL AND REMOTE FAMILIES

FAMILY WELLBEING

For families with children who live remotely and require hospital care or treatment, there is additional difficulty in travelling to these metropolitan hospital locations. Necessary travel for treatment can increase certain challenges, from financial pressures, collective anxiety, inconsistency and absences within the labour force and social isolation. Families that travel more than 80 km can experience a decline in family functioning and strains in individual relationships by 224 percent, compared to those who travel less

⁴ ibid. ⁵ ibid than 80 km, including deterioration of relationships, sibling's psychological functioning and can cause guilt and anxiety for the child with the illness themselves.⁷

All members of the family, including siblings, can experience major disruptions to their everyday lives. In 2018, it was found that 25 percent of mothers and 21 percent of fathers reported significant marital distress at a childs' diagnosis, and 36 percent of mothers and 43 percent of fathers reported significant distress after 2 years.⁸

Similarly, siblings of children who have illnesses are frequently neglected in relationships of family functioning, with their schooling, parental attachment and psychological wellbeing also affected. Siblings of young children who have a chronic disease are more at risk of adverse outcomes and unmet familial needs. In 2021, a Kidscreen Questionnaire placed these siblings below the 50th percentile in a number of areas including psychological wellbeing, moods and emotions.⁹ While there are studies showing that siblings of children with chronic illnesses have increased empathy and better relationships,¹⁰ loneliness and frequent time away from their parents can result in mental illness, post traumatic stress and a lower quality of life.

FINANCIAL STRAIN

Families with a child who has an illness in a remote or rural part of Australia are more likely to suffer from financial hardship and burdens from continued out of pocket costs for treatment, travel and accommodation. The average national out-of-pocket expenditure on healthcare is estimated to be over \$29.8 billion in travel costs, accommodation, food and childcare.¹¹ The burden of out of pocket costs is 10 percent higher for those in rural and remote areas compared to families living in major cities.¹²

Similarly, as the severity and duration of a child's illness increases, the likelihood of extended parent, carer and child absences from both work and school increases.¹³ Families traveling for treatment parents frequently experience job insecurity due to continued time off work, increasing the burden of financial hardship.¹⁴ Financial pressures and delays in educational attainment lead to increased emotional stress for every member of a family in rural and remote Australia impacted by a child with chronic illness.

¹ Living rurally or in a remote area is defined as all areas outside of Australia's major cities, classified as either Inner regional, Outer regional, Remote or Very remote.

² Australian Institute of Health and Welfare (2020) Australia's Health 2020, Rural and Remote Health, AIHW, Australian Government.

³ National Rural Health Alliance (NRHA) 2022. The little book of rural health numbers - Demography. Canberra.

⁶ L, Bishop, A, Random, M, Laverty (2017) Health care access, mental health and preventive health: health priority survey findings for people in the bush, The Royal Flying Doctors Service.

 ⁷ Yantzi, N., Rosenberg, W, N., O'burke, S., Harrison, M. (2001) 'The impacts of distance to hospital on families with a child with a chronic condition', Social Science & Medicine, 52(12): 1777-1791. https://doi.org/10.1016/S0277-9536(00)00297-5
 ⁸ Fladeboe, K., Gurtovenko, K., Keim, M., Kawamura, J., King, K. M., Friedman, D. L., Compas, B. E., Breiger, D., Lengua, L. J., & Katz, L. F. (2018). Patterns of Spillover Between Marital Adjustment and Parent-Child Conflict During Pediatric Cancer Treatment. Journal of pediatric psychology, 43(7), 769-778.

 ⁹ Nash, S., Nash, P., Bryson, L. and Gray, S., (2021). Understanding the spiritual and emotional needs of siblings of children who have a rare disease. International Journal of Children's Spirituality, 26(3), pp.158-172.
 ¹⁰ Fleary, S., Heffer, R. (2013) Impact of Growing Up with a Chronically III Sibling on Well Siblings' Late Adolescent Functioning. ISRN Family Medicine, Vol 2013

 ¹¹ Australian Institute of Health and Welfare (2021) Health Expenditure Australia 2019-20, AIHW, Australian Government
 ¹² Rocque, G., Williams, C., Miller, H., Azuero, A., Wheeler, S., Pisu, M., Hull, O., Rocconi, R. and Kenzik, K., (2019). Impact of Travel Time on Health Care Costs and Resource Use by Phase of Care for Older Patients With Cancer. Journal of Clinical Oncology, 37(22), pp.1935-1945.

¹³Spencer, N., 2014. Impacts of caring for a child with chronic health problems on parental work status and security: a longitudinal cohort study. Family Matters, (95). ¹⁴ ibid

1.2 THE MEDICAL WINGS STORY

HISTORY OF LITTLE WINGS

Little Wings was established in 2012 as a not-for-profit organisation that provides free end-to-end medical air and land transport to children with severe illnesses and their families. Little Wings currently partners with four hospitals, has 48 volunteers and flys in and out of 55 regions across New South Wales and the Australian Capital Territory. Little Wings create a pathway of free, safe and professional access for children in rural and remote NSW to receive specialised medical treatments at major metropolitan hospital locations. Since 2012, Little Wings have helped more than 6,500 passengers, completed over 2,800 journeys and have traveled over 4 million kilometres in the air and on the ground to provide families with the care they need in a safe and comfortable journey.¹⁵ The 2022 Government Budget confirmed just over \$4.1m would be allocated towards Little Wings efforts.¹⁶ This funding will enable Little Wings to secure a fourth aircraft to increase its capacity from 550 flights per year to approximately 800.¹⁷

Additional funding will enable services to be further integrated into hospital planning, assisting in collaboration and cohesion between clinics and the transportation services of Medical Wings. An additional aircraft can also allow Little Wings to expand their reach to deliver services and meet the needs of children and families in rural and remote Queensland and the ACT.

MEDICAL WINGS

Medical Wings was created as a response to the COVID-19 pandemic, where young patients were too vulnerable to fly into potential COVID hotspots to receive treatment, and commercial flights into regional areas were limited. The Medical Wings program was developed and delivered within 10 months, flying specialist clinician teams to regional areas across NSW to provide access to specialist healthcare through pop up clinics to vulnerable children and their families.

Medical Wings delivers clinics in partnership with local hospitals, Aboriginal Medical Centres,, General Practitioner Clinics and Immigration Centres to ensure families are able to access support in a culturally safe and welcoming environment. In 2021 Medical Wings delivered 108 clinics across regional and remote New South Wales. with clinics averaging 25 scheduled pediatric patients a day as well as patients also bringing family members for walk in appointments.

In addition to providing a much needed service to children and families in rural and remote NSW, Medical Wings have also delivered face to face training for the regional health workforce. In person training from specialty clinicians has built capacity within the community and confidence of healthcare workers in multiple in demand services including paediatric emergency repose, paediatric end of life care, and chemotherapy administration and support. The model of Medical Wings currently runs on an average flight cost of \$1,800 with an estimated total cost of \$113,000 in FY21.¹⁸

1.3 CREATING OPPORTUNITIES FOR MORE FAMILIES TO ACCESS QUALITY CARE

The Medical Wings service has enabled 129 missions in FY22, allowing 3,225 families to receive treatment and care close to home. Medical Wings currently supports families across regional and remote NSW with most of these families having to travel between 4 and 17 hours to access medical treatment by land, by car or public transport if not for fly-in fly-out clinician services.¹⁹ An estimated 30 percent of scheduled patients come with members of their families who also require incidental walk-in treatments. In total, an estimated 4,100 children and members of families accessed Medical Wings in 2021, 1,300 of whom are part of the Aboriginal and Torres Strait islander rural community.²⁰

The children who receive support from Little Wings and Medical Wings experience a range of severe health concerns, related to cancer, leukemia, burns, asthma, arthritis or genetic disorders. 30 percent of children had a non-burn or cancer related diagnosis including Cystic Fibrosis, Chronic Kidney Disease, Chronic Respiratory Disease.²¹

SUMMARY OF SERVICES

The Medical Wings model currently uses three types of chartered aircrafts or creates free commercial flight options, as well as land transport for clinicians to access areas where pop-in clinics are scheduled within the community. The combination of both land and air transport creates a seamless end-to-end service for clinicians and enables MDTs to conduct an extra two appointments in the day as scheduling by Little Wings is flexible to optimise care to patients.

SUMMARY OF HOSPITALS AND PARTNERSHIPS

VOLUNTEERS: Little Wings and The Medical Wings Program relies on an ongoing and consistent volunteer base including pilots, drivers and crew that maintain and transport families and clinicians. Currently, Little Wings have over 45 volunteers supporting its growth with 15 volunteer pilots and 23 volunteer drivers.²²

HEALTHCARE PARTNERSHIPS: Medical Wings clinics are delivered in strong partnership with local regional hospitals, Aboriginal Medical Centres, regional general practitioners and immigration centres in rural and remote Australia. Familiar supports for rural populations are utilised as much as possible to deliver services and each provide Medical Wings with engaged clinicians that are able to provide culturally safe care and minimise sociocultural and economic barriers to health.

SPONSORS: Medical Wings recieved seed funding from Newcastle Permanent Charitable Foundation, which was used to provide the funds to commit to clinics and ensure the safety and quality of Little Wings could be maintained across projects.

¹⁵ Little Wings (2021) Social Impact Report 2021. NSW: Australia.

¹⁶ Australian Department of Health, 2022. Primary Health Care 10 Year Plan - Stronger Rural Health Strategy. Australian Government. 17ibid.
¹⁸Little Wings Operational costs

¹⁹ Little Wings (2021) Social Impact Report 2021. NSW: Australia.

²⁰ PwC Medical Wings Economic Model, 2022. Please see Appendix A for detailed assumptions

²¹ Little Wings (2021) Social Impact Report 2021. NSW: Australia.

²² ibid.

THE IMPACT OF MEDICAL WINGS

Children living in rural and remote Australia experience health inequity in accessing appropriate care and treatment compared to children that live in or near major cities. While social and emotional outcomes remain relatively similar, there are differences in how a large portion of young people experience health service delivery in rural and regional areas. For children living in rural areas who require frequent treatment, travel to and from medical services can create difficulties to the child and their family. As described in the benefits framework below, Medical Wings supports some of these issues faced by children, families and the health system in rural and regional areas of NSW.

Figure 1: Benefits Framework



An economic analysis was conducted to consider the costs and benefits of Medical Wings' impact to children, families and the healthcare workforce, through this benefits framework, and is detailed in Appendix B.

2.1 INCREASED ACCESS TO SERVICES AND HEALTH UTILISATION

Outreach services to rural and remote Australian communities increase accessibility and equity of pediatric specialist care, cancer treatments, appointments and primary care services. The demand for Little Wings services increased by 60 percent during COVID-19.²³ Medical Wings enabled children who otherwise wouldn't have access to specialist healthcare services or weren't able to fly to metropolitan hospitals to receive treatment and care within their own communities and without the need to spend time and money on traveling to metropolitan hospitals.

Table 1: Health access benefits

Benefits	FY22*
Total missions	129
Total clinicians transported	175
Total scheduled paediatric appointments	3,225
Total incidental appointments for family members	1,000
Total patients treated by during Missions	4,225
Proportion of Aboriginal and Torres Strait Islander patients	1,300
Increased primary health utilisation throughout the year (general population)	4,100 visits
Increased primary health utilisation throughout the year (Aboriginal population)	6,400 visits
Total increased health service utilisation throughout the year	10,500 visits
Please note numbers have been rounded	

²³ Australian Department of Health, 2022. Primary Health Care 10 Year Plan - Stronger Rural Health Strategy. Australian Government.

ACCESS TO TREATMENT

A number of families and clinicians identified that due to COVID-19, paediatric outreach in rural and remote Australia would have been limited to telehealth services if not for the support of Medical Wings. Over 129 missions in rural NSW were conducted in FY22, allowing access to in-person specialist consultations to reach an estimated 4,225 patients either through scheduled appointments or incidental treatment of family members (1,000).

MEDICARE BENEFIT SCHEDULE UTILISATION AND INCREASED ACCESS FOR ABORIGINAL AND TORRES STRAIT ISLANDER COMMUNITIES

Medical Wings enables patients to feel safe and could contribute to reduced unnecessary visits to hospitals and increased utilisation of primary health care. Clinicians involved in Medical Wings have identified that by conducting services within community health centres, families feel comfortable and confident to continue to utilise primary health centres throughout the year. Available health services within the Medicare Benefit Schedule (MBS) have a greater visibility with the delivery of fly in fly out health specialist services in communities, increasing its utilisation in rural communities by 36.6 percent throughout the year.²⁴ This addition of outreach utilisation has an estimated utilisation increase of 4,100 additional primary health visits for the general population by increasing patients' knowledge of health services within the community.

Barriers to accessing healthcare services and utilisation of MBS services are particularly prevalent in Aboriginal and Torres Strait Islander communities in rural Australia due to a historical culture of distrust in healthcare providers. The relationships Medical Wings have formed with medical practices and Aboriginal Medical Services within the community have built trust and strengthened culturally safe and competent services.

Aboriginal and Torres Strait Islanders are four times more likely to increase their utilisation²⁵ of accessing care throughout the year when services are culturally safe. It is estimated that services enabled by the Medical Wings program has led to an increase in Aboriginal and Torres Strait Islander utilisation of health services by 6,400 primary health visits.²⁶

"One family lived three hours outside Tamworth and would have to travel over seven hours to get an appointment at John Hunter Children's Hospital. Medical Wings enabled the family to see their multidisciplinary team and the team was able to educate all members of the family face to face. Medical Wings has broadened the level and complexity of service we can offer rural children and their families"

2.2 IMPROVED WELLBEING

The primary impact that Medical Wings creates is the decrease of travel time and patient time and financial burdens for rural and remote families. Decreased travel costs alleviates financial pressures that regular hospitalisations and child illnesses can create, indirectly decreasing stress, anxiety and improving well-being. Private healthcare costs, travel, fuel, accomodation, food, childcare and extra surgical or medical tests, all contribute considerably to the complexity and financial burden of caring for a child with a severe illness.²⁷ Medical Wings, by providing end-to-end transportation for clinicians, allow families to stay within their communities and increase personal well-being with greater flexibility.

Table 2: Out of pocket costs benefit

Benefits

Total families impacted by Medical Wings Total decrease in out of pocket costs for treatme Total decrease in out of pocket costs for travel Total decrease in out of pocket costs for accomm Total reduction in out of pocket costs



	FY22
	3,225
ent	\$4.99m
	\$2.07m
modation	\$0.88m
	\$7.9m

²⁴ Gardiner, F., Bishop, L., Graaff, B., Campbell, J., Gale, L., and Quinlan, F. (2020). Equitable patient access to primary healthcare in Australia, Canberra: Royal Flying Doctor Service of Australia.

²⁵ Gruen, R., Weeramannthri, T. and Baille, R., 2002. Outreach and improved access to specialist services for indigenous people in remote Australia: the requirements for sustainability. Journal of Epidemiology & amp; Community Health, 56(7), pp.517-521. ²⁶ PwC Medical Wings Economic Model, 2022. Please see Appendix A for detailed assumptions

²⁷ Neli S Slavova-Azmanova, Jade C Newton and Christobel M Saunders. Marked Variation in out-of-pocket costs for cancer care in Western Australia. Med J Aust. 2020; 212 (11): 525-526. doi:10.5694/mja2.50590

DECREASED OUT OF POCKET COSTS

It is estimated that 95 percent of rural patient participants incur out of pocket costs for cancer care alone, contributing to surgeries, medical tests and appointments.²⁸ Financial burdens are a major concern for families in rural and regional Australia, and can impact the continuity, regularity and the guality of care that seriously ill children recieve. Medical Wings, by helping to deliver rural clinics, eases the travel expenses and subsequently reduces the stress and anxiety families face.

FAMILY FUNCTIONING

Families travelling more than 80km to receive hospital care are 2.2 times more likely to decline in family functioning regarding individual relationships, with time spent away from a spouse or children creating familial dissatisfaction, conflict and anxiety.²⁹ While families that undergo adversity together become closer to each other and have increased empathy, compassion and resilience, it is noted that they collectively withdraw from social life from a position of protectiveness and safety.³⁰

SIBLING CONNECTION

Siblings of children who are diagnosed with severe illnesses have mixed opportunities and negatives of this change in family functioning. While 62.5 percent³¹ siblings emphasise the positive impact of personal health cautiousness, maturity, empathy, compassion and a greater appreciation of family togetherness after their sibling's diagnosis, it is noted that the discontinuity of school participation and stability in their life would be increased with carers' long travel times for hospital appointments. Families with teenagers are 5.3 times more likely to be negatively affected by ongoing hospitalisations of their siblings, due to the discontinuity and a lack of prioritisation of their key developmental period.³² Greater time spent at home between appointments enables families to strengthen sibling connection to both the child and their parents, as well as improve family wellbeing.



28 Ibid

29 Yantzi, N., Rosenberg, W, N., O'Burke, S., Harrison, M. (2001) The impacts of distance to hospital on families with a child with a chronic condition. Social Science & Medicine, 52(12), 1777-1791.

³⁰ Dinleyici, M., Dagli, S. (2018) Evaluation of quality of life of healthy siblings of children with chronic disease. Turk Pediatri Ars, 53(4), 205-213 ³¹ Fleary, S., Heffer, R. (2013) Impact of Growing Up with a Chronically III Sibling on Well Siblings' Late Adolescent Functioning. ISRN Family Medicine, Vol 2013.

³² Yantzi, N., Rosenberg, W, N., O'Burke, S., Harrison, M. (2001) The impacts of distance to hospital on families with a child with a chronic condition. Social Science & Medicine, 52(12), 1777-1791

2.3 ALLEVIATED ECONOMIC BURDEN

Medical Wings has a positive impact on parent and carer productivity. Travelling to attend an appointment in a metropolitan hospital may necessitate parents or carers having to take days off work to drive, making them more likely to permanently reduce their work hours or have sudden nonparticipation in the labour force,³³ adding to further financial stress. More appropriate use of family time saved from travel resulted in improved patient and carer wellbeing, improved continuity of participation in schools, social activities and economic participation. This extends to time taken off school for paediatric patients and siblings. The decreased travel time that Medical Wings provide to attend healthcare appointments decrease the instances of workplace absenteeism, presenteeism and community productivity in social communities.

Table 3: Total productivity benefit

Benefits

Total families impacted by Medical Wings

Total value of reduction of absenteeism of parent

Total value of reduction of presenteeism of paren

Total productivity benefit

PRODUCTIVITY BENEFITS

Productivity benefits are estimated to generate \$3.2m in savings, resulting from reduced absenteeism and \$1.6m from reduced presenteeism. Absenteeism benefits are generated from Medical Winas enabling families to access treatment within their own communities and reducing the need for parents and children to travel to Newcastle and Sydney for treatment. Presenteeism benefits are generated from reduced stress, disengagement and improved performance at work.

REDUCED SCHOOL ABSENTEEISM

Children who receive care with the support of Medical wings have reduced school absenteeism due to constant discontinuity of school participation. Moreover, children who aren't able to receive needed healthcare specialist treatments before their infant developmental ages have a higher likelihood of not attaining educational outcomes, drug and alcohol abuse, be in situations of domestic and family violence as well as have lower employment rates.³⁴

	FY22
	3,225
ts and carers	\$3.2m
its and carers	\$1.6m
	\$4.8 m

³³ DeRigne, L. and Porterfield, S., 2016. Employment Change Among Married Parents of Children With Special Health Care Needs. Journal of Family Issues, 38(5), pp.579-606.

³⁴ Informed by stakeholder consultation, please see Appendix B for a detailed list of consultations conducted

Children with significant school absenteeism due to chronic illnesses are 3 times more likely to fall behind at school,³⁵ with a \$1m cost per student due to the decrease in adequate educational attainment.³⁶

"The provision of paediatric ENT services in Tamworth has been life changing for many children... having these childhood barriers removed by getting adequate surgery and treatment will ensure that they are able to meet their developmental milestones, be active in schooling and meet their full potential."

2.4 STRENGTHENED HEALTHCARE SYSTEM

Stressful and emotional situations such as extended travel can decrease health information processing skills.³⁷ Medical Wings provides services that give parents and carers, families and communities the confidence to take care of their ill children in between important medical examinations, and creates a culture of professional, safety and comfort to provide health information. This leads to an expected overall increase in healthcare understanding and a decrease in presentations to the emergency department for primary health needs.

Table 5: Healthcare system benefits

Benefits	FY22
Total families impacted by Medical Wings	3,225
Total bed days avoided by providing care in community settings	8,000
Total value of avoided bed days in paediatric hospitals	\$25.6m

DECREASED MALDISTRIBUTION OF RESOURCES

Reducing inappropriate use of pediatric hospital beds in rural and remote Australia frees up necessary resources and directs more appropriate use of high needs care. Nationally, there is a rural underspend of \$2.1b on specialist doctors and a rural overspend of \$829m on hospital bed care.³⁸ Medical outreach through services such as Medical Wings sees an estimate of total unnecessary hospital referrals to reduce by 85 percent, as regular out of hospital specialists and primary health care can be more appropriately accessed.³⁹

HOSPITAL SAVINGS

Without sufficient access to specialists and primary healthcare services, unnecessary usage of emergency department and hospital stay resources in rural and remote Australia increases. The average cost of a bed day per general patient is \$3,100, with an average pediatric hospital stay in NSW being 2.9 days. By providing specialist care within communities, families save on unnecessary stays which can now be utilised by other patients in need of tertiary care. The use of Medical Wings results in an estimated \$25.6m in hospital savings due to Medical Wings treating patients within their communities.

STRESS AND ANXIETY

Medical Wings reduces stress and anxiety for clinicians involved in rural and remote outreach, due to reduced travel time and a seamless end-to-end travel experience. This includes flexible flight times, no check-in wait times and increases the amount of patients they are able to see in one session.

GROWTH AND CLINICIAN EXPERIENCE

Having clinicians from metropolitan areas regularly visit rural healthcare regions provides an access to healthcare networks for rural practitioners that work alone, including a space for them to de-brief, connect and be mentored. Without Medical Wings, rural practitioners would be working in complete isolation. For clinicians that work in mostly metropolitan areas, exposure to rural and remote healthcare services can provide perspective to the access needs and challenges that exist outside urban areas, therefore increasing health literacy and overall rural health understanding.



³⁵ Landow, S., (2021). Kids hospitalised with chronic illness up to three times more likely to fall behind at school. UNSW Newsroom. Available at: https://newsroom.unsw.edu.au/news/health/kids-hospitalised-chronic-illness-three-times-more-likely-fall-behind-school ³⁶ Note the cost of school absenteeism has not been quantified to remain conservative due the risk of oversimplifying complex attribution assumptions.

 ³⁷ Temple, K., 2017. Rural Health Literacy: Understanding Skills and Demands is Key to Improvement. The Rural Monitor.
 ³⁸ Australian College of Nursing (2018) Improving health outcomes in rural and remote Australia: Optimising the contribution of nurses, ACN: Canberra: Australia.

³⁹ Bishop, L., Ransom, A., and Laverty, M. (2017). Health care access, mental health, and preventive health: Health priority survey findings for people in the bush. Canberra: Royal Flying Doctor Service of Australia.

THE SOCIAL AND ECONOMIC IMPACT OF MEDICAL WINGS FOR AUSTRALIA

The economic benefit of Little Wings is estimated at \$295,000 for each mission conducted, with a total economic benefit of \$38m in FY22, based on 129 missions across NSW. These quantified benefits impact families, clinicians and the State government directly. However is it important to also consider the impact of some of the qualitative benefits discussed earlier including improved family wellbeing, increased clinician experience and the health outcomes and cost savings providing care within communities.

The Medical Wings model plays a critical role in linking the metropolitan healthcare system to rural and remote Australia to help close the gap experienced by a large number of families in Australia. Medical Wings addresses health inequity directly by providing access to care and as Medical Wings continues to grow in regional and remote Australia, it is expected that further efficiencies and economies of scale will be realised, meaning that Medical Wings can continue to create a positive social and economic impact for families, communities, the health system, and for Australia overall.

"Access to local services is important, the addition of a [specialist] clinician traveling from Newcastle lessons the wait time and also assist in helping to close the gap for many of the Aboriginal children and families | see"

"It is important to continue [the model] so we can continue to offer specialist services to families in rural and remote regions of NSW who would otherwise be disadvantaged and who would have to carry the burden of poor access to medical care and the financial burden of having to travel."

"This program is invaluable!"

"The Program is instrumental in allowing families to not be disadvantaged by the distance they live from a major tertiary hospital. The program enables a multidisciplinary team to provide a comprehensive service to rural families and children that otherwise would need to travel long distances, creating financial and personal stressors on the family"

"It very positively affects hundreds of families each year. Being able to access specialist medical care close to home, no matter where in NSW you live is very important as is being recognised as a priority for our regional and rural communities. Providing quality, effective, safe and efficient outreach services is only possible with the help of organisations like Little Wings."





A. ECONOMIC MODEL AND ASSUMPTIONS

This appendix includes all the details of the assumptions that were included to produce the economic impact model. The model is based on a list of assumptions to estimate the economic and social impact of the Medical Wings Model in FY22. The list of assumptions across various input categories is outlined in Table 6.

Table 6: List of model inputs and assumptions

Component	Value/Calculation	Additional notes/sources
Average cost per Medical Wings Mission	Average: \$1,800	Little Wings Data
Total Cost of Medical Wings Model FY22	\$113,000	Little Wings Data
Number of families accessing Medical Wings	Number of total people: 3,225	Little Wings Data
Increased utilisation of Aboriginal and Torres Strait islanders accessing care throughout the year	4x increase in MBS utilisation	Gruen RL, Weeramanthri TS, Bailie RS. Outreach and improved access to specialist services for indigenous people in remote Australia: the requirements for sustainability. Journal of Epidemiology & Community Health 2002;56:517-521.
Increased utilisation of primary health services due to rural fly in fly out services	36.6 percent for general population	Gardiner, F., Bishop, L., Graaff, B., Campbell, J., Gale, L., and Quinlan, F. (2020). Equitable patient access to primary healthcare in Australia, Canberra: Royal Flying Doctor Service of Australia
Average cost of bed days	\$3,100 Calculated using triangulated weighted averages.	Peter Hicks, Sue Huckson, Emma Fenney, Isobel Leggett, David Pilcher and Edward Litton Med J Aust. 2019; 211 (7): 324-325. doi: 10.5694/ mja2.50309 Page, K., Barnett, A.G. & Graves, N. What is a hospital bed day worth? A contingent valuation study of hospital Chief Executive Officers. BMC Health Serv Res 17, 137 (2017). https://doi.org/10.1186/s12913-017-2079-5
a verage length of paediatric ospital stay	2.9 days Calculated using triangulated weighted averages. Noted that this is a general hospital triangulation as opposed to specific rural hospital stays	Independent Hospital Pricing Authority (2021) National Hospital Cost Data Collection Report Financial Year 2019-20, IPHA: Sydney, Australia. Australian Institute of Health and Welfare (2017-18) Admitted patient care 2017-18
Referral reductions	85% in reduction of unnecessary hospital referrals	Bishop, L., Ransom, A., and Laverty, M. (2017). Health care access, mental health, and preventive health:Health priority survey findings for people in the bush. Canberra: Royal Flying Doctor Service of Australia.
Average Out-of-pocket Treatment Costs (OOPC)	Average OOPC of treatment: \$1,540 Calculated using triangulated	Average OOPC for treatment: Harvey R. (2013) Out-of-pocket payments for health care - finding a way forward. Parliament of Australia.
	weighted averages.	accessed 15 April 2022. Mumford, V., Baysari, M. T., Kalinin, D., Raban, M. Z., McCullagh, C., Karnon, J., & Westbrook, J. I. (2018). Measuring the financial and productivity burden of paediatric hospitalisation on the
		wider family network. Journal of paediatrics and child

Value/Calculation Component Average Out-of-pocket Travel Average OOPC of travel: \$640 Calculated using triangulated Costs (OOPC) weighted averages. age Out-of-pocket Average OOPC of omodation Costs (OOPC) accomodation: \$270 Calculated using triangulated weighted averages.. \$1,130 of Absenteeism Calculated using triangulated weighted averages. \$590 of Presenteeism

B. STAKEHOLDER CONSULTATIONS

We thank the time and effort of the stakeholders belo and social impact report.

Name	Role	Location
Katherine Berry	OOHC contact, NSW Health	Taree, Hunter Region
Jascha Kehr	Cardiologist, John Hunter Children's Hospital	Hunter New England LHD
Mian Bi	Managing and Medical Director, Regional Specialists Tamworth	Tamworth
Paul Craven	CEO, John Hunter Children's Hospital	Hunter New England LHD

Addit	ional	notes,	/sources

health, 54(9), 987-996. https://doi.org/10.1111/jpc.13923 Yusuf, F., Leeder, S. (2020) Recent estimates of the out-of-pocket expenditure on healthcare in Australia. CSIRO Australian Health Review, 44(1), 340-346. https://doi.org/10.1071/AH18191

Average OOPC of accommodation: Kornelsen, J., Khowaja, A.R., Av-Gay, G. et al. The rural tax: comprehensive out-of-pocket costs associated with patient travel in British Columbia. BMC Health Serv Res 21, 854 (2021). https://doi.org/10.1186/s12913-021-06833-2 Mumford, V., Baysari, M. T., Kalinin, D., Raban, M. Z., McCullagh, C., Karnon, J., & Westbrook, J. I. (2018). Measuring the financial and productivity burden of paediatric hospitalisation on the wider family network. Journal of paediatrics and child health, 54(9), 987-996. https://doi. org/10.1111/jpc.13923

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Becher, B., Dollard, M. (2016) Psychosocial Safety Climate and Better Productivity in Australian Workplaces: Costs, Productivity, Presenteeism, Absenteeism, Safework Australia: Canberra: Australia.

hank the time and effort of the stakeholders below for their contribution in informing the economic

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