Telecommunications and Community Wellbeing : A review of the literature on access and affordability for low-income and disadvantaged groups

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Executive Summary

Background to the review

In Australia, Telstra is the nominated telecommunications provider responsible for meeting universal service obligations (USOs), although other carriers contribute to the costs. Telstra's licensing conditions also require it to offer services for low-income groups. The *Access for Everyone* package was introduced in 2002 and provides a range of services and assistance to low-income and disadvantaged customer groups. These services are funded by Telstra alone and not through the universal services fund.

The effectiveness of these programs has been regularly researched and monitored by the Low Income Measures Assessment Committee (LIMAC), consisting of representatives of nine peak welfare bodies, plus relevant government departments.[1]

There has been increasing policy concern in recent years that with rapid changes taking place in communications technologies, a 'digital divide' has been opening up between those able to take advantage of technological advances and those who for a variety of reasons cannot.

This review was commissioned by LIMAC as a contribution to further debate and public policy development on access and affordability for telecommunications. The report has a specific focus on people with low incomes and other disadvantaged social groups and will form part of LIMAC's annual report to the Commonwealth Minister for Communications on Telstra's performance in this field.

The report consists of a search and review of the key literature on the relationship between telecommunications and community wellbeing, access and affordability issues for disadvantaged groups and a benchmarking exercise on how Telstra's programs compare with those in other comparable countries. The report concludes with some recommendations for taking forward practice and policy debates on access and affordability in the light of rapid technological change.

Telecommunications and wellbeing

Human wellbeing is an elusive concept, but in recent years it has moved from being one primarily measured in economic terms to one with a more multi-dimensional interpretation, in line with the broader human progress measures of the United Nations 2000 Millennium Development Goals.

These are relevant to this review because they touch directly on the claimed applications of communications technologies, including their ability to link people to essential services and to educational or employment opportunities, and to foster social participation and connectedness.

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[1] Australian Council of Social Service, Anglicare Australia, St Vincent de Paul Society, The Salvation Army, The Smith Family, Jobs Australia, Homelessness Australia, Council on the Ageing and the Department of Families, Housing, Community Services and Indigenous Affairs. Observers are Telstra, the Australian Communications and Media Authority and the Department of Broadband, Communications and the Digital Economy.

There is considerable evidence that new forms of telecommunication can bring both macroeconomic benefits, accruing to national economies, and microeconomic benefits accruing to individuals, both in developed and developing countries. There is also some evidence that lower-income groups can benefit particularly from access to mobile phones, through improved work and business opportunities and productivity gains.

This has been particularly evident in some developing countries, where mobile phones have been viewed as a key tool in anti-poverty strategies, although some critics argue that this effect has been overstated. It appears that innovative shared-access schemes are likely to be superseded when mobile phone costs fall sufficiently to allow widespread individual ownership.

Social benefits are also important, including maintenance of familial links, enhancement of social capital, increased capacity to acquire information and skills, personal safety and access to emergency services.

A key area of policy concern, however, is that access is currently inequitable and affordability a problem for significant proportions of the population. In Australia, although the notional cost of mobile phone usage has been falling, it appears that expenditure on ICTs as a whole has been growing and for a significant minority of households this is placing some strain on family budgets.

The 'digital divide' is also continuing in Australia, even though access to internet connections has been increasing. In Australia, as in other countries, those less likely to have internet access include people on low incomes, people without tertiary education, people without English-language skills, Indigenous people, people with disabilities, older people and people living in remote areas.

However, the digital divide concept is less useful in the changing technological context than that of 'digital exclusion', as digital exclusion tends to follow and reinforce existing social inequalities. There is evidence that as telecommunications usage becomes normal practice for a majority, those unable to access ICTs become further disadvantaged, particularly where access to many public and government services is increasingly moving online.

At present, surveys are not showing that access to mobile phones or the internet are regarded by a majority of the population as a necessity, such that without them people may be seen consensually as 'poor' or 'socially excluded'. However, welfare service clients are more likely to see these items as necessary, reflecting both that they are becoming essential for people having to engage with public services and that access to fixed-line phone services may be more difficult for people without resources, secure accommodation and good credit records.

Telecommunications usage by disadvantaged groups

Since around 2002, mobile phones have become the dominant technology in voice communication as the number of mobile subscribers has overtaken the number of landline subscribers globally.

This has implications for the providers of fixed-line services and for Telstra in particular. Not only does fixed-to-mobile substitution place competitive cost pressures

on fixed-line services, it also potentially makes schemes like *Access for Everyone*, which is focused primarily on fixed-line services, less relevant.

Telstra is also obliged to retain and maintain an effective network of payphones for public use. Their use has also been in decline as the popularity of mobile phones grows, but they remain highly important for particular groups of the population.

Broadband internet access is also markedly increasing in Australia, but socio-economic characteristics continue to influence the rate of connections: people living in metropolitan areas, households with children and higher income households are more likely to be connected. A 2007 Australian survey of internet use found that around three-quarters of those surveyed had recently used the internet either at home or at work, and that broadband users valued it more highly, using it for longer periods and for a wider range of purposes. More than 40 per cent, however, still did not have broadband in their home.

In spite of the general increase in use of ICTs, there remain significant barriers to access and affordability as well as complex issues of usage for particular disadvantaged groups, including people living in remote areas, Indigenous communities, homeless people, older people, people with disability and people from cultural and linguistically diverse communities.

Public service obligations and innovations in an international context

Telstra's *Access for Everyone* package compares favourably with similar schemes in the UK and the US, in terms of its breadth of coverage across a range of disadvantaged groups and its focus on their particular needs. By contrast, schemes in the other countries are targeted mainly just at households with low incomes.

In addition to the *Access for Everyone* package, Telstra has developed training programs in ICT use for older people and a new mobile handset aimed at this group. There is also government assistance with telecommunications needs for people eligible for income support and pensioners, as well as a new national internet access scheme for seniors.

Although mobile phones and internet connections are available to subscribers in Australia and the UK using the special schemes, access to and use of these services is not subsidised in the way that fixed-line services are. In the US, on the other hand, a new Safelink Wireless Program has begun to be rolled out, involving a free mobile phone with subsidised prepaid calling and free air time for eligible customers. Safelink is provided by a company independent of the main telecommunications providers and funded by government.

Conclusions and recommendations

The findings of the review suggest that Telstra's *Access for Everyone* program, and the work of LIMAC, continues to make a significant contribution to addressing affordability issues for a range of low-income groups, and that the package, through its breadth, compares relatively well with those available in the US and UK.

However, affordability continues to be a crucial and relatively neglected area of telecommunications. Access to telecommunications has become more, not less,

central to social participation, so its affordability has increasingly direct, rather than indirect, implications for social exclusion and inclusion.

Further, social participation increasingly relies on technologies over and above traditional fixed-line, standard telecommunication services, which have been the focus of universal service obligations and affordability measures.

The report recommends that LIMAC closely examine the development of the new US Safelink wireless program to see whether lessons might be learned from its implementation for Australia, both in terms of the overall approach and in terms of funding arrangements. We would also recommend that consideration be given to new approaches to broadband internet.

Many disadvantaged people also are excluded from use of these technologies by lack of knowledge and skills. We would suggest that a role for LIMAC and Telstra could also be in discussing how a further contribution could be made to fostering digital literacy amongst the disadvantaged customer segments that make up the *Access for Everyone* clientele.

This is also an important time for the wider telecommunications industry, the community, government and the regulators to take up and debate more comprehensive policy measures in telecommunications affordability. This would provide an opportunity for in-depth discussion of the areas of need of low-income consumers, especially with regard to technologies rapidly becoming standard, such as mobiles and broadband. It would also provide the opportunity to discuss key questions about how affordability policy should be structured to ensure all consumers are better included in Australia's digital economy, namely:

- whether affordability becomes a wider industry responsibility (building on the LIMAC model);
- or whether affordability becomes a dedicated government program (as suggested by the US example).

1 Introduction

1.1 Background to the research

In Australia, Telstra is the nominated telecommunications provider responsible for meeting universal service obligations (USOs), although other carriers contribute to the costs of providing universal services (Australian Communications and Media Authority, 2008a: 97-98). As a separate requirement of Telstra's license condition, it is required to offer services for low income earners (LIMAC, 2003: 2). This condition was introduced as a protection for low-income households from cost increases arising from rebalancing of line rental and other charges, following the Australian Competition and Consumer Commission's (ACCC) 2001 report on Telstra's pricing arrangements.[2]

As a result, Telstra established the Low Income Measures Assessment Committee (LIMAC) in 2002, involving representatives from nine peak national welfare agencies and relevant government departments, and launched its *Access for Everyone* program. The *Access for Everyone* package aims to provide affordable access to telecommunication services for customers on a low income, as well as products and services for other disadvantaged groups. These services are not funded through the USO arrangements and the cost is thus borne by Telstra alone.

In June 2007, the then Minister for Communications, Information Technology and the Arts announced a review of the USO. The current Government has yet to make an announcement on this review, citing the need to establish the process for the new National Broadband Network first (Tindall, 2008).

There has been increasing policy concern in recent years across both developed and developing economies that with rapid change taking place across all key areas of communications technology, a 'digital divide' has been opening up. This divide is between those able to take advantage of technological advances and those who for a variety of reasons (including low income, old age, remote location, disability, low skill levels or other disadvantage) cannot (eg., Willis and Tranter, 2002; Lloyd and Bill, 2004; Chen and Wellman, 2005; Chinn and Fairlie, 2006; Holloway, 2006).

There are differing views on the extent to which this divide is entrenched and will remain in place, and on whether the acquisition of ICT skills automatically brings social advantages. Nevertheless, it is generally accepted that in addition to being essential for national economic prosperity, access to communications technology can enhance both individual and community wellbeing in a wide range of ways (Fallows, 2004; Crump, 2006).

In recent years successive Australian Governments have taken a number of initiatives to promote both technological development in telecommunications and broader access to these technologies across the community.

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2 The policy rationale for this condition is outlined in the Regulation Impact Statement for the Carrier Licence Conditions (Telstra Corporation Limited) Declaration 1997 (Amendment No. 2 of 2002).

These include:

- The 2005 *Connect Australia* package to improve broadband speeds and rollout, better mobile phone coverage and assistance with communications for schools, hospitals and universities;
- The June 2007 *Australia Connected* initiative, which aimed to ensure that 99 per cent of the population can access fast affordable broadband by June 2009. This included a $958m grant to the Opel Networks joint venture between Optus and Elders Ltd to deliver broadband services to regional remote areas using Worldwide Interoperability for Microwave Access (WiMax) technology. It should be noted, however, that Government funding to Opel was withdrawn in early 2008 because their implementation plan did not meet contractual requirements (see Conroy, 2008a);
- On 11 April 2008, the Minister for Broadband, Communications and the Digital Economy, announced the release of a request for proposal process to roll out and operate a new, open access, high-speed, fibre-based broadband network. In December 2008 it was announced that Telstra had been excluded from this process because it did not met all the tender requirements (Conroy, 2008b).

In a number of developing countries, cheap and accessible forms of communication have become key elements of anti-poverty strategies. They have been shown to be effective in breaking down barriers to market access experienced by many in poor rural communities (see, for example, Bhavnani et al., 2008). While there is increasing understanding of the range of ways in which different countries and telecommunications companies are innovating to make services more affordable and accessible (Milne, 2006), there are still gaps in our knowledge about how effective infrastructure development and regulation can assist this process (Parker et al., 2005).

The other side of these potential benefits is that lack of access to technologies and services is coming to be seen as one dimension of what is referred to as 'social exclusion' (Saunders, 2003; Hays, Gray and Edwards, 2008). However, to understand the use of telecommunications as an aspect of social inclusion requires looking beyond simple issues of access to technology. Engagement in networks also requires specific skills, literacies and knowledge (Notley and Foth, 2008). There is thus a role for public policy in fostering these skills which goes beyond simply placing regulatory obligations on the telecommunications industry.

Most developed countries place universal service obligations on their main telecommunications carriers, although how these operate and are regulated varies significantly between countries (Wellenius, 2000; Department of Broadband, Communications and Digital Economy, 2004; Xavier, 2006). The structure and regulation of USOs themselves are likely to undergo some changes with the advent of Next Generation broadband technologies and the consequent convergence of voice, packet data and internet services. There is a debate going on in a number of countries about whether USOs should be extended to cover all these linked services (and if so how this should be funded), or whether USOs as such should remain focused on basic telephony services (eg., Oftel, 2005; Xavier, 2006).

The *Access for Everyone* suite of programs currently includes:

- discounts on telephone connection charges and monthly account charges for eligible pensioners;
- MessageBox services to homeless and transient people through community agencies;
- Phonecards and PhoneAway calling cards to people without a phone service, including asylum seekers, through community agencies;
- emergency relief assistance to home phone customers via Telstra Bill Assistance certificates, through community agencies;
- an InContact telephone service, free of monthly account charges, for over 80,000 people who cannot afford a full home phone service; and
- Sponsored Access services, free of monthly account charges, for crisis and emergency accommodation centres, so that residents can be reached by telephone.

Since 2002 the effectiveness of these programs has been researched and monitoring by LIMAC. In August 2007 LIMAC released the results of five years of market research on program awareness, access and effectiveness. This showed that there had been a marked improvement over the years in affordability of basic services and in the breadth of accessibility of services for key disadvantaged groups (LIMAC, 2007). LIMAC also called on other telecommunication companies to follow Telstra's lead in this field.

As the next stage of its research, LIMAC commissioned this review of the literature on communications and wellbeing by the UNSW Consortium as a contribution to further debate and public policy development. The report has a specific focus on people with low incomes and other disadvantaged social groups and will form part of LIMAC's annual report to the Commonwealth Minister for Communications on Telstra's performance in this field.

1.2 Methods

The main method specified for this research project was that of literature search and review. Types of literature review vary within a hierarchy of scientific rigour, headed by systematic review, whereby relevant studies are assessed for their methodological robustness against a set of rigorous pre-determined criteria. This 'gold standard' method is appropriate where a mass of comparable data exist on a specific outcome or topic, especially in the medical or 'hard' scientific disciplines, and where significant resources are available for the review.

In this project much of the information or data available do not fit these criteria. Much of it is 'grey' or non-academic literature, including government and industry reports and market research. The short timeframe for the review also did not support attempting to adopt a systematic review method. We have nevertheless attempted to be as systematic as possible and have drawn on peer-reviewed research wherever it was available. A decision was also made to focus mainly on material published after 2000, in view of the rapid developments in communications technology, and with a further emphasis on more recent material.

In certain areas of the topic under review, particularly discussion of new communications technology and the spread of mobile phone usage within developing countries, the volume of material was so great that because of the short frame for the review the focus of scrutiny needed to be narrowed down to avoid articles and reports that had little immediate relevance to the key topics. On the other hand, some relatively ephemeral material, such as ministerial or industry press releases, have been included in discussion because they shed light on important policy developments. Where research studies were based on small samples or may be of limited reliability this is noted.

The methodological basis for this report therefore includes the following.

- consultation with LIMAC and Telstra to identify more precisely any specific areas to be included within the review and any to be excluded;
- consultation with other relevant academics, policymakers, peak bodies, or experts in the area who may be able to advise on available literature and documents, including members of LIMAC itself;
- review of the available academic and other literature from a diverse range of disciplines using appropriate social science and other academic databases, government sources and generalised internet searching methods (such as Google);
- inclusion of benchmarking and comparison information on developments in accessible communications from comparable countries such as the US and the UK; and
- noting of any apparent issues of robustness or rigour of particular information sources, so that a judgement can be made about the relative reliability of different data.

1.3 Report structure

Section 2 opens up the discussion on how telecommunications may affect wellbeing, at national, community and individual levels, and how lack of access to ICTs can contribute to social exclusion. Section 3 focuses in on disadvantaged groups within the population, what we know about their usage of telecommunications and the barriers that exist for different groups in accessing these technologies. Section 4 then compares the progress made in Australia in making telecommunications accessible to low-income and disadvantaged groups with that in other comparable countries. Section 5 draws together the conclusions of the research and puts forward some recommendations for LIMAC's consideration.

2 New dimensions of telecommunications access and affordability: wellbeing and social inclusion/exclusion

2.1 Defining wellbeing

This report concerns the relationship between access to telecommunications and the wellbeing of communities and individuals, especially those facing social disadvantage. But what do we mean by wellbeing? Human wellbeing is an elusive concept which does not have a universally accepted definition and involves many, often competing, interpretations (Mandelson, 2005; McGillivray and Clarke, 2008). Traditionally it has been regarded as largely synonymous either with health or with economic security and in the latter case assessed mostly in monetary terms, through measurement of income and assets. In recent years, however, the concept of wellbeing has taken on a more multi-dimensional interpretation, in line with the broader human progress measures adopted by the United Nations in its 2000 Millennium Development Goals (United Nations, 2000).

This shift from income measurement alone to one incorporating these broader questions of access to education and health services, political freedoms and empowerment, gender equality, ecological sustainability and happiness reflects influential work on human capabilities and needs by Sen (1987), Nussbaum (1992, 2000), Doyal and Gough (1991) and others. Many of these different domains of wellbeing remain controversial and difficult to measure because of their subjective nature (Headey and Wooden, 2005; McGillivray and Clarke, 2008). They are relevant to this review, however, because they touch directly on the claimed applications of communications technologies. These include their ability to link people to essential services and to educational or employment opportunities. They also include the potential to foster social participation and connectedness, and to enhance personal security and autonomy.

In a recent speech to the National Consumer Congress, the Secretary to the Treasury, Ken Henry (2007), used telecommunications as a prime example of the benefits flowing from competition policy to the economic wellbeing of Australians. He argued that deregulation and privatisation in telecommunications has led to greater choice and opportunity for consumers, as well as producing distributional benefits through competitive pricing. Risks and complexity can also flow from competition, but risk, he argued, is well controlled through the regulatory bodies. He did, however, note that in a technology-driven sector competition tends to lead to great complexity – in competing service packages, for example. The policy question is whether complexity can be reduced without compromising the other claimed benefits.

The next sections look in more detail at the benefits (and possibly disadvantages) of access to information and communications technology (ICT). The literature sees these benefits mainly in the following terms:

- Economic benefits to society as a whole (macro)
- Economic benefits to individuals and households (micro)
- Social benefits (accruing both to individuals and communities)

2.2 Economic benefits

Macro-economic benefits

There is good evidence that telecommunications services are an increasing contributor to the growth of economies of both developed and developing countries. One US study by Entner and Lewin (2005) showed that the economic impact of the US wireless telecom industry alone was significant, generating an estimated $118 billion in revenues and contributing around $63 billion in federal, state and local fees and taxes. In 2004, 2.5 per cent of all jobs depended on the wireless industry.

In Australia the mobile telecommunications industry is also making an increasing contribution to the economy both directly and indirectly (Access Economics, 2007). Access Economics' modelling found that the direct contribution of the mobile phone industry to the economy, as measured by Industry Gross Product, grew from $4.5b in 2001-02 to $5.8b in 2005-06, while indirect benefits, including downward pressure on fixed-line phone costs and increased labour productivity, also grew significantly. In total they estimated that the mobile industry increased Australian real Gross Domestic Product (GDP) by $6.4 billion, with associated positive impacts on investment (up by $3.7 billion) and household consumption (up by $3.0 billion), and increased employment by 53,000 full-time equivalent jobs.

Similarly, a Concept Economics study, cited by Telstra Group Managing Director for Public Policy and Communications, David Quilty, in a recent speech to the National Press Club suggests that mobile broadband is cutting costs by reducing the need for travel, saving time and generating new business, and that Next Generation technology could increase GDP by up to 0.7 per cent per year in Australia (Quilty, 2009). A UK study by the Centre for Economics and Business Research (CEBR) has also estimated that mobiles phones have increased UK labour productivity by just under one per cent, amounting to a total productivity gain in GDP of £8.9 billion in 2004 (CEBR, 2005).

Micro-economic benefits

The fact that growth in new communications technologies boosts the economy as a whole does not automatically mean that individuals directly benefit as well. So do these macro-economic also flow on to individuals and households, and more particularly do they benefit lower-income households? There is some evidence that they can. Recent research by the US New Millennium Research Council, for example, found that mobile phones can significantly boost the earning power and economic productivity of low-income earners (Sullivan, 2008). More than 75 per cent of those surveyed reported using their mobile phone to discuss work or money, while nearly one-third of those in work said their phone had helped them make money and acquire new work or customers. Sullivan also found that the income gains attributed to mobile phone usage were more significant for low-income and 'blue collar' households than for other segments of the population.

Another impact of the increased take-up of mobile phone technology and the high level of industry competition is that prices have fallen significantly, making access to phones much more widely available to people on lower incomes. In Australia, between 1997-98 and 2005-06, average prices per minute fell by more than half, attributed in part to the growing popularity of 'capped' plans which provide mobile

subscribers with heavily discounted package of mobile services for a fixed price (Access Economics, 2007). However, it should be noted that these distributional benefits can come with increased risk and complexity, as Henry (2007) has warned. The profusion and variety of capped plans and service packages can be highly confusing for many customers, with risks of accruing additional costs because they are not aware of the 'small print' in many contracts. This problem has recently led the UK regulator Ofcom to issue guidance for communications providers and consumers on the law affecting extra charges consumers can face on top of their usual bill (Ofcom, 2008a, 2008b).

Recent Australian market research carried out for AAPT also suggests that the complexity of service plans may be inhibiting customers from searching for the best price deals, and that this, together with the new services and hardware available, is actually driving up levels of consumer expenditure on ICTs (AAPT, 2009). The survey of 1000 people aged over 16 found that households' telco costs had increased by an average of around $44 a month in the past year. More than one in three households reported that the cost of keeping up with technology for their children was a burden on the household budget, and around one-third were aiming to restrict time spent on the phone and internet in an attempt to manage expenditure.

The impact of ICTs in developing countries: macro versus micro?

Much of the international literature concerning the economic impact of communications technology focuses on developing countries, because it is there that ICT take-up – especially that of mobile phones – has been most rapid and appears to be most directly linked with economic benefits to the lowest-income groups. We briefly outline the key points arising from this literature as there may be some lesson of relevance for attempts to deliver ICT access to remote parts of Australia.

Bhavnani et al. (2008) have recently reviewed the evidence on the economic impact of mobile telephony in developing countries for the World Bank. They find strong evidence that ICTs, and mobile telephony in particular, impact positively on economic welfare by generating additional GDP, creating employment, increasing employment productivity and expanding tax revenues. The uses of mobiles in poor rural areas include gaining knowledge about market opportunities, arbitrating price information and coordinating sales, thereby increasing incomes and reducing wastage (Myhr, 2006; Jensen, 2007). Mobile telephony can also substitute for transport in remote communities, reducing business transaction costs.

The take-up of mobile phones in a number of developing countries has been rapid, often defying predictions that low education levels, poor infrastructure and other disadvantages would inhibit take-up in poorer rural areas. Mobile telephony has proved to have a number of advantages in this respect over fixed-line phones services, including affordability to even the poorest of people through innovative use-models such as sharing of phones through SIM cards and payments for air time through micro-prepayment, as well as emergence of even cheaper secondary markets for used devices. The economic impact has been so great in some countries that mobile phones are now commonly regarded as key instruments of poverty reduction (Praharad, 2004; Souter et al., 2005; Ovum, 2006; Bai, Ganesan and Srivastava, 2007).

One of the most widely cited examples is that of Grameen Telecom's Village Phone scheme in Bangladesh, where as an extension of the Grameen Bank micro-credit schemes, mobile phones have been offered to women loan participants to use in their own enterprises and for re-sale of phone time to others, providing an additional source of cash income (Richardson et al., 2000; Cohen, 2001). However, while this project was initially highly successful, recent evidence suggests it has largely foundered as a direct means of alleviating poverty, partly because of the rapid spread of mobile phones amongst the population of Bangladesh more widely. Schaffer (2007) argues that the 'shared access' model which the Village Phone represents, is a halfway house between no one owning a mobile phone and everyone owning one. Shared access models can be effective but tend to have a limited life when prices drop to the point where widespread individual ownership is achievable. This is a pattern which can be observed in many developing countries and has implications for any similar models of shared access in rural and remote areas of Australia.

De Silva and Zainudeen (2007), also inject a note of caution into the wider debate about poverty alleviation, arguing that while the macroeconomic gains may be impressive, empirical evidence for economic benefits at the individual and household level is not extensive. Their own study of households at the 'bottom of the pyramid' in five developing countries found that ownership of telecom equipment, as opposed to just access, was a significant factor, but even where people owned phones, price or perceptions of price often acted as a deterrent to actual usage.

2.3 Social benefits

While it is not always easy to separate the social from the economic benefits of telecommunications, there is evidence that ICT usage has a number of potential benefits beyond those that are directly monetary. These benefits are often framed in terms of the capacity of new communications technologies to enhance 'social capital', or what might broadly be described as networks that enhance relational and participatory involvement in communities. However there has been a debate as to whether the internet in particular really does provide new and better ways of communication or whether it substitutes for traditional forms of social interaction and actually separates people from community and families, leading to greater social isolation. Wellman et al. (2001) framed this as a 'utopian' versus 'dystopian' debate, but one where until recently there was relatively little empirical data to support either position.

One small US longitudinal psychological study in the late 1990s tended to support the dystopian view, finding that amongst new users of the internet greater time online was associated with declining communication with families, reduced social circles and an increase in depression and loneliness (Kraut et al., 1998). Wellman et al.'s (2001) own study, however, based on one of the first large-scale web surveys, found that internet use seemed neither to increase nor decrease social capital but to supplement it, with heavy internet users also showing high levels of offline participation in voluntary organisations and politics. They argued that internet use was becoming normalised as it was incorporated into routine practices of everyday life.

Recent qualitative research for the UK Department for Communities and Local Government (DCLG), also suggests that ICTs have the potential to strengthen social capital, to increase people's capacity to acquire information and skills, and to provide

access to and knowledge of public services (DCLG, 2008). Several earlier US studies have shown that mobile phone technology is a critical component for family security, personal safety and access to emergency services (Katz and Aakhus, 2001), while internet usage and email have become important information sources and aids to maintaining social networks (Fallows, 2004; Crump, 2006; Pew, 2006). Mobile phones have also been found to enhance social inclusion and autonomy amongst disadvantaged population groups, including older people. They provide 'anytime access' to services that are particularly vital for elderly people, enabling them to retain autonomy and a sense of security (Abascal and Civit, 2001; Sullivan, 2008). Similarly, ICTs have the capacity to enhance independence, sense of control, knowledge and social networking of people with a disability (DCLG, 2008).

There has not been extensive research on the social impacts of telecommunications in Australia. Large-scale statistical research such as that by the Australian Bureau of Statistics has been mainly descriptive and based on simple categorisations of usage such as personal/private and study/educational (Notley and Foth, 2008). In 2007, however, the ABS published a report calling for a more sophisticated framework to be developed to measure the social impacts of ICTs (Australian Bureau of Statistics, 2007).

In developing countries too, the social benefits of mobile phone take-up have been noted alongside the direct economic impacts. Bhavnani et al. (2008) provide a number of examples, including use of mobiles to aid disaster relief and emergency communication, dissemination of locally-generated educational and health information, and maintenance of familial and social contact.

Three particular types of mobile phone usage can be identified in this context (Goodman, 2005; Zanudeen et al., 2005; Bayes, 1999):

- as an amenity and a shared commodity;
- to mediate strong links (with family and friends and other community members – including those overseas); and
- to mediate weak links (with individuals 'outside' the community, such as government officials) .

The new added-value features increasingly incorporated into relatively low-cost mobile phones, including cameras, internet browsing and wireless connectivity, also provide additional means for users to connect to the information society. These features have facilitated the formation and maintenance of social networks, allowing populations that are geographically isolated to become part of a global information community (Ling et al., 2006).

One further area where internet access has been claimed to be of potential benefit is at the community level. A number of qualitative studies have been undertaken in Australia of experiments to enhance local participation in 'e-government' and self-directed learning through providing organised community wide internet access at the local level. Goggin (2003), for example, examined the outcomes of projects to get small regional communities online through the *Networking the Nation* program. His study found that while the program as a whole was successful, the process of getting communities on line at the local level itself raised a host of issues about the

development of social capital, about communities identifying their own local needs and the gaps between their expectations and what was achievable within the resources available.

Meredyth et al. (2005) studied the impact of an experiment in the free provision of networked computers on a public housing estate. The aim was to see whether tenants would use the resources to access online health, housing, educational and employment services, rather than just playing games or seeking entertainment. They found that while usage varied widely and did include game playing, entertainment and downloading of pornography, there was also significant searching for social services, use of government and community agency websites and other forms of self-directed information seeking. However, they concluded that the experiment had more impact in educating individuals than necessarily building 'community' in a traditional sense. Notley and Foth (2008) argue that it is not an 'either/or' situation: ICTs can have a positive impact on both individual social inclusion and community social capital.

What most of these studies tend to show, however, is that the issue is not only about access to the technology itself. The rapid increase in channels by which people can now connect to others across geographical, cultural and economic boundaries also requires the acquisition of 'digital literacy'. To understand use of telecommunications as an aspect of social inclusion or the development of social capital in terms of 'networked societies' involves looking beyond simple issues of access to technology: engagement in networks also requires specific skills, literacies and knowledge that need to be accompanied by structural policies and programs that support inclusive networks (Thomas and Wyatt, 2000; Faulkner and Kleif, 2003; van Dijk, 2006; Notley and Foth, 2008; Smith Family, 2008). Thus there is a role for public policy which goes beyond regulatory obligations placed on the telecommunications industry and specifically addresses how this digital literacy can be disseminated.

Finally, a cautionary note; it should not be assumed that all new forms of communication are necessarily benign. For young people the mobile phone has become an important symbol of group membership and status, providing opportunities for social connection and a means of establishing identity and difference in social networks (Green, 2003). Yet it can also be a means of exclusion and bullying. A small Australian survey of school students by Drennan et al. (2007), for example, found that 'm-bullying' was rife amongst their late high-school age sample and that high levels of distress were caused by threatening or harassing messages and photos. Anecdotal evidence also suggests that the internet and social networking sites are also frequent locations for bullying and harassment.

In summary, therefore, we can say that there is considerable evidence of economic and social benefits to individual and community wellbeing from access to new forms of telecommunications, even if there may also be some potential disadvantages. These benefits can accrue not only to the user population as a whole, but also specifically to lower-income or more disadvantaged groups if they can access and afford the technologies. A key area of policy concern, however, is that access is currently inequitable and affordability a problem for significant proportions of the population. In Australia, although the notional cost of mobile phone usage has been falling, it appears that expenditure on ICTs has been growing and for a significant minority of households this is placing some strain on family budgets.

2.4 'Digital exclusion'

In spite of the rapid growth of mobile phone accessibility, there is still a widespread concern that many disadvantaged people across both developed and developing countries do not have affordable access to the new communications technologies, especially the internet. The separation between those who have access to the new telecommunications technology, and the skills to use it effectively, and those who do not, has come to be known as the 'digital divide'. This concept emerged shortly around the turn of the millennium, as it came to be understood that earlier utopian ideas of the internet as a post-industrial 'geographical equaliser' were flawed because many disadvantaged groups even within the most developed and most 'wired' countries remained excluded from access (Holloway, 2005).

Since then the digital divide has been widely researched both globally and within Australia. Although perceptions of this divide have changed over the years as more information has become available, and as patterns of internet use have themselves changed, there are a number of key issues on which the literature is in broad agreement.

First, at a macro level, studies on internet take-up show that per capita income, overall levels of educational achievement, internet access costs, and the effectiveness of telecommunications infrastructures and policy all have important influences on the level of internet take-up in different countries (Hargittai, 1999; Kiiski and Pohjola, 2002; Chinn and Fairlie, 2006). There is also evidence that the level of regulation placed on internet service providers is a factor independent of other economic factors (Wallsten, 2003; Kauffman and Techatassanasoontorn, 2005). Wallsten found that higher levels of regulation were strongly correlated with lower internet adoption and higher access charges. Controlling for other factors, countries that required formal regulatory approval for ISPs to begin operations had fewer internet users and hosts than countries without such requirements. Countries that regulated ISP final-user prices also had higher internet access costs.

However, even in countries with high overall levels of internet use there are particular population groups that are less likely than others to have access to a computer or the internet. In Australia, as in other countries, these include people on low incomes, people without a tertiary education, people without English-language skills, Indigenous people, people with disabilities, older people and people living in remote areas (Lloyd and Bill, 2004; Chen and Wellman, 2005) .

In Australia, there has been what some would describe as an excessive geographical focus on supply-side issues of the digital divide in terms of broadband rollout in regional and remote areas, which relates partly to longstanding political concerns about inequalities between the city and 'the bush' (Notley and Foth, 2008). Important as infrastructure issues are, this debate has tended to obscure the fact that it is demand-side social and economic factors that are the main inhibitors to more widespread uptake of ICTs. Significant spatial divides in ICT access also exist even within metropolitan areas, not only between the city and the bush (Holloway, 2005).

There are a number of broader problems with the digital divide concept, however, which are usefully outlined by van Dijk (2006). First, it suggests a simple divide between 'haves' and 'have nots' – one that is absolute and difficult to bridge –

whereas in fact most inequalities of access are of a relative kind and also continually shifting. For example, while 'power users' of the internet remain predominantly young, male, affluent and metropolitan, since 1997 the online population has become increasingly reflective of the overall population, with late adopters of technology such as older people catching up with their younger counterparts.

The term 'have-nots' also implies a form of technological determinism which suggests that providing physical access to digital technology would solve problems of inequality in the economy and society, whereas in fact digital inequalities primarily reflect other existing social and economic inequalities.

Digital inequalities may, however, exacerbate social and economic inequalities. The significance of the economic and social benefits accruing to telecommunications is that lack of access to these technologies and services is coming to be seen as one dimension of what is referred to as 'social exclusion'. Social exclusion is increasingly being used as a more nuanced way to understand poverty and deprivation, especially in advanced economies where the majority of the population is relatively affluent (Saunders, 2003). We would argue that this is also a more useful concept than that of the digital divide to employ when discussing access and affordability issues for telecommunications.

One effect of the apparent normalisation of ICT usage, both in terms of the internet and mobile phones, is to further exacerbate disadvantage for a relatively small minority who have neither physical access nor the digital literacy skills to make use of access. As Warren (2007: 1) argues in relation to some rural populations in the UK, 'there is a risk that, as the Internet becomes increasingly regarded as the default communications medium, a minority becomes progressively disadvantaged, first in relative and then in absolute terms'. At a sociological level this is similar to the forecast by Castells (2000; 187) (cited in Notley and Foth, 2008) that 'inside the networks, new possibilities are constantly created – outside the networks, survival is increasingly difficult'.

An important area where this risk is manifested is in children's education. Leading educationalists Patricia and Don Edgar (2009) have recently argued that inequality in access to technology is exacerbating existing inequalities in access to good schooling and other children's services. They say:

> Many parents are pulled in two ways by the new technology – they fear its negative impacts: passivity, physical inactivity, pornography and cyber-bullying. But they sense that without adequate exposure and skill acquisition their children will be disadvantaged. This is the modern version of educational inequality, which has always reflected both parental income and their perceptions of the value of education. (Edgar and Edgar, 2009)

There is also evidence in Australia that a significant minority of disadvantaged individuals and households do not have a home telephone. One national survey found that 15 per cent of a welfare agency client sample had no phone compared with less than under two per cent of a community-wide sample (Saunders, Naidoo and Griffiths, 2007). As part of their input to this survey, the Brotherhood of St Laurence

reported that 24 per cent of their clients were without a telephone (Brotherhood of St Laurence, 2007: 3).

One way in which social exclusion is currently being measured in Australia and elsewhere is through household surveys which ask whether people have access to various goods and services which a majority of Australians consider essential in that no one should have to go without them (Saunders, Naidoo and Griffiths, 2007).

The data on telecommunications items are in fact somewhat ambiguous. In spite of the growing recognition of the potential disadvantages of not participating in the 'networked society', poverty surveys are not yet showing home internet or mobile phones as essential items for avoiding deprivation. Recent Australian data from the survey cited above, for example, shows that 81 per cent of a national community sample and 88 per cent of a sample of welfare agency clients saw having a home phone as a necessity (Saunders, Naidoo and Griffiths, 2007). Only 23 per cent regarded a mobile phone as a necessity, although this figure rose to 42 per cent in the welfare client sample, while the respective figures for having an internet connection at home were 20 per cent and 29 per cent. Similar figures were found in an earlier poverty and deprivation study in the UK (Pantazis et al., 2006).

The fact that a larger minority of welfare agency clients saw having mobile phones and the internet as essential, however, may be a reflection of the increasing need for people receiving benefits or interacting with government services to do this online or with the flexibility of mobile phone usage. For example, the increasing level of job search, reporting and communication obligations placed on jobseekers in recent years has made it difficult for them to meet these obligations to Centrelink and Job Network agencies without having access to mobile phones and the internet. Cheaper goods and services are also available through the internet, through such means as E-Bay. Exclusion from easy access to both these types of services can further disadvantage people who already face financial difficulties (Simons, 2001). Anecdotally, welfare services are also reporting seeing numbers of clients who are increasingly excluded as businesses cut costs and put access to all their services online (Chambers, 2009, personal communication).

These developments make the phenomenon of high mobile phone ownership even amongst poorer household and welfare service clients easier to understand: this may not be so much an issue of choice but more a necessity because obtaining a landline may require resources, including references and secure accommodation, which many people do not have. For pre-paid mobile phones there is no need to receive a bill or commit to a monthly charge or any future expenditure even though this service may end up more expensive overall than a fixed-line service. This is another example of poorer people paying more for the same services (eg., Stewart, 2005).

One explanation for the potential anomaly between the survey evidence and welfare agencies' experience of clients' needs is that the telecommunications world is moving so quickly that acceptance of mobile phone and internet usage as a normal, everyday practice is relatively recent. Both the design of these surveys and the responses to them may not fully reflect current attitudes and perceptions.

A further indicator of demand from people without access to computers in their homes is that of public library computer usage. Data provided to the researchers by

one of the LIMAC members covering recent library internet use in one regional town in NSW showed 313 discrete usage sessions of eight computers in one week and more than 16,000 over the course of the year. The user population consisted mainly of students (both school and tertiary), younger and older unemployed people, migrants and older people (with nearly one-third of users being aged 50 years or over) (Crawford, 2008 personal communication).The preceding discussion concerning the nature of the digital divide indicates that the difficulties facing particular disadvantaged groups in making use of the benefits of ICTs are not uniform. The next section looks at the barriers experienced by different sections of the population, corresponding to LIMAC's customer segments, through the concept of 'digital inclusion'. This concept encompasses both access to ICTS and capability of using them (Thomas and Wyatt, 2000; Faulkner and Kleif, 2003).

3 Telecommunications access and usage by disadvantaged groups

3.1 Telecommunications adoption

Since around 2002, mobile phones have become the dominant technology in voice communication as the number of mobile subscribers has overtaken the number of landline subscribers on a global scale (Srivastava, 2005). Examining the diffusion of digital wireless phone technologies, Kauffman and Techatassanasoontorn (2005) found that countries' levels of GNP and technological infrastructure are both positively associated with take-up, while regulation and higher service prices tends to retard adoption. More recently, however, astronomic growth in take-up in some of the poorest countries in Africa and Asia have shown that rapid changes in technology, low pricing and consumer ingenuity can overcome many of the problems predicted in previous economic modelling (Bhavnani et al., 2008; Stump et al., 2008).

In the United States, a recent study of data collected by the National Health Interview Survey found that nearly one out of six American households used only wireless telephones, while 13 per cent received all or nearly all calls on wireless telephones despite having a landline telephone (Blumberg and Luke, 2008). The same study found that young adults (18-30 years) living in shared accommodation, adults renting their home, those living in poverty and those belonging to an ethnic minority group were more likely to live in a wireless-only household. These findings are supported by several of the latest state reports on the efficiency of the universal telephone service in the US. They observe that consumers are increasingly and rapidly turning to wireless carriers, cable television companies, and Voice over Internet Protocol (VoIP) providers for telecommunications needs (CPUC, 2006, 2007; Blumberg and Luke, 2008).

There are some signs that a similar trend is developing in Australia, with VoIP services growing significantly and offering competitive pricing to its consumers (ACMA, 2008b), although at present VoIP still represents a minute proportion of overall traffic.

The number of mobile phone subscribers in Australia increased from an estimated 6.3m in 1998-99 to 19.9m in 2005-06, an increase in take-up from around 30 per cent to nearly 100 per cent (ACMA, 2007), putting Australia about 20th worldwide. The latest report from ACMA indicates that in June 2008 that the number of mobile phone services exceeded that of the total population (ACMA, 2009) A notable feature of this growth has been the shift from post-paid to pre-paid subscribers: in 2001, the latter made up just over one quarter of the total whereas by 2005 the share of the two payment forms was roughly equal (Access Economics, 2007).[3] Over the same period, although the overall number of fixed-line phone connections has not declined significantly, the proportionate mix of mobile voice relative to fixed-line voice calls has increased and the signs are that what is described as 'fixed-to-mobile substitution'

[3] It should be noted that estimates of mobile phone take-up vary and sometimes refer to the number of subscribers and sometimes the number of handsets sold (which presents a different picture). Data provided by Telstra's market research department also present a different estimate of the prepaid/postpaid split (37 per cent compared with 63 per cent) and an overall adult take-up rate of around 83 per cent (based on Roy Morgan Single Source Survey).

is set to increase further, particularly as the range of services now available via mobile phones, including mobile broadband, grows and becomes more affordable. Younger consumers in particular are increasingly likely to use mobile phones as their main form of voice communication, with fixed lines mainly used for internet connections (ACMA, 2008).

ACMA (2009: 21-22) argues that since the main fixed-line providers also hold about 80 per cent of mobile subscribers, and thus do not have strong commercial incentives to erode their fixed-line revenue, it is unlikely that the fixed-line market in Australia will be eroded by price falls similar to those seen in some other countries. Nevertheless, these developments do have implications for the major providers of fixed-line services and for Telstra in particular. Not only does fixed-to-mobile substitution place competitive cost pressures on fixed-line services, it also potentially makes 'social tariff' schemes like *Access for Everyone*, which is focused primarily on fixed-line services, less relevant. Milne (2006) has reviewed initiatives and innovations to increase telecommunications affordability across a number of countries. She concludes that traditional regulatory provision for social tariffs, which have been focused mainly on fixed lines, are being superseded as low-income people in developed countries follow their counterparts in developing countries by abandoning fixed lines for the flexibility of pre-paid mobiles.

The other form of fixed-line service is the payphone. Telstra is obliged under the USO to retain and maintain an effective network of payphones for public use. Their use has also been in decline as the popularity of mobile phones grows, but they remain highly important for particular groups of the population, especially Indigenous people in remote communities, young and low-income people, and travellers needing to make emergency calls (Australian Communications Authority, 2004). The then ACA's 2003 review of payphone provision found that Telstra's record of repair and maintenance of payphones in remote areas and Indigenous communities was poor and needed to be improved. It also recommended improving standardised access to payphones for people with disabilities.

Broadband internet access is also continuing to climb in Australia. ABS surveys indicate that 52 per cent of all households had broadband connections in mid-2008, a 22 per cent increase on the previous year (Australian Bureau of Statistics, 2008). However, socio-economic characteristics continue to influence the rate of connections: people living in metropolitan areas were more likely to be connected than those in other areas (57 per cent to 43 per cent); as were households with children under 15 compared to households without (67 per cent to 46 per cent). The income disparity remains particularly large, with households with an income of $120,000 or over having substantially higher rates of access (81 per cent) than households with incomes of less than $40,000 (38 per cent).

A 2007 Australian survey of internet use, undertaken as part of the World Internet Project, found that around three-quarters of those surveyed had recently used the internet either at home or at work, and that broadband users valued it more highly, using it for longer periods and for a wider range of purposes (Ewing, Thomas and Schiessel, 2008). More than 40 per cent, however, still did not have broadband in their home.

3.2 Barriers to ICT accessibility for key disadvantaged populations

People living in rural and remote areas

Reviewing the evidence on developing countries, Bhavnani et al. (2008) observe that rural populations share in common a lack of affordable access to relevant information and knowledge services that are crucial to the efficient functioning of markets and could empower disadvantaged communities. They identified a number of constraints to the development of ICTs in rural environments: institutional environment constraints, characterised by a lack of regulation and policies that would stimulate competition and private sector development in the provision of ICT infrastructures; rural infrastructure underdevelopment due to high cost and low priority for ICT investment; and low density of population, low income, and low level of technological literacy. In spite of this, however, economists have found several developing countries (e.g. Morocco, Tunisia, South Africa) defying these constraints. Some of these constraints also exist for remote parts of Australia. A recent report from the Regional Telecommunications Independent Review Committee criticised the lack of assurance of service availability in remote areas, the limited terrestrial mobile phone coverage and high prices for satellite mobile services (RTIRC, 2008). The report recommended a new framework of 'customer service standards' which would cover not only fixed-line and pay phones, but also mobile and broadband, along with the necessary investment to deliver these standards together with skills training for users.

Wireless communication technologies (such as satellite systems) are now seen as an appropriate response to telecommunications take-up in rural communities because they are cheaper and easier to install than wired telecommunications (Xavier, 2006). Emerging technologies such as *ad hoc* networks and improvements to the UHF 802.11 radio system have also been proposed as a way forward for remote and rural settlements (Desert Knowledge Cooperative Research Centre, 2008). It may be that in coming years many of the direct infrastructure problems of accessibility for Australians in rural and remote areas will be overcome. The question remains, however, whether this will be sufficient to deal with both affordability issues and those of digital literacy. This applies particularly to Indigenous Australians living in remote areas.

Indigenous Australians

Indigenous Australians face particularly acute socio-economic disadvantages, including high unemployment, low income, poor health and low educational qualifications. Moreover, the relatively limited data available on ICTs and Indigenous communities indicate that access to both telephones and the internet is far from universal, while use of services is still extremely unevenly spread between Indigenous communities (Radoll, 2005; Papandrea and McCallum, 2006; ABS, 2007b). In 2006, it was estimated that Indigenous Australians were almost 70 per cent less likely than non-Indigenous Australians to have any internet connection at home and half as likely to have broadband (ABS, 2007b). This is partly due to the fact that remote Indigenous communities, in addition to having low socio-economic status, suffer from the same constraints as other remote communities, including inadequate infrastructure, lack of service provision, high cost of access and 'thin' markets (Bandia and Vemuri, 2005).

However, it is also argued that the unique and diverse cultural needs of Indigenous Australians tend to reduce the effectiveness of traditional telephone services and other technologies provided to the wider community (Buchtmann, 2000; Morsillo, 2008). Morsillo in particular, reports on the innovative development of a special service (*Country Calling*) developed in consultation with members of remote Indigenous communities which combined a fixed-line rental (with costs payable though Centrelink's Centrepay automatic deduction from benefits system) with a flexible calling card and micro-prepayments as commonly used in developing countries. The service is still in trial, but it is hoped it may prove a more effective home phone service than traditional fixed-lines and payphones.[4]

Dyson (2006) also argues that the low take-up of ICTs amongst Indigenous Australians is not a product of rejection of western values and technology but a consequence of poor infrastructure and skills. Where Indigenous people have input into the design and management of ICTs they can be enthusiastic adopters of the technology, often using it in innovative and creative ways. To this end, Telstra announced in September 2008 that it was teaming up with Rio Tinto Alcan to connect northern Arnhem Land to high speed broadband internet services via fibre optic cable (Telstra, 2008b).

Transient and homeless people

The social exclusion experienced by transient and homeless people often involves a lack of community and social interaction, poor links to formal social networks and poor access to a range of public services. It can also be associated with behavioural problems, substance abuse and higher rates of mental and health problems than found in the rest of the population. On the other hand, not all homeless people's experience is the same and many are able to function at a reasonable level in society while still not having secure housing.

LIMAC's submission to the Government's Homelessness Green Paper (2008) made the point that despite high levels of access to communications services generally in Australia, a significant proportion of people seeking assistance from welfare agencies do not have a personal communications service. LIMAC argued that access to communications is an essential pre-requisite for people to be able to seek assistance, be contactable by Real Estate agents/landlords, and maintain contact with Centrelink and Job Network or other agencies. Mobiles are moving towards becoming multi-purpose devices that provide access to information as well as communications. Research on homelessness prevention and risk factors in tenancy management indicate that regular support or contact by phone is an effective strategy to improve outcomes (Flatau et al, 2008: 10), while management of rent arrears and reminders to tenants by real estate agents are now routinely done by text or calls to a mobile phone (Short et al., 2008: 29). The resulting White Paper (Australian Government, 2008), however, barely hints at the role of communications in helping to address issues of homelessness. This suggests a need for greater cross-departmental and cross-portfolio recognition of the role of telecommunications in social inclusion.

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[4] The observations of Schaffer (2008), noted above, are relevant here, however, in relation to the common demise of shared-use models when individual mobile phone ownership becomes practical and affordable.

The relationship between communications and homelessness is not necessarily a straightforward one, however. One study in the UK has found that a high proportion of people using the facilities of homeless charities had a mobile phone, but most had only limited experience of computers and the internet (DCLG, 2008). A qualitative study amongst homeless people in Scotland also found that access to or ownership of mobile phones was very common, but that digital inclusion does not necessarily mean social inclusion, because some homeless individuals tended to use ICTs in ways that reinforced the patterns and practices of their subculture (Buré, 2005). While they could act as an important safety net, for example, in allowing them to keep in touch with support agencies, they were also commonly used in connection with drug purchases or other criminal activity. Unlike the internet, which many users found intimidating or problematic because of limited skills, mobile phone were not only easily used, they also could act as a form of tradeable commodity. Although this study was based on a small sample of participants, it highlights the complexity of the relation between ICTs and social inclusion, and nuances the view that access to technologies necessarily leads to expected and beneficial outcomes.

Unemployed people and low-income families

Families living below the poverty line struggle to pay bills and often experience credit problems. Some do not have bank accounts, may have irregular payment of benefits, and thus often experience difficulties in affording home phone and wireless services in the long-run. Similarly, mobile phone contracts are often difficult to maintain because of costly usage charges over the long-term (Sullivan, 2008). Research for the Office of Communications in the UK found that many low-income households who did not have a mobile phone at the time of the survey had experienced financial difficulties in the past with mobile contracts (Ofcom, 2007). This explains the success of pre-paid packages among low-income users which allow a basic connection at low entry prices and a greater ability to control expenditure (Oestmann, 2003; Commission of the European Communities, 2008).

Internationally, the most visible effect of low-income status seems to be the avoidance of mobile phone take-up (Ofcom, 2007). Affordability of mobile phones is generally seen as dependent both on personal income levels and phone service pricing. Yet, as we have seen earlier, these have not proved to be barriers to rapid take-up of mobile telephony in a number of developing countries, partly because of a lack of alternatives and partly because of innovation by both service providers and consumers in terms of service models and price. Also, as Barrantes and Galperin (2008) recently observed, there is no universal agreement as to what constitutes affordable telecommunications because of variations in people's perceptions and needs.

Analysing a range of affordability studies across countries, Milne (2006) concluded that high 'teledensity' rates occur when a basic service basket of 2.5 per cent or less of average household expenditure was available. In the Australian context, average total household expenditure in 2004 (the most recent year for which data are available) was $883 per week, with households in the lowest gross income quintile spending an average of $412 per week and those in the highest gross income quintile spending $1,484 per week (Australian Bureau of Statistics, 2005). Thus a 2.5 per cent phone service basket would represent $22 per week (or about $95 per month) on average for all households, $10 per week (or $43 per month) for the lowest income quintile and $37 per week (or $160 per month) for the highest income group. This is

within the range of commonly available mobile phone capped plans, but still represents a significant proportion of weekly household income for lower-income families.

Aged pensioners and older persons

Generally, aged pensioners have a lower income and poorer health than the rest of the population, while often suffering from loneliness. Surveys indicate that people over the age of 60 tend to use mobile phones for limited purposes, such as calling or texting for emergency situations, or staying in touch with relatives (Kurniawan et al., 2006). Melenhorst et al. (2001) also found that older persons perceive mobile phones primarily as a means to keep in contact with someone emotionally close who lives more than half an hour away, to set time for leisure activities with friends, and to share news. Customer feedback to Telstra also highlights the gains in confidence and independence for older people provided by a mobile phone.

Older people often have difficulties with mobile phones associated with the need to find handsets quickly and with using handsets that include small keys and characters. Unfamiliarity with non user-friendly functions that are only used occasionally can also present problems (Abascal and Civit, 2001). Indeed, as Holzinger et al. (2007) point out, the use of technological applications requires a level of procedural knowledge associated with cognitive performance, which slows down with age. Older people with disabilities also frequently experience extra difficulties in using mobile phones. Hearing-challenged users, for instance, often experience difficulties with interference transmissions during conversation. For users with mobility restrictions, especially for those with limited control over their hands (such as those with rheumatoid arthritis, Parkinson disease), the biggest problem comes in starting and ending conversations (Abascal and Civit, 2001). Text messaging also has its own accessibility problems, with visibility being restricted (Omori et al., 2002).

It is commonly thought that elderly people are reluctant to adopt new technologies, but research has found that they are motivated to use mobile applications when they are sufficiently informed of the product's attributes and benefits. Another factor that explains reluctance is anxiety and low confidence, which are often overcome once elderly people are taught computer-based skills (Melenhorst et al., 2006). The Council on the Ageing (2002) has argued that older people are likely to be a growth market for technology products in the future as existing users age and demand better services.

People with disability

Although the population of people with disability in developed countries is highly diverse in terms of age, ethnicity and educational level, they have, on average, lower income levels due to the financial burden of health care costs and restricted employment opportunity. They also have poorer access to education and housing than other individuals. The accessibility of telecommunications for people with disability has been a longstanding problem. There is a considerable research and policy literature on the problems with accessibility across a range of telecommunications, including mobile phone and internet products, services and technologies (Jolley, 2003; Annable, Stienstra and Goggin, 2007).

While there have been important advances in government and corporate policy on telecommunications and disability (Tilley et al. 2002), there are recurrent problems

with new technologies being inaccessible or difficult to use. Social approaches draw attention to the power relations of technology that needlessly build in, or create disability, where a consumer with impairment would otherwise be freely able to use telecommunications (Goggin and Newell, 2000, 2003). For instance, new features in mobile phones, such as touch screens and speech technologies, are incorporated in a way that excludes many persons with disabilities. For persons with hearing impairments, increasing reliance on speech and other auditory capabilities of the phone can also make them less accessible. For people with visual impairments touch screens and the decreasing size of screens can make mobile phones less accessible. For people with cognitive impairments, the increasing array of complex options and features can also make these phones difficult to use (Jaeger, 2006).

In terms of internet usage, however, it is a mistake to assume that all people with disability face the same difficulties. US research by Dobransky and Hargittai (2006) found that people with hearing problems and some limited walking ability were no less likely than the wider population to be internet users, controlling for socio-economic status, whereas blind people and those with conditions or injuries that globally reduced their functioning were less likely to use the net. This may be because adaptive technology is both difficult to learn and expensive, and lags in development behind the technology to which it is supposed to bring access. People with complex needs often require support and assistance to put together a package of technology that makes telecommunications accessible.

Providers have sought to, and indeed have an obligation under the *Disability Discrimination Act* (DDA) to, make telecommunications accessible for people with disability, but achieving this is actually quite complicated in practice. Mainstream technologies are not necessarily accessible: rather they often require specialised options, or expensive assistive or adaptive technologies. Consumers with disability often fall between the gaps of what is currently provided in the telecommunications area (as a requirement of the universal service obligation, DDA, or codes of practices in telecommunications) and the state-based general equipment schemes. Many consumers with disability are unable to afford the equipment or software that could make taken-for-granted technology accessible to them. They also often lack information on their entitlements or on free options. For instance, UK research found that people with disability on low incomes were often unaware of free adaptive technologies available to them (DCLG, 2008).

In addition, a longstanding issue in affordability for people with disability has been the extra cost incurred to achieve a similar level of access or use to that of their non-disabled counterparts. This has recently been recognized in the Regional Telecommunications Review, which found: ‘People with special needs require access to new technologies and support mechanisms at an appropriate price to enhance their interaction with society’ (finding 1.1.2, RTRC, 2008; see discussion in Tedicore, 2009).

A prominent example has been the use of text technology (such as TTYs) by deaf users, where there has been some recognition of the extra costs incurred because of the slowness of typing compared with much voice conversation. Another example is SMS, a technology popular among deaf consumers because it is convenient and relatively ubiquitous. While SMS is often perceived to be cheap, relatively speaking it is quite expensive, as peak advocacy group Tedicore note: ‘SMS is suitable for short

messages but it is not a conversational service and repeated SMSs between two people to try and simulate a conversation becomes very costly. For example, SMS at 15 cents/100 bytes is the equivalent of $1.5 million dollars per gigabyte' (Tedicore, 2009: 9). For its part, video communication is currently very expensive, yet, with sufficient bandwidth, equipment and services (for instance, a functioning video relay service) the various versions of this could allow communication in Australian Sign Language (AUSLAN).

Despite identification of the issues, a systematic approach to affordability and disability has not been forthcoming, especially in relation to new technologies such as mobiles and internet of demonstrable benefit to people with disabilities. This was a finding of Jolley's 2003 study: 'In developing strategies to spread the benefits of mobile telephony throughout Australia the government has focused on geographical access, and has not explicitly addressed affordability for people on low incomes and accessibility for people with disabilities' (Jolley, 2003: 16). While some action has been taken since this time, notably through the Telstra Disability Equipment Program, billing and credit management options, and the efforts of LIMAC, a comprehensive policy is still needed.

One recent suggestion is a Communications Allowance, proposed by Tedicore and others: 'While Centrelink offers a Telephone Allowance of $132 per year based on eligibility to Disability Support Pension holders, this is totally inadequate to meet the costs of a fixed phone, mobile phone and a broadband connection ... This does not take into account the additional software required by some people with disabilities to make the phone workable for them' (Tedicore, 2008). An alternative idea raised in the context of National Disability Strategy discussions is that of creating a substantial allowance payable to people with disabilities in recognition of the various additional costs they incur — and allowing them to decide where they wish to direct their expenditure (whether on telecommunications or internet technology, or other kinds of technology or additional expenses incurred in everyday life).

In February 2009, the Federal government announced a feasibility study into a new disability equipment program, independent of the carriers. The study will include analysis of emerging technologies and demand, cost and funding options (Shorten and Conroy, 2009). With this study, the consultations around the National Disability Strategy, and also the recognition of the importance of accessible information and communications technologies in many of the provisions of the new UN Convention on the Rights of Persons with Disabilities, it is likely that affordability issues will be widely discussed.

Culturally and Linguistically Diverse (CALD) people

Culturally and linguistically diverse people have certain needs and usage patterns that differ from other segments of the population, although most issues identified with this group are generic across all low-income groups. UK research for Oftel (2003) found that recent migrants, non-English speakers or those with limited English used phones to call abroad more frequently, experienced difficulties in accessing information from suppliers, and could be in financial and housing situations that constituted a barrier to telephone take-up, especially if they were asylum seekers. Oftel also observed that the main distinctive feature of low-income groups was their high use of telecoms to maintain links with geographically spread family members. Thus, telecommunications

hold an important role in the lifestyle of CALD groups. Increasingly, migrants from developing countries where cheap mobile phones are commonly available are making use of these in Australia too, along with cheap pre-paid calling cards for both fixed and mobile services that are commonly available in areas of high migrant concentration. This seems likely to contribute further to the phenomenon of fixed-to-mobile substitution that was discussed above.

Conclusion

Overall, it is clear that there are both specific barriers and complex issues of usage that apply to different disadvantaged groups in accessing ICTs. We now move on to examine some different models of providing special assistance in access and affordability to these customer groups in Australia and other comparable countries.

4 Public service obligations and innovation in telecommunications accessibility and affordability – an international context

In Australia, universal service obligations stipulate that everyone in the community should be offered basic telecommunication services regardless of where they live. Even so, for low-income households and other disadvantaged groups the affordability of basic services is a widely recognised problem. As a result of campaigning and advocacy by welfare and consumer organisations a number specific programs have been set up in Australia and overseas to provide low-income households with access to core telecommunications products and services. It is important to contextualise these initiatives within a broader international picture as many of the emerging issues and concerns relevant to the Australian telecommunications sector are part of a broader policy agenda unfolding on the international stage.

This section mainly examines how the *Access for Everyone* scheme in Australia compares to initiatives established in the United Kingdom (UK) and United Stated (US). The discussion focuses on the UK and US because comparable initiatives have been implemented in both of these countries. Within the European Union, there are clear directives in place which require member states to meet universal service obligations, but no such directives are in place to provide targeted services to vulnerable groups. The literature refers in passing to a number of individual initiatives in European countries, such as Ireland's policy of providing government-funded, free telephone rental for qualifying elderly and disabled people living alone (Wellenius, 2000), but little detail is available. Since 2003, Ireland's policy has been supplemented by a Vulnerable User Scheme, which provides a reduced monthly rental cost and a limited amount of calls at reduced price (Commission for Communications Regulation, 2003). Once this cap is exceeded, subsequent calls up to a further threshold are charged at double the standard rate. Again little detail is available.

Other relevant countries such as Canada were not included in this discussion because while there has been ongoing policy debate about whether similar schemes were needed in Canada (Lawson, 2002; Public Interest Advocacy Centre, 2008), comparable initiatives do not appear to have been introduced. The Scandinavian countries all report processes for meeting universal service obligations, but these mainly refer to the minority of households that are without fixed-line services, mostly because of remote location (see, for example, Sweden's universal service obligation requirements (Swedish Post and Telecom Agency, 2008)) and there is little reference to specific schemes to assist disadvantaged sections of the population.

It is important also to note that the schemes outlined below are only one of a variety of ways in which universal service obligations can be addressed or extended. Governments often seek a range of ways to extend communications access beyond that which the private sector will provide on its own. As Wellenius (2000) has pointed out, in adopting such measures governments have to make decisions on which services to extend, to which populations groups, at what cost, who should provide the additional services and who should pay. The answers to these questions vary widely across countries and across time, particularly in the light of rapid changes in technological possibilities (Department of Broadband, Communications and Digital Economy, 2004).

The benefit of comparing Australian initiatives with overseas equivalents is that it can lead to new insights and a deeper understanding of different pathways to facilitate access to affordable telecommunications. Nevertheless, there are limitations to this approach. For example, it cannot always be assumed that what works well in one context will automatically work well in other social, cultural and political settings. Therefore, it is important to contextualise existing initiatives within the broader context of telecommunications policy and practice in each country to avoid misinterpretations.

4.1 Social tariff schemes in Australia, the UK and the US

Australia

In Australia, Telstra is the nominated provider responsible for meeting the universal service obligation, although other carriers contribute to the costs of providing this service (ACMA, 2008a: 97-98). As a separate requirement of Telstra's license condition, it is required to offer services for low income earners (LIMAC, 2003: 2). However, these services are not part of the USO fund so other carriers do not contribute to Telstra's costs. Telstra launched its *Access for Everyone* program in 2002. The *Access for Everyone* package aims to provide affordable access to telecommunication services for customers on a low income as well as products and services for other disadvantaged groups. The program is targeted specifically at customers who are:

- Transient and homeless
- Low-income families
- Age pensioners
- People with disability
- Unemployed
- Indigenous Australians
- People from non-English speaking or culturally diverse backgrounds

(LIMAC 2003: 2).

The *Access for Everyone* program offers a range of products and services, but central to it are affordable options for low-income households to install a fixed-line home phone. For example, the *InContact* service provides households with a home phone without the cost of line rental (while calls can be received, calls can only be made to emergency numbers or other customer service numbers, or other calls can be made using a phonecard). Eligibility for this service is usually limited to people in possession of a heath care card or who receive a pension (LIMAC 2003: 12). An alternative to this is the *HomeLine Budget* in which the monthly line rental for a home phone is charged at a discounted rate (but with higher calling rates). In addition to offering discounts on fixed-line services, the package includes a range of other initiatives to assist existing customers to avoid disconnection and to help them budget for their telephone service (such as *Bill Assistance* and *access to Centrepay*).

While low-income customers are a key target group, other initiatives have been specifically established with other different target groups in mind. These include: services for unemployed and homeless people (*MessageBox* answering service),

pensioners (*Pensioner Discount*), people with disability (*Disability Equipment Program*), people from culturally and linguistically diverse backgrounds (*Multicultural Service Centres*) and Indigenous communities (*Indigenous Communities Hotline*) (see Telstra, 2008a).

The *Access for Everyone* program has not been independently evaluated, but annual market research has been commissioned by LIMAC to monitor its success. This research has reported some positive results. Participants generally have high levels of satisfaction with services and an increasing proportion find their use of telecommunications more affordable, although difficulty in paying bills is still a problem (42 per cent had difficulty with paying their bill on time in 2007) (LIMAC, 2007).

While many of these initiatives have been aimed initially at ensuring affordable access to fixed line home phones, some programs are being extended to mobile and Internet accounts (see Telstra, 2008b: 1-2). Previous studies confirm that mobile and internet use is increasing amongst low-income households (LIMAC, 2007).

One other recent initiative of Telstra, aimed at addressing the difficulties older people or those with disability may have with modern, small and multifunctional mobile phones, is a new specially designed mobile handset, the EasyTouch Discovery (Telstra, 2009a). The company has also established a program of technology training for older people (*Telstra Connected Seniors*), including funding for community groups to run training courses.

In addition to Telstra's programs, the Australian Government also provides assistance with telecommunications to low-income households through the Department of Families, Housing, Community Services and Indigenous Affairs. Eligible pensioners, certain allowees and Commonwealth Seniors Health Card holders who are telephone subscribers can receive a quarterly Telephone Allowance payment to assist with the cost of maintaining a home telephone service.

On 20 March 2008 the Australian Government introduced a higher rate of Telephone Allowance for people receiving the basic rate of Telephone Allowance and who have a home internet connection and receive Carer Payment, Disability Support Pension, or are of age pension age in receipt of an income support payment (such as Age Pension), or hold a Commonwealth Seniors Health Card (Macklin, 2008a). This initiative is aimed at helping these groups to stay in contact with their community, family and friends in Australia and around the world.

On 27 November 2008 the Australian Government also launched a $15 million initiative to get more seniors connected to family and friends and the internet (Macklin, 2008b). *Broadband for Seniors* will establish up to 2 000 free kiosks over the next three years in community centres and clubs used by older people. The kiosks provide computers, internet connections and training. This picks up on and extends Telstra's existing *Connected Seniors* program.

United Kingdom

As in Australia, the largest operator in the United Kingdom, British Telecom (BT), is the nominated provider required to meet universal service obligations (except for Kingston Communications covering the Hull area). Initiatives designed to provide

affordable telephone services for low-income earners have been funded and implemented by BT. In the early 1990s it set up the *Light Users Scheme* (LUS) so that low-income earners, older people and other disadvantaged groups could be connected to the telephone network at an affordable rate. This scheme enabled consumers to receive a rebate if their bill was less than £15.07 per quarter (Ofcom, 2005: 62). The LUS however did not include help for customers to manage the size of their bills – a key issue for affordability – and in 1997, at the request of Oftel, BT introduced an optional lifeline program, *InContact Plus*, which has a low monthly fee, pre-paid calling and 'soft disconnection' arrangements. Wellenius (2000) noted that the take-up of this option was very low, partly because of the unavailability of prepaid calling at the start and also because of the rapid development of pre-paid mobile services.

More recently these two programs have been superseded by a new package, introduced in 2007, which is known as the *BT Basics* program. While *LUS* and *InContact Plus* programs are still operating, they are being phased out and replaced by *BT Basics* (BT, 2008a).

While there were no restrictions on who could join *LUS* aside from a definition of low use, eligibility for *BT Basics* is limited to low-income earners. To be eligible for the *BT Basics* package customers must receive one of the following government benefits – income support, job seekers allowance or guaranteed pensioners credit (BT, 2008b: 1). The *BT Basics* program provides line rental for a fee of £13.50 (around $30) per quarter, which includes £4.50 worth of free calls. For every call made after this, a discounted rate of 10p per minute (and 3p per call) is charged for all calls made within the UK (BT, 2008b: 1).

This package not only provides low income households with access to telephone services but broadband internet is also available through this scheme (BT, 2008a). It is only available to BT customers, however, so to access it customers must switch carriers if they already have a rental line with another operator (see BT, 2008b: 5). No evaluation has been carried out of BT Basics as yet.

United States

The United States has a different model of assistance for low-income households and other disadvantaged groups from those of Australia and the UK. Rather than offering discounts through targeted programs administered by telephone service providers, the Federal Communications Commission (FCC) is responsible for administering the *Lifeline* and *Link-Up* programs. The funding for these programs is collected by a non-profit company, the Universal Service Administrative Company (USAC) and the source of funds is based on a 10 per cent charge on long-distance calls (Simon, 2008: 143).

Lifeline was set up in 1984 with the aim of providing discounts to low-income households on their monthly phone bills. Figures from 2004 indicate that the average discount received by eligible participants was just over US$11 (Holt and Jamison, 2007: 393). *Link-Up* was established in 1987 and provides a discount on the costs of installing a home phone. Participation in the program potentially halves the cost of installation (Federal Communications Commission, 2008). In 2000, both of these programs were expanded to specifically target Indigenous Americans living on tribal

lands. *Link-Up* provides an additional US$70 and the *Lifeline* US$25 per month for Indigenous people (OECD, 2006: 44).

While there are other related strategies in place in the US, including funding for small companies who provide access to rural and remote areas, discounts for schools on their telecommunication and internet services and for providers of rural health care (Holt and Jamison, 2007: 394), the *Lifeline* and *Link-Up* programs have been the key initiatives which offer an affordable home telephone services to low-income *households*. Unlike the UK and Australian initiatives, in which the major service providers offer discounts to consumers, in the US consumers apply to be part of the *Lifeline* scheme through their telephone service operator who is then reimbursed by the government. The complicating factor in the US is that while *Lifeline* is a federal program, some States also provide additional financial assistance. Consequently, eligibility for subsidies may vary between US states. As a general rule, eligibility is based on household income levels (household income must be at or below 135 per cent of the national poverty guidelines), or on participation in other means-tested government programs (such as Medicaid, food stamps, Supplemental Security Income, federal public housing assistance, the low-income home energy assistance program, Temporary Assistance to Needy Families, or the national free school lunch program) (FCC, 2008a).

While there has been some discussion about the different types of initiatives operating in countries such as Australia, UK and US (see OECD, 2006: 44), the literature overall tends to refer only briefly to specialised initiatives as part of a broader discussion about universal service obligations (see for example Wellenius, 2000; Simon, 2008: 143). There appears to be limited research on the effectiveness of programs for vulnerable consumers. One exception to this is in the US where considerable research has been undertaken on the *Lifeline* program (see for example, Brown 2006; Garbacz and Thompson, 1997; Florida Public Service Commission, 2007). In particular, there has been ongoing discussion about why take-up rates for the program are so low and what are the barriers to participation (see Holt and Jamison, 2007: 399-400). Although the research evidence is inconclusive on the factors inhibiting participation in the program, there is some evidence to suggest that low-income households were abandoning their home phone in favour of mobile phone technology (Holt and Jamison, 2007: 405).

In this context it is interesting to note that recent developments in the US have seen the *Lifeline* program expanded in the shape of a new program called the *Safelink Wireless Program*. Essentially the overall objective of the program is the same as *Lifeline* – the provision of affordable access to a telephone service – the key difference is the type of technology on offer. The program offers low-income households access to a mobile phone service. Rather than providing a discount or rebate like the existing *Lifeline* program, *Safelink* is implemented by one provider: TracPhone. Essentially, TracPhone offers participants a free phone, without contracts or monthly fees. Customers use a pre-paid card to pay for their calls and receive free calling time (see www.safelinkwireless.com).

Safelink is an initiative which recognised the growing importance of mobile phones (in a country with relatively low take-up compared with other developed economies). It is limited at present to seven States (Florida, Tennessee, Virginia Georgia, Massachusetts, New York, Pennsylvania), but is said to be expanding to other

selected States in the near future, including Alabama, Connecticut, District of Columbia, Delaware, New Hampshire and North Carolina. It is also is limited to one person per household. Initial eligibility lasts for one year, after which users have to demonstrate that they still qualify. Under the scheme international calls are charged at the same rate as national calls, emergency calls are free and caller ID, call waiting and voicemail services are included. The number of free call minutes per participant appears to vary between States, for example from 42 minutes in Pennsylvania to 80 in Massachusetts. At present there is little information available about the take-up or effectiveness of this scheme.

Table 1 presents a summary picture of these key initiatives in Australia, the UK and US, in terms of the disadvantaged customer segments targeted by the *Access for Everyone* program. It shows that while all three countries aim to provide basic services for people on a low income, they vary in terms of whether they directly target people from other disadvantaged groups.

While all three countries have aimed to provide basic telephone services to low income households, eligibility for discounted services not only differs between countries but has also changed over time. For example, in the UK there were previously no restrictions on who could participate in the *Light User Scheme* except in terms of their monthly phone usage, whereas the newly introduced *BT Basics* has limited participation to people who receive a means-tested government benefit. Furthermore, a recent media report concerning price increases by BT suggests that low-income households who are not eligible for *BT Basics* may face an increase of £1 per month on their line rental (see *The Guardian*, 2009). In the US, eligibility is somewhat less restrictive than in the UK. Participation in the *Lifeline* and *Link-Up* programs is offered to people who receive government assistance *or* to households who are on a low income (FCC, 2008a).

Table 1: Initiatives targeted at low-income earners and disadvantaged groups, by target groups: Australia, United States and United Kingdom

	Target groups						
	Low income	*People with a disability*	*Unemployed*	*Pensioners*	*Homeless people*	*Indigenous people*	*Culturally & Linguistically diverse*
Australia							
Access for everyone(2002 –)	✓	✓	✓	✓	✓	✓	✓
United States							
Lifeline (1984 –)	✓					✓	
Safelink wireless program (2008 –)	✓						
Link Up (1987 –)	✓						
United Kingdom							
Light Users Scheme (1993 – 2007)	✓						
In Contact plus (1999 – 2007)	✓						
BT Basics (2007 –)	✓	✓	✓	✓			

As indicated in Table 1, special programs have been developed in both the US and Australia for Indigenous communities. In Australia special initiatives have also been further targeted at other disadvantaged groups such as homeless people and culturally and linguistically diverse communities.

While Table 1 might suggest that only the UK and Australia provide targeted initiatives for people with disability, in the US they are specifically targeted through other dedicated programs. These include Text Relay Services (FCC, 2008b), similar to Australia's National Relay Service (www.relayservice.com.au).

Types of technology

These 'social tariff' schemes in the three countries are similar in that they have started out aiming to offer lower-cost fixed-line phone services to disadvantaged consumers, either through reduced line charges, lower or pre-paid call costs or various forms of help with bill management and avoidance of disconnection. Australia's scheme possibly goes the furthest in terms of specifically targeted help for people in unusual

situations, such as those without a home. One difference at present though is in the types of technology that they have decided to offer within these subsidised assistance schemes (see Table 2 below). For example, the US has expanded its scheme to include free mobile phones through *Safelink* and in the UK internet services are now also available through *BT Basics*. In Australia, Telstra's *Access for Everyone* programs are just beginning to recognise mobile and Internet accounts. It seems likely that these will converge more closely in the future as demand increases for mobile and Next Generation broadband services.

However, it is important to look more closely at the type of service offered for the new types of technology. In the UK standard broadband fees apply (BT, 2008b: 7). Similarly, in Telstra's case, broadband (in particular, pre-paid wireless broadband) and dial-up internet are listed as some of the services on offer, but there is nothing to indicate that low-income earners or other disadvantaged groups receive any special discounts. Rather, these products and services are offered with 'affordable' plans as options that are open to anyone in the community (Telstra, 2008b: 1). Similarly, Telstra offers pre-paid mobiles which are promoted alongside the low-income package (in particular, its 'Long Life' option giving extended activation times), but as with internet services, this appears to be marketed as an affordable option for everyone in the community not just for low-income households (see Telstra, 2008b: 21).

This raises questions about whether pre-existing initiatives like *Access for Everyone* should be expanding the range of technology on offer or whether dedicated programs are needed like those operating in the US. As discussed above, in the US, the expansion of the *Lifeline* program through the creation of a new program, *Safelink wireless*, enables low-income households access to mobile phone products and services as a direct substitute for a home phone. Is there more that could be done in the Australian context to provide affordable access to mobile phones and internet services for low income households and other disadvantaged groups? With the incremental inclusion of new technology into existing programs, should other operators, not just the major providers, also be involved in offering discounted services for low-income customers?

While there appears to be limited comparative analysis in the literature of these specialised initiatives, regulatory bodies have offered their own commentary on the comparability of these schemes. For example, the UK regulator Ofcom has suggested that the previous specialised services offered by BT (*LUS* and *In Contact Plus*) were not as generous as programs run in other countries such as Australia and the US (Ofcom, 2005: 13).

Table 2: Initiatives targeted at low-income earners and disadvantaged groups, by technology type: Australia, United States and United Kingdom

Country	***Initiative***	***Technology Type***		
		Home phone	*Mobile phone*	*Internet*
Australia	*Access for everyone (2002 –)*	☐	☐ (limited applicability)	☐ (limited applicability)
United States	*Lifeline (1984 –)*	☐		
	Safelink wireless program (2008 –)		☐	
	Link Up (1987 –)	☐		
United Kingdom	*Light Users Scheme (1993 – 2007)*	☐		
	In Contact plus (1999 – 2007)	☐		
	BT Basics (2007 –)	☐		☐

It is important to keep in mind that one of the similarities between the Australian and UK models is that the major telecommunications operators in each country, Telstra and BT, have incurred the costs associated with providing specialised services to low income households and other disadvantaged groups. By contrast, the US model operates as a government-funded initiative. How schemes such as these continue to be funded, administered and implemented is a key policy issue.

In a review of the UK universal service obligations, Ofcom (2005) concluded that the overall costs of the USO, including the special targeted services for low-income consumers, were reasonable and broadly matched by the estimated benefits gained by service providers through branding and marketing. Thus it did not recommend a shift in the funding mechanisms. Ofcom did, however, note that this question might need to be revisited in the light of changing technology and possible future inclusion of mobile and broadband services under the USO umbrella. In a discussion of USOs internationally Xavier (2006) reaches a similar conclusion.

5 Conclusions: the future of access and affordability programs for disadvantaged populations

This review has examined the literature on the relationship between telecommunications technology and community wellbeing. There are clear limitations to this research, in terms of the breadth and depth of coverage and analysis of the literature on telecommunications affordability. However, our findings do suggest that Telstra's *Access for Everyone* program, and the work of LIMAC, continues to offer a set of initiatives that make a real contribution to addressing affordability issues for a range of low-income groups, and that the package compares relatively well with the offerings available in the US and UK.

This said, affordability continues to be an extremely important and relatively neglected area of telecommunications, underscored by the current global financial crisis. As our literature review shows, there is new evidence of the relationship between telecommunications and wellbeing, and the implications of affordability of telecommunications resulting in poor or low levels of access, use and availability. Access to telecommunications has become more, not less, central to social participation, so its affordability has increasingly direct, rather than indirect, implications for social exclusion and inclusion.

Further, social participation increasingly relies on technologies over and above traditional fixed-line, standard telecommunication services, which have been the focus of universal service obligations and affordability measures; notably, mobiles and the internet have continued to grow in importance since the last LIMAC annual review, as evidenced in survey and consumption research.

The speed of technological change creates challenges for telecommunications suppliers and welfare agencies alike: this is not a static situation but a rapidly changing one, where new needs may be identified and new market or technological solutions developed, only to be superseded very quickly. Disadvantaged people and welfare agencies alike can often be left behind in this process.

In light of this, we make two broad sets of recommendations: first, a recommendation for targeted extensions to the LIMAC program; secondly, a broader set of recommendations beyond the remit of LIMAC and Telstra, to the wider community, industry, and Government.

5.1 New directions for LIMAC

LIMAC has already recognised the importance of mobile phones and the internet, and we would recommend that it closely examine the development of the new US Safelink wireless program to see whether lessons might be learned from its implementation for Australia, both in terms of the overall approach and in terms of funding arrangements. We would also recommend that consideration be given to new approaches to broadband internet.

However, as the literature review shows, access or even affordability are not the only issues in relation to the use of more advanced technology. Many disadvantaged people are excluded from use of these technologies more by lack of knowledge and skills – the package of attributes that go towards making up 'digital literacy'. We

would suggest that a role for LIMAC and Telstra could also be in discussing how a further contribution could be made to fostering these skill sets amongst the disadvantaged customer segments that make up the *Access for Everyone* clientele. Telstra is already involved in relevant skills trainings through its *Connecting Seniors* program and existing members of LIMAC including the Smith Family are engaged in skills training with young people and disadvantaged families. These initiatives could provide a useful basis for further development.

5.2 New directions for telecommunications affordability policy

Informed by our research, we are convinced that this is an important time – given the trends in affordability and technology – for the wider telecommunications industry, the community, government and the regulators to take up and debate more comprehensive policy measures in affordability and telecommunications. As Milne (2006) argues, availability, access and affordability are three key criteria for assessing telecommunications, but they are not synonymous: telecoms need to know their varying customer segments' spending patterns in order to meet their needs.

While Telstra was given the responsibility by government in 2002 to offer services for low-income earners, and, as we have said, we think there are ways in which Telstra's measures can be appropriately extended, the affordability policy issues, especially as they now centrally relate to broadband internet and mobile phones, need to be the responsibility of the whole of industry and government.

To establish the policy rationale for revisiting affordability, it is worth reviewing its history in Australia. Affordability has been a traditional goal of Australian telecommunications policy, and it has continued so since the commencement of liberalisation and deregulation (Evans, 1988). Since the *Telecommunications Acts* of 1991 and 1997, affordability has been addressed in three main ways.

First, affordability has been a concern of general competition and pricing policy. It is generally believed that competition in telecommunications, if genuine, will result in overall price reductions, and so greater affordability of services for all consumers, including those on low incomes. However, this aggregate picture belies a number of issues for low-income groups about how the market actually functions, and how economic benefits flow differentially to particular groups of consumers. Of special concern is monitoring the impact of what is called 'rebalancing' – or the removal of cross-subsidies of connection, line rental and local call prices by other telecommunications services (notably long-distance and international calls). There has been a longstanding recognition that the consolidation of competition in telecommunications, and the processes that accompany this, benefit some groups of consumers relatively more than others. Low-income consumers in particular have been a group believed to be potentially adversely affected by rebalancing. Accordingly, in debates about the continued regulation of prices through price control mechanisms, issues for low-income consumers have featured prominently.

Secondly, affordability has been a concern of welfare, social and equity aspects of telecommunications policy. There have been longstanding entitlements for various types of welfare recipients to provide assistance for essential telecommunications and now communications services. Such entitlements have been provided by the relevant government department (for instance, FaHCSIA). As discussed above, the

Government currently assists eligible pensioners, certain allowees and Commonwealth Seniors Health Card holders who are telephone subscribers with a quarterly Telephone Allowance and in March 2008 introduced a higher rate of Telephone Allowance for certain eligible groups receiving the basic rate of Telephone Allowance who have a home internet connection. Then in November 2008 the Australian Government launched a $15 million *Broadband for Seniors* initiative to get more older people connected to family and friends and the internet.

Thirdly, affordability has been discussed from time to time as part of universal service obligations that require the standard telecommunications service to be delivered by a designated provider, but funded by the relevant industry parties as a whole. The difficulty here has been that in Australia affordability was to a large extent separated from the other aspects of universal service obligation when the legislation and policy was formulated in the 1991-1999 period (Wilson and Goggin, 1994; Goggin, 1998; CLC, 2001, 2004). That is, when a new approach to universal service was developed for the new competitive telecommunications environment, first availability of service was recognised and safeguarded, then accessibility (for instance, for people with disabilities), but affordability was only indirectly recognised, if at all. Thus, the universal service obligation itself has not required affordability.

This brief history of affordability provides a context for understanding the emergence of Telstra's *Access for Everyone* package and the establishment of the LIMAC committee. In February 2001, an Australian Competition and Consumer Commission report on Telstra price control arrangements raised concerns about the adequacy of these measures for effectively addressing low-income concerns (ACCC, 2001). In April 2001 Minister Alston announced a package of measures of benefits to safeguard low-income consumers, significantly developed by Telstra, welfare and consumers groups, and government, in order to allow changes to price controls to proceed, ushering in further rebalancing (Alston, 2002a). The work of LIMAC commenced, but in the meantime there were parliamentary debates that ensued with the Labor opposition questioning the changes – and threatening to disallow the relevant instrument (Crean and Bird, 2002). By November 2001, an enhanced package was agreed (Alston, 2002b) and the determination proceeded, with a licence condition put on Telstra to deliver the low-income measures package (clause 22, Carrier Licence Conditions (Telstra Corporation Limited) Declaration 1997; see Regulatory Impact Statement for rationale).

Since 2002, LIMAC has continued to provide advice to Telstra and the Minister on the low-income package. The broader issues of affordability have increasingly been raised in relation to the now essential nature of mobiles for very many consumers, and also new services such as broadband (most recently, for instance, with the final report of the Regional Telecommunications Inquiry (RTRC, 2008).

The central difficulty for adequate policy is that current affordability measures have a number of shortcomings: they arise from a consideration of price controls, rather than affordability per se; they are the responsibility of Telstra, rather than the industry in general; it is unclear that the assistance offered by government departments to pensioners and various low-income beneficiaries, while welcome, is sufficient, especially to cover new technologies; the roles of different government departments and agencies need to be better co-ordinated and strengthened; affordability measures for people with disabilities are inadequate and need to be urgently addressed. Further,

while Telstra has been charged with the responsibility of substantially addressing low-income issues, this has made it difficult to open up a general discussion of affordability, engaging all relevant industry, regulatory, government and community stakeholders.

The present Government is considering what its future approach will be in the area of universal service. And, of course, it is on the verge of major announcements regarding the national broadband network. As mentioned earlier, the UK regulator Ofcom concluded in 2005 that there was no need at present to disturb the existing arrangements whereby the main providers (BT and Kingston) paid the costs of the universal service obligation (Ofcom, 2005). However, this was based on a fairly narrow discussion of affordability for the providers and the return to them through marketing and branding, rather than on a wider discussion of telecommunications affordability for the community as a whole. Xavier (2006), in his review of USOs for the OECD, is also cautious about extending these obligations beyond the standard fixed-line services, for reasons including concern that at an early stage of broadband penetration a blanket USO approach might distort competition and investment incentives. However, he also recognises that this is likely to require regular reconsideration because universal services are an evolving concept. He also notes that:

> In an NGN environment, current funding arrangements for USOs may be unsustainable. A variety of alternative arrangements can be envisaged ranging from a tax on each telephone number to a financing through general taxation revenue. They should be thoroughly assessed against a number of criteria, such as economic efficiency, equity and competitive entry as well as against current practice where the infrastructure and service providers directly fund universal service. (Xavier, 2006: 5)

In this light, we would suggest that it is a good time for a public discussion about the way forward on affordability that could generate new options for policy. This would provide an opportunity for in-depth discussion of the issues raised in this report, regarding the areas of need of low-income consumers, especially with regard to technologies rapidly becoming standard, such as mobiles and broadband. It would also provide the opportunity to discuss key questions about how affordability policy should be structured to ensure all consumers are better included in Australia's digital economy, namely:

- whether affordability becomes a wider industry responsibility (building on the LIMAC model);

- or whether affordability is assigned to a dedicated government program (as suggested by the US example);

In either case, we would suggest that it is timely to review how the efforts of various departments and agencies with an interest in telecommunications and the internet can be better co-ordinated, in a stronger and more effective overall government and regulatory approach to affordability.

The need to review government policies and provisions in this area, and to ensure a more comprehensive approach springs from the evolving nature of communications

essential for consumers (increasingly mobiles and broadband as well as Internet) — implying a larger role for parts of government not traditionally involved in telecommunications. It also follows from recognition of the importance of social inclusion and well-being approaches to telecommunication.

Accordingly we would recommend that it is a high priority to find a new way to co-ordinate four different approaches and the agencies that are charged with safeguarding these: safeguarding the welfare of particular disadvantaged groups (and especially addressing the outstanding needs of those with disability and Indigenous consumers); social inclusion; citizenship; and the interests of consumers in telecommunications and convergent technology development. The Government has placed a strong emphasis on focussing on overarching issues such as access to digital technology and social participation, so this is an opportune time for co-ordination to bring about a clearer focus on the key role that telecommunications now plays in social inclusion and the need for a comprehensive and effective overall approach to affordability.

As part of a new and comprehensive approach to telecommunications and well-being, we also recommend that there is an opportunity for the Government to refine its approach to digital literacy. There are commendable and important initiatives underway at the national level, especially in the provision of equipment to schools and in developing the national broadband infrastructure. Digital literacy also has other dimensions, as the affordability and well-being literature shows (see also McWilliam, Hartley and Gibson, 2008), and it is important to ensure that this is being addressed by government policy and programs — otherwise access and participation gaps will continue, and potentially worsen.

References

AAPT (2009), 'Australian households spending $44 more every month on home telco costs, AAPT research reveals', press release 14 February, http://home.aapt.com.au/At_AAPT/What_s_news/2009/financial_impact_on_families.html, accessed 2 March 2009.

Abascal, J. and Civit, A. (2001), 'Universal access to mobile telephony as a way to enhance the autonomy of elderly people', *Proceedings of the 2001 EC/NSF Workshop on Universal Accessibility of Ubiquitous Computing*, Association for Computing Machinery, New York, 93-99.

Access Economics (2007), *Australian Mobile Telecommunications Industry: economic significance and state of the industry*, report for the Australian Mobile Telecommunications Association, Canberra.

Alleman J. H. and Rappoport, P. N. (2003), 'Universal service', in Madden G. (ed.), *Traditional Telecommunications Networks*, Edward Elgar, Cheltenham, 315-336.

Alston, Richard, the Hon., Senator (2002a), 'Consumer to benefit from Telstra price caps', media release, 88/02, 22 April.

Alston, Richard, the Hon., Senator (2002b), 'Government welcomes new Telstra low-income proposals', media release, 255/02, 13 November.

Annable, G., Goggin, G. and Stienstra, D. (eds) (2007), 'Accessibility and inclusion in information technologies', special issue of *The Information Society*, 24 (2).

Australian Bureau of Statistics (ABS) (2005), *Household Expenditure Survey, Australia: Summary of Results, 2003-04*, Catalogue 6530.0, ABS, Canberra.

Australian Bureau of Statistics (ABS) (2007), *Household Use of Information Technology, 2006-07*, ABS, Canberra.

Australian Bureau of Statistics (ABS) (2008), *Household Use of Information Technology, 2007-08*, ABS, Canberra.

Australian Communications Authority (ACA) (2004), *Payphone Policy Review*, ACA, Canberra.

Australian Communications and Media Authority (ACMA) (2007), *Telecommunications Today: consumer attitudes to take-up and use*, Commonwealth of Australia, Melbourne.

Australian Communications and Media Authority (ACMA) (2008a), *The Australian VoIP Market: the supply and take-up of VoIP in Australia*, Commonwealth of Australia, Melbourne.

Australian Communications and Media Authority (ACMA) (2008b) *ACMA Communications Report 2007-2008*, Commonwealth of Australia, Melbourne.

Australian Communications and Media Authority (ACMA) (2009), *Australian Household Consumers' Take-up and Use of Voice Communications Services*, Convergence and Communications Report Series, Report No. 1, Commonwealth of Australia, Melbourne.

Australian Competition and Consumer Commission (ACCC) (2001), *Review of Price Control Arrangements*, February, ACCC, Melbourne.

Australian Government (2008), *The Road Home: a National Approach to Reducing Homelessness*, White Paper, Commonwealth of Australia, Canberra.

Australian Government Department of Broadband, Communications and the Digital Economy (2004), *Universal Service Obligation and Customer Service Guarantee Review 2004: Final Report*, DBCDE, Canberra.

Bai, T. V., Ganesan, A. and Srivastava, S. K. (2007), 'Analysis of mobile communication spread and its implications in India', *Academic Open Internet Journal*, 21, www.acadjournal.com, accessed 19 February 2009,.

Bandia, S. and Vemuri S. (2005), 'Telecommunications infrastructure facilitating sustainable development of rural and remote communities in Northern Australia', *Telecommunications Policy*, 29, 237-249.

Barrantes, R. and Galperin H. (2008), 'Can the poor afford mobile telephony? Evidence from Latin America', *Telecommunications Policy*, 32 (8), 521-530.

Bertrand, F. (2000), 'Universal Service – the Canadian Perspective', speech to the International Institute of Communications (IIC) Regulatory Meeting, Tampa, Florida, 23 September.

Bhavnani, A., Won-Wai Ciu, R., Janakiram, S. and Silarszky, P. (2008), *The Role of Mobile Phones in Sustainable Rural Poverty Reduction*, Report for the World Bank ICT Policy Division, Global Information and Communications Department, Washington DC.

Blumberg, S. J. and Luke J. V. (2008), *Wireless Substitution: early release of estimates from the National Health Interview Survey, July-December 2007*, Centre for Disease Control and Prevention (CDC), National Centre for Health Statistics, accessed 19 February 2009, www.cdc.gov/nchs/data/nhis/earlyrelease/wireless200805.pdf.

Brotherhood of St Laurence (2007), *Left Out and Missing Out: Voices from the Margins*, Snapshot 2007, BoSL, Melbourne.

Brown, J (2006), *Disconnecting from Communications: a Survey of Floridians who qualify for Lifeline and dropped their telephone service*, University of Florida, Telecommunications, PURC Working Paper, www.cba.ufl.edu/purc/research/telecom.asp, accessed 30 January 2009.

British Telecom (2008a), 'BT Maintains Commitment to helping low income families', press release 8 October,

www.btplc.com/news/articles/showarticle.cfm?articleid=195eaa52-9127-4eca-91c9-a1c0db252ca2&Terms=4907,7573, accessed 27 January 2009.

British Telecom (2008b), *BT Basic: A Helping Hand from BT*, British Telecom, London, www.btplc.com/inclusion/phoneservices/services/btbasic/btbasic.pdf, accessed 27 January 2009.

Buchtmann, L. (2000), 'Digital songlines: the use of modern communication technology by an Aboriginal community in remote Australia', *Prometheus*, 18 (1), 59-74.

Buré, C. (2005), 'Digital inclusion without social inclusion: the consumption of information and communication technologies (ICTs) within homeless subculture in Scotland', *The Journal of Community Informatics*, 1 (2), 116-133.

California Public Utilities Commission (CPUC) (2006), *Universal Telephone Service to Residential Customers*, report to the California Legislature, San Francisco.

California Public Utilities Commission (CPUC) (2007), *Universal Telephone Service to Residential Customers*, report to the California Legislature, San Francisco.

Castells, M. (2000), *The Rise of the Networked Society*, 2nd edition, Blackwell, Oxford.

Centre for Economics and Business Research (CEBR) (2005), *'I Can't Imagine Working Without My Mobile': an analysis of how mobile phone use contributes to business productivity*, paper commissioned by O_2, wwwO2.com/media_files/CEBR4.pdf, accessed 19 February 2009.

Chambers, K. (2009), Anglicare: personal communication.

Chen, W. and Wellman, B. (2003), *Charting and Bridging Digital Divides: comparing socio-economic, gender, life stage, and rural-urban internet access and use in eight countries*, report for AMD Global Consumer Advisory Board (GCAB), NetLab, Centre for Urban and Community Studies, University of Toronto, Toronto.

Chen, W. and Wellman, B. (2005), 'Minding the cyber-gap: the internet and social inequality', in M. Romero and E. Margolis (eds), *The Blackwell Companion to Social Inequalities*, Blackwell, Oxford.

Chinn, M. D. and Fairlie, R. W. (2006), 'The determinants of the global digital divide: a cross-country analysis of computer and Internet penetration', *Oxford Economic Papers*, 59 (1), 16-44.

Cohen, N. (2001), *What Works: Grameen Telecom's Village Phones: Digital Dividend Study*, World Resources Institute, Washington DC, www.digitaldividend.org/pdf/grameen.pdf, accessed 19 February 2009.

Commission for Communications Regulation (Ireland) (2003), *Vulnerable User Scheme*, Information Notice, www.comreg.ie/_fileupload/publications/ComReg0348.pdf, accessed 1 February 2009.

Commission of the European Communities (CEC) (2008), *On the Second Period Review of the Scope of Universal Service in Electronic Communications Networks and Services*, Brussels, http://ec.europa.eu/information_society/policy/ecomm/doc/library/communications_reports/universal_service/572_final_en.pdf, accessed 19 February 2009.

Communications Law Centre (CLC) (2001), *Australian Telecommunications Regulation: The Communications Law Centre Guide*, 2nd edition, Communications Law Centre, Sydney:

Communications Law Centre (CLC) (2004), *Australian Telecommunications Regulation: The Communications Law Centre Guide*, 3rd edition, UNSW Press, Sydney.

Conroy, Senator the Hon. S. (2008a), 'Opel Networks Funding Agreement not to proceed, ministerial press release 2 April, www.minister.dbcde.gov.au/media/media_releases/2008/019.

Conroy, Senator the Hon. S. (2008b), 'Telstra proposal excluded from further consideration under Government's NBN process', ministerial press release 15 December, www.minister.dbcde.gov.au/media/media_releases/2008/097.

Council on the Ageing (Australia) (COTA) (2002), 'Submission to the Broadband Advisory Group,' August, COTA, Melbourne.

Crawford, J. (2008), personal communication based on data from Lismore Library NSW.

Crean, the Hon. S. and Bird, S. (2002), 'Labor says enough is enough on Telstra price grab', media release, 19 September.

Crump, B. (2006), 'Institutions, community, and people: an evaluation of a longitudinal digital divide experience', in Trauth, E., Howcroft, D., Butler, T., Fitzgerald, B. and DeGross, J. (eds.), *Social Inclusion: Societal and Organizational Implications for Information Systems*, Springer, Boston, 333–346.

Department for Communities and Local Government (DCLG) (2008), *Community Perspectives on Digital Inclusion Qualitative Research to Support the Development of the Digital Inclusion Strategy*, Research Report, Eland House, London

Desert Knowledge Cooperative Research Centre (2008), *Submission to the Regional Telecommunications Review*, www.desertknowledgecrc.com.au/news/downloads/DKCRC-Regional-telecommunications-submission-July-2008.pdf, accessed 12 February 2009.

de Silva, H. and Zainudeen, A. (2007), 'Tele-use on a shoestring: poverty reduction through telecom access at the 'Bottom of the Pyramid'', paper presented at the *Centre for Poverty Analysis Annual Symposium on Poverty Research*, Colombo, 6-7 December.

Drennan, J., Brown, M. and Sullivan Mort, G. (2007), 'The impact of m-bullying on self-esteem and subjective well being', in Sullivan Mort, G. and Hume, M. (eds.),

Social Entrepreneurship, Social Change and Sustainability: Proceedings of the 2007 International Nonprofit and Social Marketing Conference, Griffith University Press, Brisbane.

Dobransky, K. and Hargittai, E. (2006), 'The disability divide in internet access and use', *Information, Communication and Society*, 9 (3), 313-334.

Doyal, L. and Gough, I. (1991), *A Theory of Human Need*, MacMillan, London.

Dyson, L. (2004), 'Cultural issues in the adoption of information and communications technology', in Sudweeks, F. and Ess, C. (eds.), *Proceedings of the Cultural Attitudes Towards Communication and Technology Conference*, Murdoch University, 58-71.

Edgar, P. and Edgar, D. (2009), 'The digital divide holding back disadvantaged kids', *Crikey*, 9 February, www.crikey.com.au/Media-Arts-and-Sports/20090209-The-digital-divide.html, accessed 25 February 2009.

Entner, R. and Lewin, D. (2005), *The Impact of the US Wireless Telecom Industry on the US Economy*, a study for CTIA, the Wireless Association, Ovum, Boston MA.

Evans, Senator the Hon. G. (1988), *Australia's Telecommunications Services: A New Framework*, AGPS, Canberra.

Ewing, S., Thomas, J. and Schiessel, J. (2008), *The Internet in Australia: CCi Digital Futures Report*, ARC Centre of Excellence for Creative Industries and Innovation, Institute for Social Research, Swinburne University of Technology, Melbourne.

Fallows, D. (2004), *The Internet and Daily Life*, Pew Internet and American Life Project, Washington DC.

Farr, P. (2003), *Connecting our Communities: Sustainable Networking Strategies for Australian Remote Indigenous Communities*, 2003, Report for Department of Communications, Information Technology and the Arts (DCITA) by Peter Farr Consultants, Canberra.

Faulkner, W. and Kleif, T. (2003), *One Size Does Not Fit All! Digital in/exclusion in a rural community*, SIGIS case study report, University of Edinburgh, Edinburgh.

Federal Communications Commission (FCC) (2008a) *FCC Fact Sheet: Lifeline and Linkup: Affordable Telephone Service for Income-eligible consumers*, updated 26 June 2008, www.fcc.gov/cgb/consumerfacts/lllu.html, accessed 29 January 2009.

Federal Communications Commission (FCC) (2008b) *FCC Fact Sheet: Telecommunications Relay Service*, updated 12 October 2008, www.fcc.gov/cgb/consumerfacts/trs.html, accessed 29 January 2009.

Federal Communications Commission (FCC) (2008c), *Trends in Telephone Service*, Industry Analysis and Technology Division, Wireline Competition Bureau.

Flatau, P., Slatter, M., Baulderstone, J., Coleman, A., Long, S, Memmott, P. and Sheppard, L. (2008), *Sustaining At-risk Indigenous Tenancies*, Australian Housing and Urban Research Institute, Positioning Paper No. 104.

Florida Public Service Commission (2007) *Number of Customers Subscribing to Lifeline Service and the Effectiveness of Procedures to Promote Participation*, www.floridapsc.com/publications/pdf/telecomm/tele-lifelinereport2007.pdf, accessed 30 January 2009.

Garbacz, C. and Thompson, H.G. (1997), 'Assessing the impact of FCC Lifeline and Link-Up programs on telephone penetration', *Journal of Regulatory Economics*, 11, 67-78.

Goggin G. and Newell C. (2000), 'An end to disabling policies? Toward enlightened universal service', *Information Society*, 16, 127-133.

Goggin, G. and Newell, C. (2003), *Digital Disability: the social construction of disability in new media*, Rowman and Littlefield, Lanham MD.

Goggin, G. (2003), 'Wiring the country: local telecommunications and Australian rural communities', *Southern Review*, 36 (1), 34-47.

Goggin, G. (1998), 'Citizens and Beyond: Universal service in the Twilight of the Nation-State', in Langtry, B. (ed.), *All Connected?: Universal Service in Telecommunications*, University of Melbourne Press, Melbourne, 49-77.

The Guardian (2009), 'BT plans inflation-busting price rises for landlines', 22 January, www.guardian.co.uk/business/2009/jan/22/bt-raises-prices-consumers, accessed 30 January 2009.

Hay, A., Gray, M. and Edwards, B. (2008), *Social Inclusion: origin, concepts and key themes*, paper prepared by the Australian Institute for Family Studies for the Social Inclusion Unit, Department of Prime Minister and Cabinet, AIFS, Melbourne.

Hargittai, E. (1999), 'Weaving the Western Web: explaining differences in internet connectivity among OECD countries', *Telecommunications Policy* 23 (10/11), 701-718.

Heady, B. and Wooden, M. (2005), 'Economic wellbeing and subjective wellbeing, the effects of income and wealth', in Mandelson, L. (ed.), *Rethinking Wellbeing*, Australia Research Institute, Curtin University of Technology, Perth, 91-108.

Henry, K. (2007), 'Connection consumers and the economy: the big picture', Closing Address to the National Consumer Congress by the Secretary to the Treasury, Melbourne, 15 March.

Hinton, C. A. (2003), 'The perceptions of people with disabilities as to the effectiveness of the Americans with Disabilities Act', *Journal of Disability Policy Studies* 13, 210-220.

Holloway, D. (2005), 'The digital divide in Sydney: a socio-spatial analysis', *Information, Community and Society*', 8 (2), 168-193.

Holt, L. and Jamison, M. (2007), 'Re-evaluating FCC policies concerning the Lifeline and Link-Up Programs,' *Journal on Telecommunications and High Technology Law*, 5 (2), 393-412.

Holzinger, A., Searle, G, and Nischelwitzer A. (2007), 'On some aspects of improving mobile applications for the elderly', in Stephanidis, C. (ed.), *Universal Access in Human Computer Interaction*, Springer-Verlag, Berlin, 923-932.

Inter-American Telecommunications Commission Organisation of American States (CITEL) (2000), *Universal Service in the Americas*, CITEL, Washington DC.

Jaeger, P. T. (2006), 'Telecommunications policy and individuals with disabilities: issues of accessibility and social inclusion in the policy and research agenda', *Telecommunications Policy*, 30, 112-124.

Jensen, R. (2007), 'The digital provide: information technology, market performance and welfare in the South Indian fisheries sector', *The Quarterly Journal of Economics*, CXXII, 3879-3924.

Jolley, B. (2003), When the Tide Comes In: towards accessible telecommunications for people with disabilities in Australia, Human Rights and Equal Opportunity Commission, Sydney,www.hreoc.gov.au/disability_rights/communications/tide.htm

Katz, J. E. and Aakhus, M. (eds.) (2001), *Perpetual Contact*, Cambridge University Press, New York/Cambridge.

Kauffman, R. and Techatassanasoontorn, A. (2005), 'Is There a global digital divide for digital wireless phone technologies?', *Journal of the Association for Information Systems*, 6 (12), 338-382.

Kiiski, S. and Pohjola, M. (2002), 'Cross-country diffusion of the internet', *Information Economics and Policy*, 14, 297-310.

Kurniawan S., Mahmud M. and Nugroho, Y. (2006), *A study of the Use of Mobile Phones of Older Persons*, CHI' 06 Extended Abstracts on Human Factors in Computing Systems, Montreal.

Kraut, R. E., Patterson, M., Lundmark, V., Kiesler, S., Mukhopadhyay, T., & Scherlis, W. (1998), 'Internet paradox: a social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53 (9), 1017-1032.

Lawson, P. (2002), *Eliminating Phonelessness in Canada: Possible Approaches*, Second Edition, Report commissioned by Human Resources Development Canada, Public Interest Advocacy Centre, Ottawa, www.piac.ca/telecom/eliminating_phonelessness_in_canada_possible_approaches_second_edition, accessed 30 January 2009..

Low Income Measures Assessment Committee (LIMAC) (2003), *Telstra's Access for Everyone Package: a package of telecommunications initiatives for customers on low*

incomes, LIMAC Report for the Minister for Communications, Information Technology and the Arts, 31 December, Sydney.

Low Income Measures Assessment Committee (LIMAC) (2007), *Telstra's Access for Everyone Package: a package of telecommunications initiatives for customers on low incomes*, LIMAC Report to the Minister for Broadband, Communications and the Digital Economy, 12 May, Sydney.

Low Income Measures Assessment Committee (LIMAC) (2008), *Submission to the Government's Green Paper on Homelessness*, Sydney.

Ling, C., Hwan,g W. and Salvendy, G. (2006), 'Diversified users' satisfaction with advanced mobile features', *Universal Access Information Society*, 5, 239-249.

Lloyd, R. and Bill, A. (2004), *Australia Online: How Australians are Using Computers and the Internet 2001*, Australian Bureau of Statistics/NATSEM, Canberra.

Macklin, the Hon. J. MP (2008a), 'Increased support for more than three million Australian', press release 20/03/08, www.jennymacklin.fahcsia.gov.au/internet/jennymacklin.nsf/content/increase_support19mar08.htm.

Macklin, the Hon. J. MP (2008b), 'Broadband for Seniors rollout', media release 27/11/08, www.facsia.gov.au/internet/jennymacklin.nsf/print/senior_broadband_27nov08.htm

Mandelson, L. (2005) (ed.), 'The social context of wellbeing', in Mandelson, L. (ed.), *Rethinking Wellbeing*, Australia Research Institute, Curtin University of Technology, Perth, 1-26.

McGilivray, M. and Clarke, M. (eds.) (2006), *Understanding Human Well-being*, United Nations University Press, Geneva.

McWilliam, Hartley, J. and Gibson, M. (eds.) 2008), 'Digital literacies', *Media International Australia*, Special Issue No.128 (August).

Meredith, D., Hopkins, L., Ewing, S. and Thomas, J. (2005), 'Information, e-government and opportunity: a public housing estate online', paper presented to the 2005 Australian Social Policy Conference, University of New South Wales, Sydney, July.

Milne, C. (2006), 'Improving affordability of telecommunications: cross-fertilisation between the developed and the developing world', paper presented at the *Telecommunications Policy Research Conference 2006*, George Mason University, Virginia.

Milne, C. (2006), *Telecoms Demand: measures for improving affordability in developing countries. A toolkit for action*, Report to the Department of Media and Communications, London.

Melenhorst, A. S., Rogers, W. A. and Bouwhuis, D. G. (2006), 'Older adults' motivated choice for technological innovation: evidence for benefit-driven selectivity', *Psychology and Aging*, 21 (1), 190-195.

Morsillo, R. (2008), 'Indigenous culture and communications: can stakeholders build a better telephone service?', *Telecommunications Journal of Australia*, 58 (1), 5.1-5.14.

Myhr, Jona (2006), *Livelihood Changes Enabled by Mobile Phones – the Case of Tanzanian Fishermen*, Bachelor Thesis, Department of Business, Uppsala University, Uppsala.

Notley, T. and Foth, M. (2008), 'Extending Australia's digital divide policy: an examination of the value of social inclusion and social capital policy frameworks', *Australian Social Policy*, 7, 87-110.

Nussbaum, M. (1992), 'Human functioning and social justice', *Political Theory*, 20 (2), 202-246.

Nussbaum, M. (2000), *Women and Human Development: The Capabilities Approach*, Cambridge University Press, Cambridge.

Organisation for Economic Cooperation and Development (OECD) (2006), *Working Party on Telecommunications and Information Services Policies: Rethinking Universal Service for a Next Generation Network Environment*, Committee for information, Computer and Communications Policy, OECD, Paris, www.oecd.org/dataoecd/59/48/36503873.pdf, accessed 30 January 2009.

Oestmann, S. (2003), *Mobile Operators: Their Contribution to Universal Service and Public Access*, Intelecon Research and Consultancy Ltd., Vancouver.

Office of Telecommunications (Oftel) (2003), *Telecoms Usage Amongst Low Income Groups, and Identification of any Issues Specifically Related to Ethnicity*, Oftel, London.

Office of Communications (Ofcom) (2005), *Review of the Universal Service Obligation*, www.ofcom.org.uk/consult/condocs/uso/statement/.pdf, accessed 30 November 2008.

Ofcom (2007), *Low Income Consumers and the Communications Market: an attitudinal study into people living on a low income and their experience of communications services*, Annex 4, Ofcom, London.

Ofcom (2008a), *Statement: Ofcom review of additional charges*, www.ofcom.org.uk/consult/condocs/addcharges/statement/, accessed 28 January, 2009.

Ofcom (2008b), *Additional Charges: including non-direct debit charges, early termination charges and itemised billing charges*, www.ofcom.org.uk/advice/guides/addcharges.pdf, accessed 28 January 2009.

Omori, M., Watanabe, T., Takai J., Takada, H. and Miyao, M. (2002), 'Visibility and characteristics of the mobile phones for elderly people', *Behaviour & Information Technology*, 21 (5), 313-316.

Ovum (2006), *The Economic and Social Benefits of Mobile Services in Bangladesh; a case study for the GSM Association*, London, GSMA.

Papandrea, F. and McCallum, K. (2006), *Community Business: the uses and requirements for internet services in remote Indigenous communities in South Australian and the Northern Territory*, Communications Policy and Research Forum, Sydney, 25-26 September..

Pantazis, C., Gordon, D. and Townsend, P. (2006), 'The necessities of life', in Pantazis, C., Gordon, D. and Levitas, R. (eds.), *Poverty and Social Exclusion in Britain: The Millennium Survey*, Policy Press, Bristol, 89-122.

Parker, D., Kirkpatrick, C. and Figueira-Theodorakopoulou, C. (2005), *Infrastructure Regulation and Poverty Reduction in Developing Countries: a review of the evidence and a research agenda*, Cranfield Centre for Competition and Regulation Research, UK.

Prahalad, C. K. (2004), *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profit*, Wharton School Publishing, New Jersey.

Public Interest Advocacy Centre (2008), 'Major parties asked to support consumer rights in telecommunications', press release 29 September, PIAC, Ottawa, www.piac.ca/telecom/major_parties_asked_to_support_consumer_rights_in_telecommunications, accessed 19 February 2009.

Quilty, D. (2009), 'The investment imperative', speech to the National Press Club, Canberra, 24 February.

Radoll, P. (2005), 'Information Communication Technology – Evidence from the National Aboriginal and Torres Strait Islander Social Survey', *Indigenous Socioeconomic Outcomes: Assessing Recent Evidence*, Canberra.

Regional Telecommunications Independent Review (RTTR) (2008), *Framework for the Future*, Final Report, RTTR, ACT, http://www.rtirc.gov.au/Report.

Richardson, D. Ramirez, R. and Haq. M. (2000), *Grameen Telecom's Village Phone Programme in Rural Bangladesh: a multi-media case study final report*, TeleCommons Development Group, Guelph, Ontario.

Richardson, L. and Le Grand, J. (2002), *Outsider and Insider Expertise: the response of residents of deprived neighbourhoods to an academic definition of social exclusion*, Paper 57, Centre for Analysis of Social Exclusion (CASE), London School of Economics, London.

Safelink Wireless website (2009), 'Safelink Wireless program', www.safelinkwireless.com/EnrollmentPublic/benefits.aspx, accessed 29 January 2009.

Saunders, P. (2003), *Can Social Exclusion Provide a New Framework for Measuring Poverty?*, SPRC Discussion Paper No. 127, Social Policy Research Centre, University of New South Wales, Sydney.

Saunders, P., Naidoo, Y. and Griffiths, M., with the assistance of Davidson, P. (ACOSS), Hampshire, A. (Mission Australia), Taylor, J. (Brotherhood of St Laurence), Bellamy, J. and King, S. (Anglicare, Diocese of Sydney) (2007), *Towards New Indicators of Disadvantage: deprivation and social exclusion in Australia*, Social Policy Research Centre, University of New South Wales, Sydney.

Schaffer, R. (2008), 'Unplanned obsolescence', *Fast Company*, 11 September, www.fastcompany.com/magazine/118/unplanned-obsolescence.html?page=0%2C2.

Sen, A. (1985), *Commodities and Capabilities*, North Holland, Amsterdam.

Sen, A. (1987), 'The standard of living: lecture II, lives and capabilities', in Hawthorn, G. (ed), *The Standard of Living*, Cambridge University Press, Cambridge.

Short, P., Seelig, T., Warren, C., Susilatwi, C. and Thompson. A. (2008), *Risk-assessment Practices in the Private Rental Sector: implications for low-income renter*s, Report for the Australian Housing and Urban Research Institute, University of Queensland Social Research Centre, Brisbane.

Shorten, the Hon. B. and Conroy, Senator the Hon. S. (2009), 'Exploring improved communications access for Australians with a disability', media release, 06/2009, 16 February.

Simon, J. (2008), 'Universal service: between socio-political mythology and economic reality – an international cross comparison EU-USA of the regulatory-economic framework', *Info*, 10 (5/6), 138-151.

Souter, D., Scott, N., Garforth, C., Jain, R., Mascarenhas, O and McKerney. K. (2005), *The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: a study of rural communities in India (Gujarat), Mozambique and Tanzania*, Commonwealth Telecommunications Organisation for the UK Department for International Development, London.

Srivastava, L. (2005), 'Mobile phone and evolution of social behaviour', *Behaviour & Information Technology*, 24 (2), 111-129.

Stewart, A. (ed.) (2005), *Do the Poor Pay More?*, Consumer Law Centre Victoria, Melbourne, www.consumeraction.org.au/downloads/DL54.pdf.

Stump, R. L., Gong, W. and Li, Z. (2008), 'Exploring the digital divide in mobile-phone adoption levels across countries', *Journal of Macromarketing*, 28 (4), 397-412.

Sullivan, N. (2008), *Cell Phones Provide Significant Economic Gains for Low-income American Households*, New Millennium Research Council, Washington DC.

Swedish Post and Telecom Agency (PTS) (2008), 'Universal Services: access to telephony', 11 Novermber 2008, www.pts.se/en-gb/Documents/Reports/Telephony/2008/Universal-Services-Access-to-telephony---PTS-ER-200820/, accessed 1 March 2009.

Telecommunications and Disability Consumer Representation (Tedicore) (2008), *Submission to the National Disability Strategy*.

Telecommunications and Disability Consumer Representation (Tedicore) (2009), *Preparatory Paper for the Disability Roundtable*, February.

Telstra (2008a), 'Arnhem Land communities to connect to high speed broadband', www.nowwearetalking.com.au/news/arnhem-land-communities-to-connect-to-high-speed-broadband, accessed 12/2/09.

Telstra (2008b) *Access for everyone brochure*, www.telstra.com.au/abouttelstra/commitments/accessforeveryone/index.cfm, accessed 14 January 2009.

Telstra (2009), 'EasyTouch phone discovers what customers want', www.nowwearetalking.com.au/news/easytouch-phone-discovers-what-customers-want-027.

Telstra Low Income Assessment Committee (LIMAC) (2007), 'Telecommunications more affordable for low income earners', www.nowwearetalking.com.au/news/telecommunications-more-affordable-for-low-income-earners, accessed 26 October 2008.

Tilley, C., Hills. A., Bruce, C. and Meyers, N. (2002), 'Communication, information and well-being for people with physical disabilities', *Disability and Rehabilitation*, 24 (9), 503-510.

Tindall, S. (2008), 'NBN delays universal service review', ZDNet Australia 1 August, www.zdnet.com.au/news/communications/soa/NBN-delays-universal-service-review/0,130061791,339291011,00.htm?feed=pt_conroy, accessed 29 January 2009.

Thomas, G. and Wyat,t S. (2000), 'Access is not the only problem: using and controlling the Internet', in Wyatt, S., Henwood, F., Miller, N. and Senker, P. (eds.) *Technology and In/equality: questioning the information society*, Routledge, London, 21-45.

United Nations (2000), *United Nations Millenium Declaration: Resolution Adopted by the General Assembly 55/2*, UN, New York, http://www.un.org/millennium/declaration/ares552e.pdf.

Van Dijk, J. (2006), 'Digital divide research, achievements and shortcomings', *Poetics*, 34, 221-235.

Wallsten, S. (2003), *Regulation and Internet use in Developing Countries*, Policy Research Working Paper No. 2979, World Bank, Washington DC.

Warren, M (2007), 'The digital vicious cycle: links between social disadvantage and digital exclusion in rural areas', *Telecommunications Policy*, 31, 374-388.

Wellenius, B. (2000), 'Extending telecommunications beyond the market: toward universal service in competitive environments', *Public Policy for the Private Sector*, Note No. 206, World Bank, Washington DC.

Wellman, B., Quan Haase, A., Witte, J. and Hampton, K. (2002), 'Capitalizing on the internet: network capital, participatory capital and sense of community', in Wellman, B. and Haythornthwaite, C. (eds.), *The Internet in Everyday Life*, Blackwell, Oxford, 291-324.

Willis, S. and Tranter, B. (2006), 'Beyond the 'digital divide': socio-economic dimensions of internet diffusion in Australia', *Journal of Sociology*, 42 (1), 43-59.

Wilson, I. R. and Goggin, G. (1993), *Reforming Universal Service: The Future of Consumer Access and Equity in Australian Telecommunications*, Consumers' Telecommunications Network, Sydney.

Xavier, P. (2006), 'Universal access to telecommunications in a competitive environment', *Liberalisation and universal access to basic services: telecommunications, water and sanitation, financial services, and electricity*, Organisation for Economic Co-operation and Development, Paris.