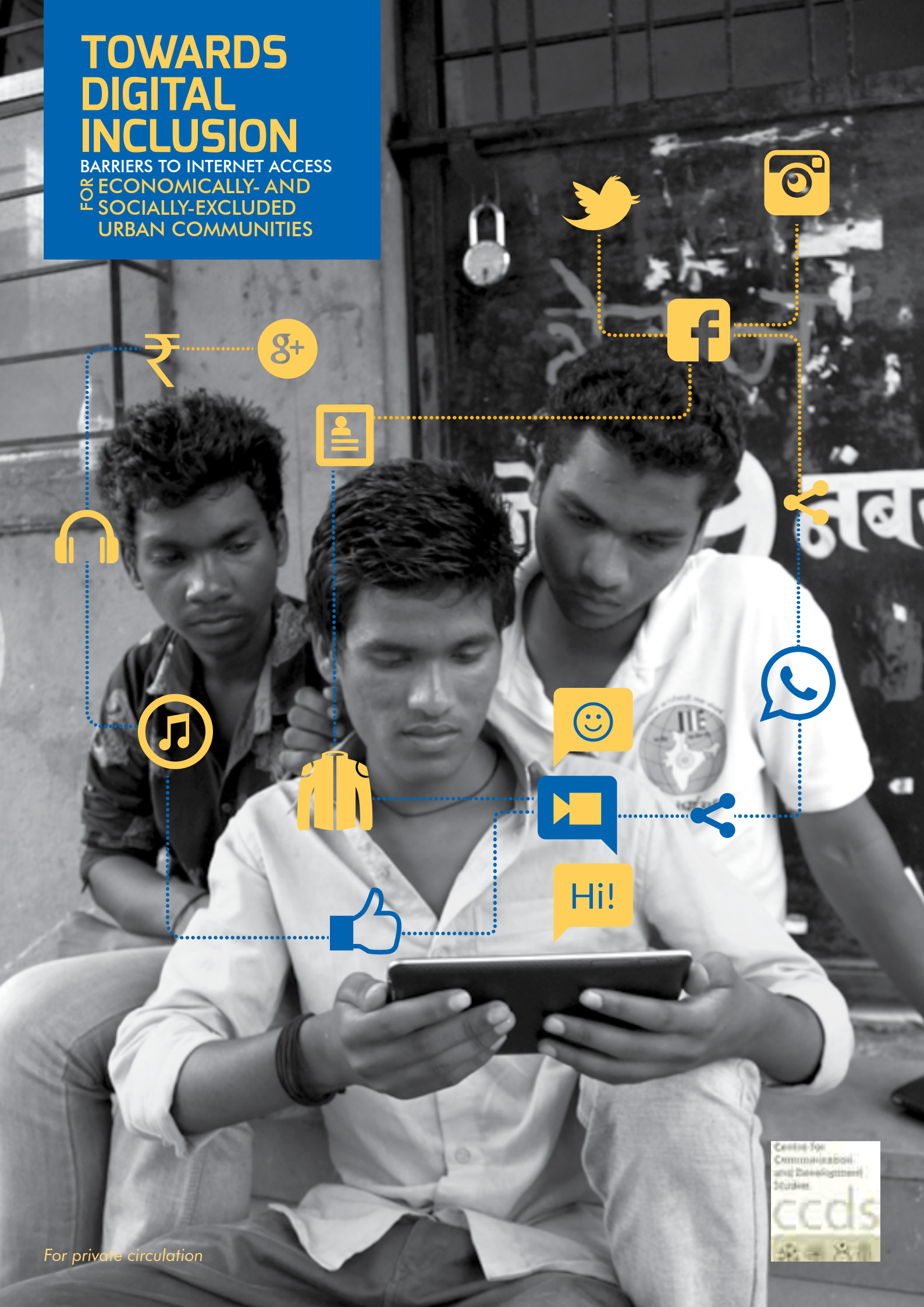
TOWARDS DIGITAL INCLUSION

BARRIERS TO INTERNET ACCESS FOR ECONOMICALLY- AND SOCIALLY-EXCLUDED URBAN COMMUNITIES



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TOWARDS DIGITAL INCLUSION

BARRIERS TO INTERNET ACCESS FOR ECONOMICALLY- AND SOCIALLY-EXCLUDED URBAN COMMUNITIES

A study by the Centre for Communication and Development Studies (CCDS)

Supported by Ford Foundation

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ABOUT CCDS

The Centre for Communication and Development Studies (CCDS) is a social change resource centre that builds knowledge resources on social justice, equitable development, pluralism and accountable governance. We create and nurture open spaces and independent media for dialogue and advocacy on these issues.

CCDS has 15 years of experience in research, media advocacy and strategic communications.

CCDS took an early lead in the creation of open-access knowledge resources for the social sector in India. Our resource base Infochangeindia.org went online in 2001, featuring original reportage and analysis on issues such as poverty, livelihoods, food security, social exclusion and public health, by a wide and credible network of journalists, academics, activists and researchers.

Infochange took information for social change out of the seminar rooms and to students, researchers, mediapersons, members of marginalised communities and concerned citizens. Infochange has also informed scores of campaigns, advocacy movements, development organisations and policymakers.

Twenty-eight volumes of research and reportage have been compiled and published by us in our theme-based dossier *Infochange Agenda*.

Infochange won the Manthan Award for best e-content for development, and has been selected by the Maharashtra government as an innovator in development media and communications. Several individual journalists have won national and international awards for their Infochange articles/ films.

CCDS also pioneered Open Space, a civil society platform for dialogue, expression and social action. Since 2004, Open Space has encouraged young adults in Pune to explore and engage with issues related to pluralism and human rights. Open Space has been a trendsetter in civil society outreach, reaching out to young adults through literature, cinema, music, theatre and dialogue and facilitating creative expression.

Open Space has worked with leading educational institutions at the graduate and post-graduate level across India, and has also granted fellowships to young social entrepreneurs to initiate this outreach process in Thiruvananthapuram, Ahmedabad, Kolkata, Lucknow, Ranchi, Bengaluru and other cities. Open Space has published several books and produced short films which have been widely used over the years as innovative learning material for young adults.

Since 2013, CCDS has focused its research on urban poverty, participatory governance and digital inequality.

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CONTENTS

INTRODUCTION: CONTEXT, BACKGROUND AND PROBLEM

1.1 INTERNET IN INDIA 5
1.2 DEFINING DIGITAL DIVIDE AND DIGITAL INEQUALITY 7
1.3 DIGITAL INCLUSION 8
1.4 MEASURING DIGITAL INEQUALITY 9

RESEARCH METHODOLOGY

2.1 INTRODUCTION 13
2.2 SCOPE OF THE STUDY 13
2.3 MATERIALS AND METHODS 13
- 2.3.1 Study location 13
- 2.3.2 Profile of study sites 13
- 2.3.3 Pilot study 15

2.4 THE SAMPLE 15
2.5 DEFINITION OF KEY TERMS 17
2.6 DATA COLLECTION TECHNIQUES 18
- 2.6.1 Quantitative surveys 18
- 2.6.2 Qualitative research 19

2.7 DATA ANALYSIS 20
2.8 DURATION OF SURVEY 20
2.9 ETHICAL CONSIDERATIONS 20
2.10 CHALLENGES IN FIELD WORK 21
2.11 STUDY LIMITATIONS 21

PROFILE OF PUNE CITY AND SURVEYED SETTLEMENTS

3.1 INTRODUCTION 23
3.2 CITY PROFILE 23
- 3.2.1 Demographic profile 23
- 3.2.2 Urban poverty & slums 24

3.3 PROFILE OF STUDY SETTLEMENTS 27
- 3.3.1 Location of study settlements 27
- 3.3.2 Profile of study settlements 27
- 3.3.3 Demographic characteristics 33
- 3.3.4 Socio-religious groups 35
- 3.3.5 Access to basic amenities 36
- 3.3.6 Educational status of surveyed population 39
- 3.3.7 Employment and occupation 41
- 3.3.8 Wealth status 42
- 3.3.9 Household assets 42
- 3.3.10 Ration cards and government schemes 42

3.4 SUMMARY 45

MEDIA AND INTERNET PENETRATION

4.1 INTRODUCTION 47
4.2 MEDIA EXPOSURE 47
- 4.2.1 Sources of information 47
- 4.2.2 Internet as a source of information 47
- 4.2.3 Type of information sought 47

4.3 USER/NON-USER HOUSEHOLD PROFILE 48
- 4.3.1 Internet use and non-use 48
- 4.3.2 Socioeconomic status 50
- 4.3.3 Possession of mobile phones and internet use 51
- 4.3.4 Households possessing computer skills 52
- 4.3.5 Expenditure on media consumption 52

4.4 USER/NON-USER POPULATION PROFILE 54
- 4.4.1 Internet awareness 54
- 4.4.2 How users were introduced to the internet 55
- 4.4.3 Internet users and non-users by socioeconomic characteristics 58

4.5 INTERNET USER PROFILE 61
- 4.5.1 Gender 61
- 4.5.2 Age 62
- 4.5.3 Educational status 63
- 4.5.4 Occupation 63
- 4.5.5 Wealth quintile 64

4.6 SUMMARY 64

MODES, QUALITY AND COST OF INTERNET ACCESS

5.1 INTRODUCTION 67
5.2 FREQUENCY OF INTERNET USE 67
5.3 PURPOSE OF INTERNET USE 69
5.4 POINT OF INTERNET ACCESS 72
5.5 INTERNET SERVICES USED 77
5.6 MODES OF INTERNET ACCESS 78
- 5.6.1 Devices 78
- 5.6.2 Internet packs 78

5.7 EXPENDITURE ON INTERNET SERVICES 82
- 5.7.1 Expenditure on internet by family income 83

5.8 QUALITY OF ACCESS 85
5.9 SUMMARY 87

BARRIERS TO INTERNET ACCESS AND USE

6.1 INTRODUCTION 89
6.2 BARRIERS TO GETTING CONNECTED (NON-USERS) 89
- 6.2.1 Internet awareness among non-users 89
- 6.2.2 Barriers reported by non-users 90

6.3 BARRIERS TO INTERNET USE (INTERNET USERS) 95
- 6.3.1 Infrastructural barriers 96
- 6.3.2 Affordability and internet utilisation 98
- 6.3.3 Education and ICT skills as barriers 100

6.4 GENDER BARRIERS IN INTERNET USE 101
- 6.4.1 Women's access to and ownership of ICT devices 102
- 6.4.2 Internet access by gender 104
- 6.4.3 Gendered patterns of use 105

6.5 HIGHLIGHTING THE MAJOR BARRIERS 107
- 6.5.1 Socio-demographic characteristics and internet access 107
- 6.5.2 Internet access for men and women 108
- 6.5.3 Household characteristics for connected and non-connected households 109

6.6 SUMMARY 110

ASPIRATIONS AND PERCEIVED BENEFITS OF THE INTERNET

7.1 INTRODUCTION 113
7.2 ASPIRATION TO GO ONLINE 113
7.2.1 Non-user respondents 113
7.2.2 User respondents 114
7.3 SOCIAL SUPPORT AS ENABLER 116
7.4 ENABLING FACTORS REPORTED BY INTERNET USERS 117
7.5 ENABLING INFRASTRUCTURE 118
7.6 FUTURE TRENDS 118
7.7 SUMMARY 121

ENABLERS AND INITIATIVES FOR DIGITAL INCLUSION IN PUNE

8.1 INTRODUCTION 127
8.2 MAHARASHTRA'S E-GOVERNANCE INITIATIVES 127
8.3 UNWIRE PUNE: UNIVERSAL ACCESS AT THE CITY LEVEL 128
8.4 E-GOVERNANCE INITIATIVES OF THE PMC 129
8.5 INTERNET INITIATIVES OF THE PCMC 130
8.5.1 E-governance in the PCMC 130
8.5.2 Public Wi-Fi project in the PCMC 131
8.6 PUBLIC INTERNET ACCESS POINTS 131
8.6.1 Cybercafés 132
8.6.2 Common Service Centres 133
8.7 STATE-RUN DIGITAL LITERACY TRAININGS AND SERVICES 134
8.7.1 MKCL's MS-CIT courses 134
8.7.2 Computer education at the school level 135
8.7.3 Comparison of e-learning in government, CSR- and trust-supported schools 136
8.8 COMMUNITY-LEVEL INITIATIVES FOR COMPUTER LITERACY 137
8.9 SUMMARY 138

CONCLUSION

9.1 INTRODUCTION 143
9.2 GOING BEYOND TECHNOLOGY 143
9.3 DIGITAL INCLUSION POLICY 146
9.4 RECOMMENDATIONS FOR DIGITAL INCLUSION 148
9.4.1 Reframing the digital divide debate 148
9.4.2 E-governance and social inclusion 148
9.4.3 Motivation 149
9.4.4 Access/Infrastructure 149
9.4.5 User capability 151

REFERENCES 153
ACRONYMS & ABBREVIATIONS 156
GLOSSARY OF HINDI/MARATHI WORDS 157
INTERVIEWS/INTERACTIONS CONDUCTED FOR THIS RESEARCH STUDY 158
ABOUT THE RESEARCH TEAM 160

TABLES

Table 1.1 Internet user penetration (2013) 5
Table 1.2 Subscriptions per 100 population (2013) 6
Table 1.3 Internet subscribers in India at a glance (2014) 6
Table 2.1 Sample size for each selected settlement 17
Table 3.1 Population in Pune Urban Agglomeration (2011) 23
Table 3.2 Literacy rate (2011) 26
Table 3.3 Composition of population by socio-religious groups in urban Pune and slums in the city 26
Table 3.4 Access to amenities and assets 27
Table 3.5 Slum settlements selected for study 27
Table 3.6 Age distribution of surveyed population aged 0-70 years by settlement 34
Table 3.7 Marital status of household members aged 16-70 years 35
Table 3.8 Socio-religious groups 35
Table 3.9 Ownership of house 38
Table 3.10 Type of house 39
Table 3.11 Number of rooms per house 39
Table 3.12 Room density 39
Table 3.13 Educational status of household members aged 16-70 years by gender 40
Table 3.14 Educational status of household members aged 16-70 years by settlement 40
Table 3.15 Distribution of school-going children under 16 years of age by type of school 40
Table 3.16 Medium of instruction in schools for children 41
Table 3.17 Computer training in school for children under 16 years of age 41
Table 3.18 Occupation of adult household members 41
Table 3.19 Wealth quintiles by settlement 42
Table 3.20 Household ownership of assets by settlement 43
Table 3.21 Types of ration card held by households 43
Table 3.22 Number of households that are beneficiaries of government schemes other than PDS 44
Table 4.1 Internet users in the household 49
Table 4.2 Percent distribution of connected and unconnected households by socioeconomic characteristics 51
Table 4.3 Percent distribution of connected and unconnected households by possession of types of mobile phones 51
Table 4.4 Computer skills in connected and unconnected households 53
Table 4.5 Monthly family expenditure on internet, television and mobile phone – talktime and SMS only 53
Table 4.6 Family expenditure on mobile phones (talktime and SMS only) by wealth quintile 54
Table 4.7 Internet penetration at the level of household members 54
Table 4.8 Internet awareness amongst non-users at the level of household members 54
Table 4.9 Awareness of internet users about the purposes of internet use by socioeconomic and demographic characteristics 57
Table 5.1 Ownership of devices that can connect to internet 78
Table 5.2 Household expenditure on internet by family income 83
Table 5.3 Household monthly expenditure on internet by age 84
Table 5.4 Household monthly expenditure on the internet by education 84
Table 5.5 Household monthly expenditure on internet by occupation 85
Table 6.1 Barriers reported by internet non-users 91
Table 6.2 Percentage of users accessing the internet in an Indian language 93
Table 6.3 Internet access points 97
Table 6.4 Types of internet connection across wealth quintiles 97
Table 6.5 Use of internet service packages 99
Table 6.6 Expenditure on the internet 99
Table 6.7 Purpose of internet use 101
Table 6.8 Educational status of internet users by gender 105
Table 6.9 Occupation of internet users by gender 105
Table 6.10 Regression of socio-demographics on internet access for all respondents 108
Table 6.11 Regression of socio-demographics on internet access for males and females 109

Table 6.12 Regression of household characteristics on internet access for connected and non-connected households 109
Table 7.1 Non-users' perceptions of the internet 114
Table 7.2 Aspiration to go online 114
Table 7.3 User respondents' perceptions about the internet 115
Table 7.4 Percent of male and female user respondents 'agreeing' to statements on the internet 115
Table 7.5 Perceived changes in the family/individual as a result of internet use – User respondents 115
Table 7.6 Support for internet use 117
Table 7.7 Need for internet facility 118
Table 7.8 Preferred public internet access point 118

FIGURES

Figure 2.1 Pune Urban Agglomeration 14
Figure 3.1 Age structure in Pune slums 24
Figure 3.2 Location of surveyed slum settlements 28
Figure 3.3 Gender distribution of household population for persons below 16 years of age 33
Figure 3.4 Gender distribution of household population for persons aged 16-70 years 33
Figure 3.5 Age-sex distribution of surveyed population aged 0-70 years 34
Figure 3.6 Access to water supply 36
Figure 3.7 Access to sanitation 37
Figure 3.8 Drainage 38
Figure 3.9 Households that have availed of government schemes other than PDS 44
Figure 3.10 Households availing of formal/informal loans 44
Figure 4.1 Major sources of information for households 47
Figure 4.2 The internet as a source of information by wealth quintile 48
Figure 4.3 The internet as a source of information by socio-religious groups 48
Figure 4.4 Type of information sought from sources of information 48
Figure 4.5 Percentage of households with at least 1 internet user by settlement 49
Figure 4.6 Number of internet users per household 50
Figure 4.7 Use of computers in the household by settlement 52
Figure 4.8 Use of computers by gender 53
Figure 4.9 Expenditure on media as a proportion of total family income 54
Figure 4.10 How users were exposed to the internet 55
Figure 4.11 Awareness of purpose of internet use 56
Figure 4.12 Internet access of individual respondents by gender 58
Figure 4.13 Internet access of individual respondents by age 59
Figure 4.14 Internet access of individual respondents by marital status 59
Figure 4.15 Internet access of individual respondents by socio-religious groups 59
Figure 4.16 Internet access of individual respondents by educational status 60
Figure 4.17 Internet access of individual respondents by occupation 61
Figure 4.18 Internet access of individual respondents by wealth quintile 61
Figure 4.19 Gender distribution: internet users 62
Figure 4.20 Age distribution: internet users 62
Figure 4.21 Educational status: internet users 63
Figure 4.22 Occupational distribution: internet users 64
Figure 4.23 Wealth quintiles: internet users 64
Figure 5.1 Frequency of internet use 67
Figure 5.2 Frequency of internet use by gender 68
Figure 5.3 Frequency of internet use by age 68
Figure 5.4 Frequency of internet use by occupation 69
Figure 5.5 Frequency of internet use by wealth quintile 69
Figure 5.6 Purpose of internet use 70
Figure 5.7 Purpose of internet use by gender 71
Figure 5.8 Purpose of internet use by age 71
Figure 5.9 Purpose of internet use by educational status 71
Figure 5.10 Purpose of internet use by occupation 72
Figure 5.11 Points of internet access 73
Figure 5.12 Points of internet access by age 74
Figure 5.13 Points of internet access by educational status 74
Figure 5.14 Points of internet access by occupation 75
Figure 5.15 Points of internet access by wealth quintile 75
Figure 5.16 Medium of internet access 77
Figure 5.17 Data packs by gender (data transfer limit) 79
Figure 5.18 Data packs by age (data transfer limit) 79
Figure 5.19 Data packs by occupation 80
Figure 5.20 Type of internet packages (days' validity) 80
Figure 5.21 Data packs by gender 81
Figure 5.22 Data packs by age 81
Figure 5.23 Data packs by occupation 82
Figure 5.24 Expenditure (₹/month) on the internet 82
Figure 5.25 Expenditure (₹/month) on the internet by gender 84
Figure 5.26 Users' perceptions of quality of service 86
Figure 5.27 Users' perceptions of affordability of service 87
Figure 6.1 Awareness of internet among non-users by age 90
Figure 6.2 Awareness of internet among non-users by occupation 90
Figure 6.3 Awareness of internet among non-users by education 92
Figure 6.4 Percentage of internet non-users within each educational group 92
Figure 6.5 Awareness of internet among non-users by wealth quintile 95
Figure 6.6 Barriers to access reported by internet users 95
Figure 6.7 Non-users' awareness of internet by gender 102
Figure 6.8 Computer use in the household by gender 102
Figure 6.9 Ownership of mobile phones for internet users by gender 103
Figure 6.10 Gender distribution of internet users 104
Figure 7.1 Family support for using internet 116
Figure 7.2 Enablers for internet use 117
Figure 7.3 Awareness of the internet among non-users by age-groups 118
Figure 7.4 Internet users by gender 119
Figure 7.5 Internet users by education 119
Figure 7.6 Internet users by occupation 120
Figure 7.7 Internet users by wealth quintile 120
Figure 7.8 Perceived changes as a result of internet use (youth below 25 years) 120

EXECUTIVE SUMMARY

With the internet becoming essential for education, communication, livelihoods and government services and entitlements, access to the internet is no longer a privilege or luxury. Those who do not have access to the internet (or have rudimentary or limited access) will fall further and further behind in the digital age. The CCDS study examines the extent of digital inequality in a rapidly-expanding Indian metropolis and explores the barriers to internet access for the poor and marginalised.

The digital have-nots are often those who are already disadvantaged along the traditional axes of inequality. They include the poor who do not have the economic capital to buy the infrastructure required to log on to the web; those who do not have the social capital – including education and ICT skills – to use computers and the internet; and those who do not have the freedom or autonomy to use digital technologies – such as women.

Digital inequality ends up reinforcing existing social inequalities, and therefore constitutes a major social inclusion and public policy issue.

Digital inequality between the developed, developing and least-developing nations, between rural and urban areas and between genders has been studied by social scientists and policymakers globally over the last two decades. Research on digital inequality within supposedly 'well-connected' urban areas, however, is still to gain ground.

The CCDS study explores the barriers to internet access for a broad spectrum of low-income and socially-excluded populations in Pune city, an urban agglomeration in Maharashtra state, where roughly 40% of citizens live in informal settlements or slums. Data on the extent of digital inequality and its causes will offer crucial insights for the digital inclusion of marginalised urban populations.

Extent of digital inequality

The CCDS study, undertaken between July 2013 and December 2015, surveyed nearly 10% of households in six low-income settlements of the urban agglomeration – a total of 1,634 households. The study revealed that only 18% of adult residents use the internet, despite taking a very broad definition of internet user, including all those who have ever accessed the internet on any device, anywhere, in the last three months.

Further inequalities in internet access within the settlements were observed along the lines of gender, age, education, wealth and occupation.

Digital inequality by gender: There is a big gender gap: 16% of women in the study locations are internet users compared to 58% of men. The number of non-users among women is double the number for men.

Digital inequality by age: There is a big age gap: The majority of users – 64% – are in the 16-20 age-group. Only 7% of the 35+ report internet use.

Digital inequality by education: Use of internet rises as levels of education rise. There are few users with no education or only primary education. Households where a family member had completed schooling or was enrolled in Standard 10 were three times more likely to be connected to the internet than households without an educated member.

Digital inequality by wealth: Affordability strongly determines internet access. A higher proportion of internet users fall in the upper wealth quintiles.

Digital inequality by occupation: Students and those in more secure jobs in the formal or informal sector were much more likely to be online than daily-wagers or non-working people.

Digital inequality due to lack of awareness: In the margins of the city where the study populations live, roughly 40% of non-users have never even heard of the internet.

Barriers to access

Infrastructural constraints: No wired broadband services are offered in the low-income settlements although these services may be available in commercial and middle-income residential areas a stone's throw away. No free or subsidised public access points are available in the settlements and commercially-operated cybercafes tend to be located some distance away. Users reported the variable network connectivity and coverage offered by mobile telecom service providers as a major barrier to fuller use.

Economic constraints: Households that are poorer are constrained by the absence of enabling infrastructure like computers, dongles, smartphones and feature phones, as well as the cost of internet services.

Educational constraints: Education is also linked to purpose of use. Though at the time of the survey, users were mainly logged onto social networks and entertainment sites, those with higher levels of education up to higher secondary/diploma/vocational courses were also using it for education/jobs and information search. Regardless of level of education, however, use of the internet for online transactions and e-governance services was limited, indicating that they might not be user-friendly for these diversely-literate populations with very basic internet infrastructure.

Lack of ICT skills: Lack of the skill to use computers and other digital devices like smartphones and tablets keeps a big section of the study population away from the digital world. Households where a family member had learnt how to use a computer were four times more likely to be connected than households where no member used a computer.

Gender constraints: Gender differences begin with literacy, with 70% of women literate compared to 87% of men. Only 40% of women own their own mobile phone compared to 79% of men. Fewer women than men can use a computer. But the biggest barrier for women appears to be the absence of agency and autonomy in going online, either on their own or family member's device or at public access points like cybercafes. The internet is considered unsafe and inappropriate for women in these neighbourhoods.

Attitudinal constraints: Some non-users believe that the internet has nothing relevant to offer them. Others believe it is addictive and a waste of time, with a strong potential for misuse.

Regardless of the congested and unhygienic environments in which the study populations live, regardless of their economic and educational constraints, poor housing and absence of digital infrastructure, digital communication is very important to respondents: 97% of the households studied had a mobile phone and 89% had television. An overwhelming 80% of users and 78% of non-users said that the internet was as basic a necessity as electricity. There is a strong aspiration to go online and be part of the digital society.

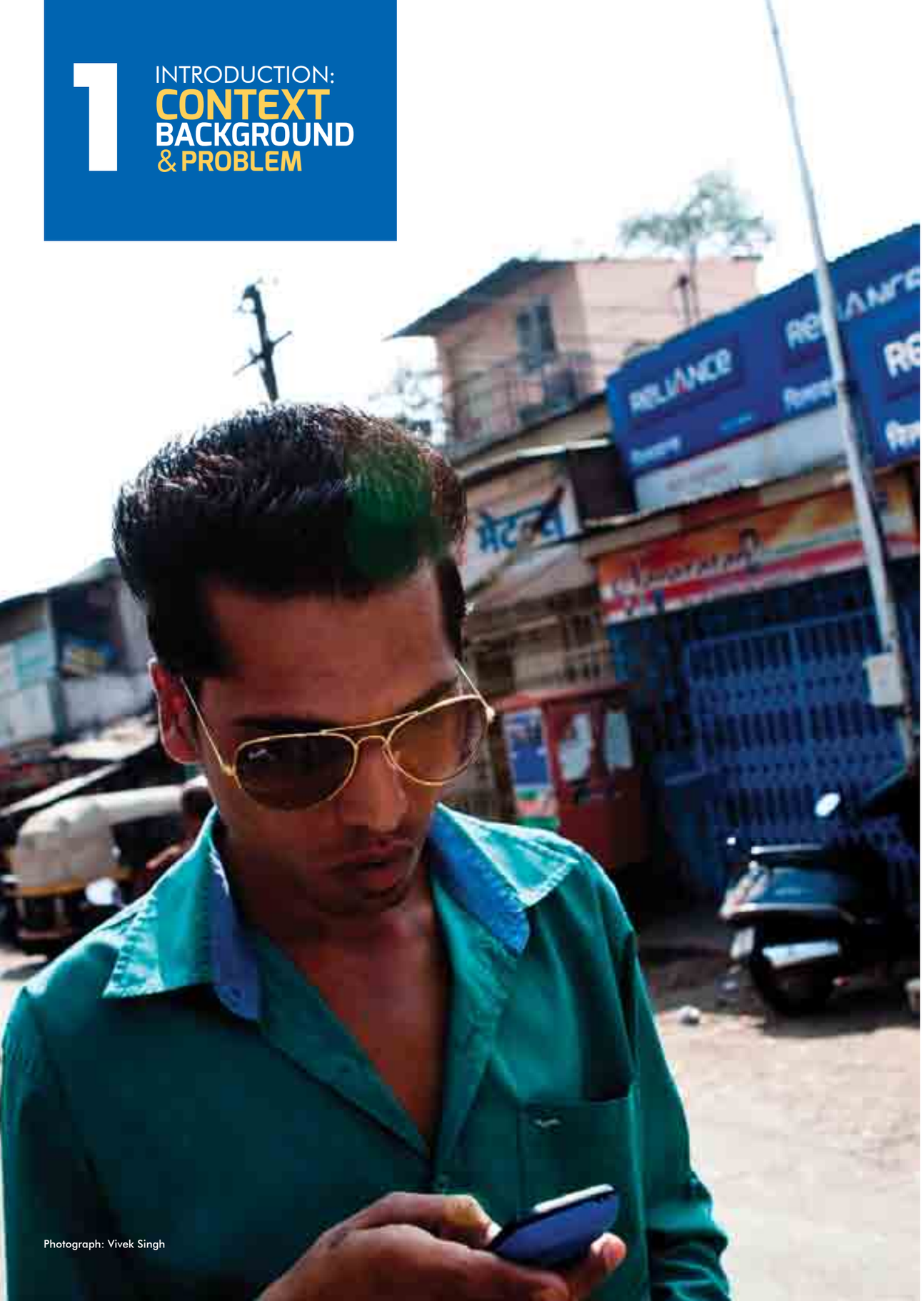
Recommendations

The CCDS study offers a reality check on the digital 'revolution' that is being celebrated in India. It points to the enormity of the task of digital inclusion if ambitious programmes such as Digital India are to benefit all citizens, not just the broadband elites. It illustrates that digital equality is not just about getting people connected to the internet. It is about ensuring that everyone has equal opportunity to access high-speed and affordable internet services, as well as the media/digital literacy to use the technology to the fullest.

Some of the recommendations that our study makes are:

- Reframing the digital divide debate and shifting the focus from access to technology alone to access + adoption, with a focus on the social contexts of technology.
- Providing high-quality internet access for marginalised urban communities: While free/subsidised Wi-Fi spots can facilitate quick access on mobile devices, fuller use of the internet is best enabled through public access centres with high-speed broadband on computers. The location of these public access centres within or close to low-income areas will facilitate access by women in particular. The presence of mentors will help users make fuller use of the internet, including in applying for state entitlements and services.
- Enhancing user capability by offering short workshops and trainings with flexible timings and audio-visual instruction in place of the one-size-fits-all ICT trainings offered in the state at present.
- Improving the quality of ICT training and infrastructure in schools that cater to the urban poor.
- Raising awareness of the internet and its benefits by developing concrete examples of use for particular communities and demonstrating the value of the internet for them.
- Addressing social acceptability through awareness-generation on online safety and responsible use of the internet.
- Building relevant (local) content and services and making them available in regional languages to help marginalised groups access information related to livelihoods, health, housing, education, personal enrichment, public amenities and entitlements.

1 INTRODUCTION: CONTEXT BACKGROUND & PROBLEM



Photograph: Vivek Singh

1.1 INTERNET IN INDIA

In April 1993, the National Center for Supercomputing Agency at the University of Illinois-Urbana Champaign released the first graphical internet browser, Mosaic. This browser and its successor, Netscape, made technical knowledge unnecessary for internet access, drawing ordinary citizens onto the Web and changing forever the way it is used and how people live.

The centrality of the internet in social, economic and political activity became quickly evident.

But so did the consequent marginality of those without access to the internet, or with only limited access. Within two years, the US's National Telecommunications & Information Administration (NTIA) had come out with a report called *Falling through the net: A survey of the 'have-nots' in rural and urban America* (US Department of Commerce and NTIA, 1995). The report discussed the digital divide and what lack of access to the internet would mean and noted: 'While a standard telephone line can be an individual's pathway to the riches of the Information Age, a personal computer and modem are rapidly becoming the keys to the vault.'

The very same year, 1995, India got access to the internet. While initially it remained the preserve of educational and technical institutions, in August, just in time for the Independence Day celebrations, Videsh Sanchar Nigam Limited, then still a public sector unit, inaugurated India's first public internet service. The Gateway Internet Access Service provided individual subscribers dial-up access speeds up to 9.6 kbps at Rs 5,000 for 250 hours to be used over a year.

From 10,000 internet users in 1995 to 254.4 million by September 2014 (Telecom Regulatory Authority of India, [TRAI]), India has witnessed a telecom revolution, enabled largely by leapfrogging wireless technologies, mobile telephony and falling prices of smartphones and mobile data access. Today the internet is accessible for as little as Rs 100 for 300 MB of data to be used over a month.

India stands third in the ranking of countries by total number of internet users. Despite the impressive absolute numbers however, internet penetration in India is at 15.1% (compared to 96.5% in Iceland, 89.8% in the UK, 46% in China and 29.9% in Bhutan) (ITU and UNESCO, 2014, p 102).

India is at the bottom of most indices when compared to other BRICS countries.

	RANK*	PERCENTAGE
BRAZIL	74	51.6%
RUSSIA	57	61.4%
INDIA	139	15.1%
CHINA	86	45.8%
SOUTH AFRICA	80	48.9%

TABLE 1.1
INTERNET USER PENETRATION (2013)

Source: ITU 2014

*http://www.internetsociety.org/map/global-internet-report/

TABLE 1.2
SUBSCRIPTIONS PER 100 POPULATION (2013)

Source: *Broadband for All: The State of Broadband 2014*. Broadband Commission

	FIXED (WIRED) BROADBAND SUBSCRIPTIONS PER 100 POPULATION		ACTIVE (MOBILE) BROADBAND SUBSCRIPTIONS PER 100 POPULATION	
	RANK	PER HUNDRED	RANK	PER HUNDRED
BRAZIL	73	10.1	37	51.5
RUSSIA	50	16.6	29	60.1
INDIA	125	1.2	113	3.2
CHINA	59	13.6	78	21.4
SOUTH AFRICA	106	3.1		NA

The fine print on internet access in India (Table 1.3) presents an even bleaker picture: TRAI data claims that 178.67 million of India's internet users are narrowband subscribers, and only 75.73 million are on broadband (ie speeds higher than 512 kbps and now recognised in India as the basic for a useful internet connection).

TABLE 1.3
INTERNET SUBSCRIBERS IN INDIA AT A GLANCE (2014)

Source: TRAI, September 2014

TOTAL INTERNET SUBSCRIBERS	254.40 MILLION
Narrowband subscribers	178.67 million
Broadband subscribers	75.73 million
Wired internet subscribers	18.70 million
Wireless internet subscribers	235.70 million
TOTAL INTERNET SUBSCRIBERS PER 100 POPULATION	20.39

Seen thus, effective internet penetration in India is reduced to 6.19 per 100. And if one considers only the 18.70 million wireline subscribers (TRAI has itself stated that only wireline subscribers could be considered to have 'desired bandwidth speeds'), less than 2 per 100 are using desired bandwidth speeds (using 2011 census figures for population).

The government's big push towards Digital India and e-governance must be placed in the context of these dismal figures for access.

The Digital India programme launched in 2014 centres around a) digital infrastructure as a core utility to every citizen, b) online and mobile availability of governance and services, and c) digital empowerment of citizens, with universal digital literacy, and digital platforms for participative governance.

With government services increasingly being made available online, lack of access to the internet hampers citizens' access to government and its services. To take just one example from the city of Pune, government recently mandated that applications to primary schools under the 25% reservation for economically weaker sections under the Right to Education Act could only be made online. The first year the online application process was introduced in the city, the majority of parents had no clue how to go about it and the quota was undersubscribed. Applications picked up the following year when the government set up helpdesks at schools to demystify the online process for parents and help them submit their applications.

Equality of access to information and communication technologies (ICTs) not only facilitates political participation but is critical for economic inclusion, education and community involvement as well as entertainment and personal interaction. Digital equality is thus a significant public policy issue.

Failure to address the disparities in access will result in the traditional elites also remaining the 'broadband elites', while the marginalised millions are relegated to what sociologist and digital media theorist Manuel Castells calls 'the black holes of informational capitalism' (Castells, 1998, p 162).

1.2 DEFINING DIGITAL DIVIDE AND DIGITAL INEQUALITY

The digital divide was originally defined in terms of access to the internet – the gap between the technology haves and have-nots, those with access to computers/ mobile devices and the internet, and those without. In an information society, digital access, the possession of digital literacy/ skills, and the ability to use them to enhance income, education and social status, underpin social participation and inclusion.

The digital divide is tied to social inequalities. It taps into existing social and economic cleavages. Those who are already marginalised – in terms of income, education, gender, age or ethnic status – will have fewer opportunities to access and use computers and the internet (Warschauer, 2003).

This would mean that the new technology could end up exacerbating inequality rather than ameliorating it (DiMaggio and Hargittai, 2001). The underclass of info-poor 'may become further marginalised in societies where basic computer skills are becoming essential for economic success and personal advancement, entry to good career and educational opportunities, full access to social networks, and opportunities for civic engagement' (Norris, 2001, p 68).

Former UN secretary general Kofi Annan was amongst the first to flag the problem at the international level: 'People lack many things: jobs, shelter, food, healthcare and drinkable water. Today, being cut off from basic telecommunications services is a hardship almost as acute as these other deprivations, and may indeed reduce the chances of finding remedies to them,' (Quoted in Norris, 2001, p 40).

As internet penetration grows, the digital divide is being seen not as a question of access alone, but also the inequality between people *with* access. Absolute exclusion of access to digital media remains important (van Dijk, 2012) but the emphasis is shifting to the relative differences between people who already have access in a certain way or to a particular extent.

'As soon as one source of technological inequality seems to be diminishing, another one emerges: differential access to high-speed broadband service,' (Castells, 2001, p 256). Even while the 'huddled masses' finally get access to basic internet services, 'the global elites will have escaped into a higher circle of cyberspace'.

This is what Hargittai has called the second digital divide.

Addressing the second digital

divide necessitates a shift in focus from access to user capability. As the number of users in a country increases, access spills over from the most privileged population groups, extending to individuals who are privileged with respect to some parameters but disadvantaged with respect to others (DiMaggio and Hargittai, 2001).

As internet diffusion increases in India, quality of access and the ability to make full use of the internet become important.

A more thorough understanding of digital inequality therefore requires us to place internet access in a broader context than just access to the technological capital that enables connectivity.

Other variables include the *skill* that people bring to their use of the technology; the *social support* internet users can draw on; the *purposes* for which people use the technology; and the extent of *autonomy* that people exercise in their use of the web (DiMaggio and Hargittai, 2001).

Efforts at ameliorating this divide or inequality have been termed digital inclusion.

1.3 DIGITAL INCLUSION

There is a paucity of academic and public policy work in the area of digital inclusion in India. It was only in 2014 that the TRAI called for discussions on the new broadband policy where it included a separate chapter on demand-side issues in adoption of broadband. The government's focus all along has been on ensuring technological or supply-side access and that too primarily in the area of telephony. The Universal Services Obligation Fund did include rural wireless broadband access as one of its schemes in 2009, and in 2014 an agreement was signed to fund gram panchayat connectivity through the national optical fibre network. And the Digital India initiative, which brings together all the union government initiatives in the digital domain, includes a few provisions that address digital inclusion. But the focus remains on connecting rural India.

The paucity of research on digital inclusion in India could be partly attributed to the belief, until recently, that the digital divide is less urgent than the traditional axes of inequality, that in a developing country, ICT might be less essential for the poor than say toilets or healthcare[1].

There's also an unquestioning faith in IT and its universal benefits in India. The 'normalisation thesis' (Norris, 2001) appears to prevail, supporting the assumption that competition in the marketplace and falling costs of hardware/ services will correct all disparities, without much need for government intervention, or provisioning for equal opportunities in access. The social profile of the online community is expected to broaden over time, just as the audience for television or the telephone did.

But the history of technology diffusion puts a damper on this view: Technological innovations from gunpowder to the telegraph to airplanes have been first adopted by higher socioeconomic groups. Education, literacy and social status facilitate access to the financial and informational resources required to adapt flexibly to innovative technologies. 'The conditions under which innovations are implemented determine, in part, their social consequences... Innovations in highly stratified societies will usually reinforce existing socioeconomic disparities,' (Norris, 2001, p 71).

As Castells notes, 'Diffusing the internet or putting more computers in schools does not in itself amount to much social change. It depends where, by whom, for whom, and for what communication and information technologies are used,' (Castells, 2005, p 6).

Digital inclusion then calls for Digital Empowerment, Digital Opportunity, Digital Equity, and Digital Excellence. 'People may start as very basic users who simply need access to resources at a community technology centre or a library. Digital Empowerment refers to the ability to use the wealth of resources in computing and the internet to learn, communicate, innovate, and enhance wealth – to move from being a digital novice to a digital professional or innovator. An effective Digital Inclusion strategy provides a path to full participation in a digital society,' (Karen Archer Perry in Wynne, Perry and Cooper, 2009).

1.4 MEASURING DIGITAL INEQUALITY

As early as 2000 the NTIA in the US was preparing separate reports for new categories of 'have-nots' – based on race, income, education, age, and disability status. Twenty years after the internet was introduced in India, there are few studies on the contours of the digital divide in the country, or how the knowledge gap is widening for those with poor access or inadequate ICT skills. We have few data on the groups that are being left in the 'black holes' of the information society, or of their aspirations to escape them. The academic and policy research that does exist is mostly on e-governance, individual initiatives towards digital inclusion, and the problems of rural connectivity. TRAI data point to the gulf between internet and telephone use, but give no sense of the barriers to internet access experienced by those who are 'offline and falling behind' (McKinsey & Company, 2014). The absence of data on the impact of the digital divide on marginalised communities in *urban* India is particularly marked.

This research tries to fill some of the gaps. The study probes the extent to which economically and socially marginalised populations in a burgeoning Indian metropolis have been able to get online, the barriers to digital inclusion that they experience in the resource-poor areas they inhabit, the uses to which they are able to put the internet, and their aspiration to go online.

The study defines 'access' in social as well as technological terms. As internet technologies penetrate further into society, the pressing question is not only how many and who can log on from home, work, or public access centres, but also how difficult it is for them to get online and what they are able to do when they go online.

Pune and its contiguous industrial areas offer a fertile urban setting to understand internet inequality. Pune has grown rapidly over the last two decades to become the eighth largest urban agglomeration in India. The city has seen a high level of in-migration, but 40% of its burgeoning population – less in the neighbouring industrial township of Pimpri-Chinchwad – lives in multidimensional poverty in informal settlements or slums. By 2015, Pune ranked second only to Bengaluru in software exports from India; state-of-the-art software parks and IT enclaves now dot its landscape, and the city plays host to a large young IT workforce. An increasing number of government services that affect all citizens, including the poor – from caste certificates to applications for driving licenses – require online applications. But this is the first study to document barriers to internet access and use in an 'IT city' where internet access, according to one study, is reported to have grown at 34% between 2013-14 ('Internet in India 2014', IAMAI-IMRB, 2014) to reach 3.6 million users in Pune and Pimpri-Chinchwad (suggestive of a penetration rate above 50%).

The specific objectives of the study are:

1. To understand inequality in internet access in low-income settlements of Pune (areas of the city falling under the Pune Municipal Corporation and the Pimpri-Chinchwad Municipal Corporation);
2. To understand how socioeconomic factors – wealth, education, language, religion, caste, gender, age, occupation and marital status – affect or do not affect internet access for people in these settlements;
3. To understand how infrastructural factors – hardware/device, connectivity/data services, and public access points – shape internet access for people residing in these settlements;
4. To study the awareness and attitudes of inhabitants of low-income urban settlements towards the internet;
5. To understand patterns of internet use among people in these settlements, and how they are introduced to and explore the internet;
6. To explore the quality of access available to them; and
7. To understand the enablers of and barriers to internet access among people in these settlements, and their aspirations to go online.

The need for such a study is overdue. The government is making ambitious plans for Smart Cities, e-governance and digital delivery of services to citizens. Without research inputs feeding into policy at this stage, efforts to address digital inequality might be inappropriate to the needs, or too little and too late.

Also, till such time that both the extent of the problem and the opportunities to address it are known, it will be difficult to convince those tasked with policy prescriptions why it should not be a case of food, income and housing first, and digital inclusion later. We should not have to wait for another study years later to suggest that the digital divide will exacerbate inequality. The objective of the research, therefore, is not merely to understand internet inequality and the use to which those with some access to the internet put it, but also to see what hopes and aspirations they have from the use of this technology and to examine the contours of what Warschauer (2003, p 26) has called the 'social embeddedness of technology'.

The next chapter provides the research methodology used to address these objectives.

ENDNOTE

1. This view was also expressed by some elected representatives and bureaucrats in the city in the course of this research

2 RESEARCH METHODOLOGY

2.1 INTRODUCTION

This study explores internet penetration amongst low-income and socially-excluded urban populations and the barriers experienced by them in going online. There is very little information on the extent of digital exclusion amongst marginalised urban communities in India. This chapter presents the methodology adopted to collect the required information through semi-structured interviews, in-depth interviews, focus group discussions, reportage and audio-visual documentation.

2.2 SCOPE OF THE STUDY

The study aims to understand internet access among people living in low-income urban settlements and the factors facilitating or inhibiting their access. It is based on the understanding that affordable, high-quality internet access should be viewed as a basic service. The study is expected to provide greater insight into the infrastructural, attitudinal and skill-development aspects of bringing socially-excluded populations online and enabling them to derive the benefits of digital inclusion. It proposes to recommend measures for the digital inclusion of low-income and marginalised urban populations.

2.3 MATERIALS AND METHODS

2.3.1 Study location

The city of Pune was chosen for the present study as it is one of the country's fastest developing metropolises with a large and growing urban population. Much of this population lives in informal settlements or slums[1]. Slums under the Pune Municipal Corporation (PMC) and the Pimpri-Chinchwad Municipal Corporation (PCMC) were considered (see Figure 2.1). As in most cities, a large percentage of those who live in Pune's informal settlements belong to socially-excluded communities[2] including those from Scheduled Castes (SC), Scheduled Tribes (ST), and religious minorities.

However, they house a fairly wide cross-section of income groups, from the poorest of the poor to upwardly-mobile families who could be better defined as lower-middle class or even middle class. (Respondents of our survey are divided into five wealth quintiles.) Census 2011 also reveals that Pune's burgeoning slum population is relatively better-off in terms of basic amenities and possession of assets as compared to the rest of urban India and Maharashtra. These communities are therefore in a position to aspire to use new information and communication technologies (ICT) including the internet. The city and study locations are discussed in detail in Chapter 3.

2.3.2 Profile of study sites

As part of the formative study, literature on urban poverty in India, Maharashtra and Pune was reviewed. The relevant official records were studied, including the first Census of India Survey of Housing Stock, Amenities & Assets in Slums (2011), the Census of India (2011) and the Slum Atlas of Pune (2011). The Slum Atlas is based on a survey by the international non-profit CHF International[3] in partnership with the Pune-based NGO Maharashtra Social Housing and Action League (MASHAL) and the PMC's department of urban community development. Other documents studied include maps and reports from MASHAL and from another Pune-based NGO, Shelter Associates. The PMC's Environment Status Report (2012-13) was also studied. Interviews were conducted with researchers who have been studying poverty and urban planning in Pune. Insights were also gained from interactions

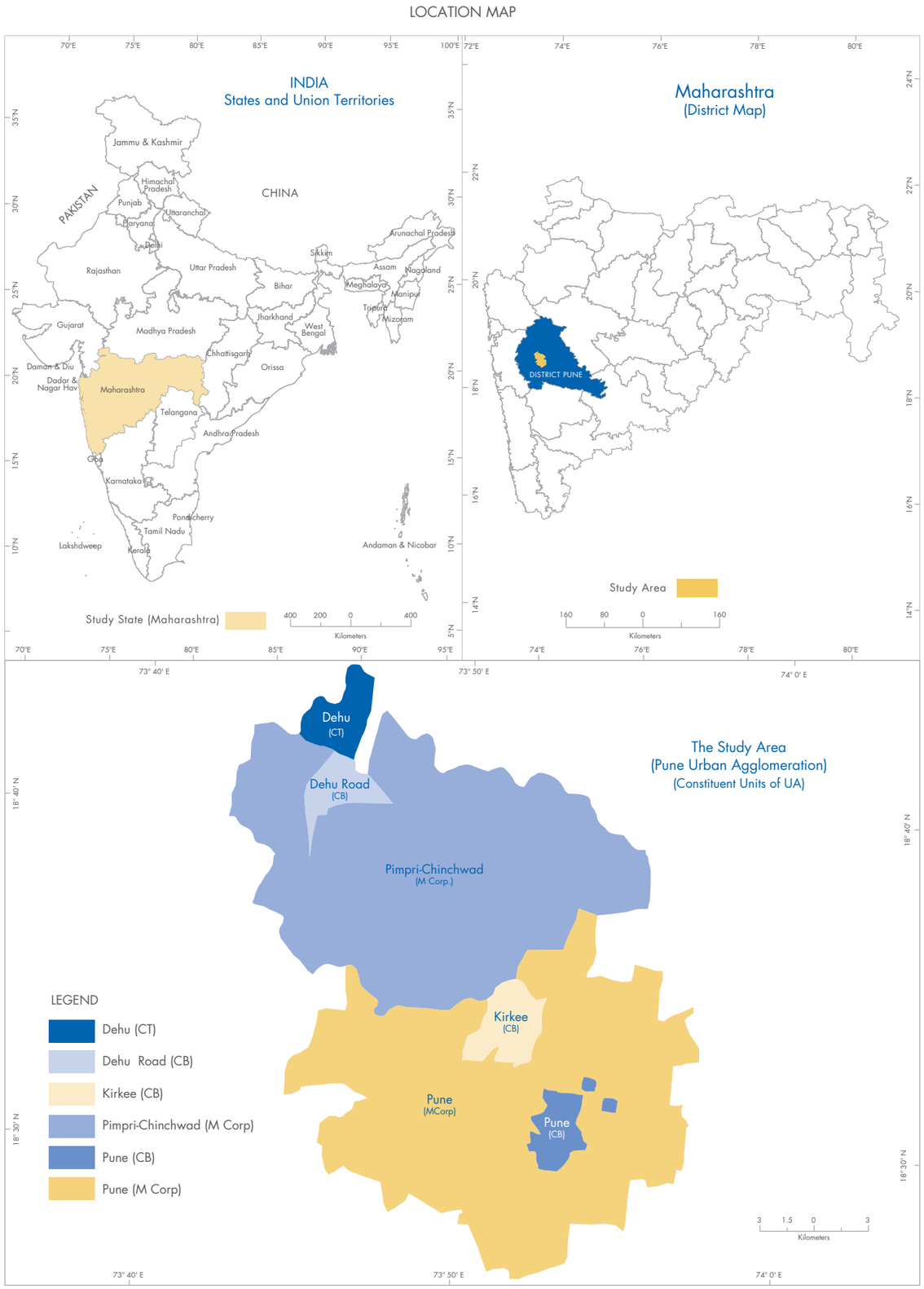


FIGURE 2.1 PUNE URBAN AGGLOMERATION
Source: Census of India, 2011, Administrative Atlas of Maharashtra, 2011
Map courtesy Dr Binod Kumar Singh, Senior Geographer,
Directorate of Census Operations, Uttar Pradesh

Photograph: Vivek Singh

with institutions and organisations working on issues related to urban poverty in Pune.

Forty settlements were shortlisted from 477 slums in the PMC documented in the Slum Atlas to include well-established and old settlements as well as relatively recent ones, settlements with diverse ethnic, caste and religious composition, diverse economic strata, and topographical features that might impact internet connectivity and use. Similarly, seven settlements were selected from 72 slums in the PCMC using maps of the area. Field visits helped document the geographical spread of the settlements, topography, legal status (declared/ undeclared), availability of basic facilities, occupational structure, and other socioeconomic characteristics including the presence of socially-excluded populations. The communication and ICT infrastructure of different settlements was also studied.

2.3.3 Pilot study

A pilot study was conducted in two low-income settlements, Ramtekdi and Kashewadi, selected on the basis of topographical differences and the presence of diverse socioeconomic groups, castes and communities. Ramtekdi is located on a hill slope and is in the vicinity of an industrial estate. Kashewadi, a relatively older settlement, is in the heart of the old city. It is mainly inhabited by Dalits, Muslims and Christians.

A total of 69 interviews, 34 from one settlement and 35 from the other, were conducted for this phase of the study. Individuals aged 16-70 were interviewed, including school/college students and the working population, for whom the internet is likely to be most important and relevant. Internet users and non-users were interviewed in the proportion of 3:1. One-third of the respondents amongst both users and non-users were women. Questions asked included awareness of the internet, frequency of use, expenditure, points of access, factors affecting use/non-use, and attitudes towards the internet. The pilot study helped prepare and refine the tool for the larger study.

2.4 THE SAMPLE

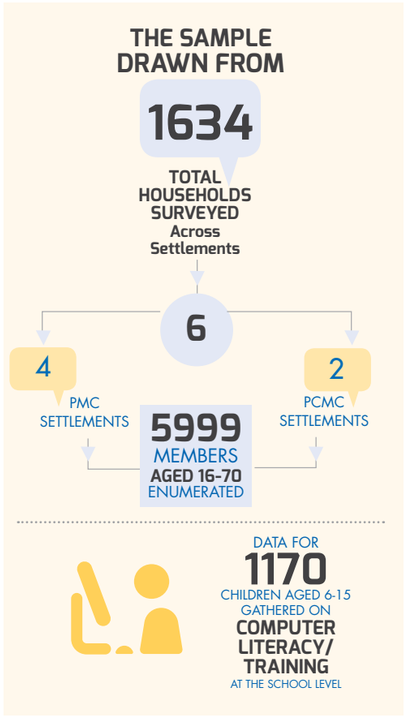
Residents of the low-income settlements, aged 16 to 70 years, formed the universe for our study. Most information was gathered from a well-informed member of the household; information provided by other members of the household was also noted.

The sample was drawn through

a multi-stage sampling method. First-level purposive sampling of the settlements was followed by systematic random sampling. Forty-seven settlements were shortlisted: seven in the PCMC and 40 in the PMC. Of these, six were selected for the study: two from the PCMC region and four from the PMC. The six settlements chosen included established settlements with second- and third-generation residents, pucca housing with buildings of one or more storeys and relatively better public amenities, as well as more recent settlements with mostly kutcha housing and very poor living conditions. Some settlements were chosen because of their topography – on hill slopes or near river beds. Settlements were also chosen to include diverse economic and occupational groups, ranging from those employed at industrial estates, wholesale markets and retail outlets to those employed in waste collection and construction labour. All the settlements chosen had large numbers of socially-excluded communities (as recorded in surveys), but some had larger percentages of Dalits, Adivasis and OBCs than others, and some had large percentages of religious minorities. This purposive selection was made in recognition of the fact that apart from cost barriers to internet access, other overlapping factors (gender, education, language, migrant status, topography of settlement, access to public/communication services, and caste) are equally likely to impact these groups' place on the adoption curve for new communication technologies.

The sites where the survey was carried out were: Anand Nagar and Mahatma Phule Nagar in the PCMC, and Ambedkar Nagar, Janata Vasahat, Laxmi Nagar, and Patil Estate in the PMC. The defining characteristics of the six study locations are detailed in Chapter 3. A little over 10% of households (calculated as per the most recently available data) from each of the six settlements, totalling 1,634 households, were covered in the survey. Settlements were divided into clusters with the help of maps from Slum Atlas 2011, Shelter Associates, and MASHAL. Households were selected through systematic random sampling. The fieldworkers were instructed to go down each lane of a cluster and sample every fifth household. If the selected household happened to be non-responding for any reason – the house was locked, no eligible person was available for an interview at the time of the visit, no member agreed to respond – the next household (that is, the sixth household) was to be approached. If nobody in the sixth household could be interviewed, the fourth household was to be checked.

The fieldworkers conducting the interviews returned with slightly more than the planned number of interviews, as is seen in Table 2.1.



NAME OF THE SLUM	NUMBER OF HOUSEHOLDS	NUMBER PROPOSED FOR SURVEY	ACTUAL NUMBER SURVEYED
PUNE MUNICIPAL CORPORATION			
Ambedkar Nagar*	2,156	216	245
Janata Vasahat*	4,542	454	451
Laxmi Nagar*	4,093	409	421
Patil Estate**	1,213	121	132
PIMPRI-CHINCHWAD MUNICIPAL CORPORATION***			
Anand Nagar	2,282	228	238
Mahatma Phule Nagar	1,306	131	147

TABLE 2.1
SAMPLE SIZE FOR EACH SELECTED SETTLEMENT

Sources:
*Slum Atlas (2011)
**Shelter Associates (2000)
***MASHAL Survey (2000, 2002)

2.5 DEFINITION OF KEY TERMS

INTERNET ACCESS/USE: Internet access and internet use have been used interchangeably in this study.

INTERNET USER: A liberal definition of internet user has been adopted for this study, keeping in mind that the study populations are at the beginning of the diffusion curve for internet technologies and have begun to access the internet very recently, over the last two-three years, following the introduction of cheaper mobile phones and data packs. Individuals who have accessed the internet at any location on any platform, by paying for internet access or without paying directly, at home, on a relative's or friend's device, at work, at an educational institute or at a public access point in the previous three months have been defined as internet users.

We found that individuals who had last used the internet more than three months earlier had almost no direct exposure to the internet; they had accessed the internet with assistance and so could not respond in any detail to questions related to internet use. On the other hand, had we used a shorter cut-off period than three months, women who might be accessing the internet once in a couple of months may have been excluded. (The International Telecommunication Union also defines an internet user as one who has used the internet from any location in the past three months [ITU 2014]; the Chinese Internet Network Information Centre defines an internet user as someone aged six and above, who has used the internet in the past six months [CNNIC, 2015]. Market research organisations have their own definitions. Internet World Stats defines an 'internet user' as anyone currently with the capacity to use the internet, ie anyone with access to an internet connection point and with the basic knowledge required to use web technology [IWS, no date]. Nielsen Online defines 'active internet users' as those who have viewed the internet at least once during the past month as against those who have ever accessed the internet [IWS, no date]).

INTERNET USER HOUSEHOLD OR CONNECTED HOUSEHOLD:
A household where at least one member is reported as having used the internet any time in the last three months.

NON-USER HOUSEHOLD OR NON-CONNECTED HOUSEHOLD:
A household in which not a single member is reported as having used the internet in the last three months.

MONTHLY FAMILY INCOME: Total of individual incomes of (earning) family members, as reported by the respondent in the household survey.

WEALTH INDEX: The wealth index is computed on the basis of housing conditions, house ownership and living environment, as well as ownership of specified household assets. Box 2.1 gives the methodology for computation of the wealth index. The wealth index, thus computed, has been used to group households into five categories – the first quintile is the lowest, representing the poorest among the surveyed households and the fifth quintile is the highest, comprising the richest.

2.6 DATA COLLECTION TECHNIQUES

Data for the present study were collected using a mixed method approach, and both quantitative and qualitative methods were employed.

2.6.1 Quantitative surveys

INTERVIEW SCHEDULE

Semi-structured interviews were conducted in the study locations using a pre-tested interview schedule. The schedule was prepared in English, translated into Marathi and then back-translated to ensure that there were no inconsistencies in translation. The survey tool was refined further after the pilot study.

The interview schedule was divided into two sections to get information on use/non-use of the internet. These were:

1. Household information; and
2. Individual information.

In the first part of the survey, information at the household level was gathered: family profile, housing, access to basic services, socioeconomic details, major sources of information, use of various communication media including the internet, and awareness about and access to the internet for family members over 16 years of age. Thus, information pertaining to 5,999 individuals from 1,634 households in the age-group 16-70 years was collected.

In the second section, one member (aged 16-70 years) of the household was interviewed. In households with an internet user, the internet user was asked to respond. If there was a male and a female user, preference was given to the woman. Individual interviews explored the reasons for respondents' use and non-use of the internet, barriers to access, the quality of access, patterns of use and attitudes towards the internet.

An additional child roster listed all children in the household, their schooling, and computer training in school. A total of 1,921 children were enumerated. This enumeration was not done in Anand Nagar.

2.6.2 Qualitative research

The quantitative survey helped understand the end-user perspective – for users and non-users – on barriers to internet access. The qualitative research included infrastructure/service providers, policymakers and state/non-state enablers of digital inclusion. This helped in triangulating the information and supplementing the quantitative findings.

Qualitative research methods including focus group discussions, in-depth interviews and audio visual documentation were used throughout the project period (July 2013 to October 2015) to explore in greater detail the barriers to internet access, patterns of use and attitudes and perceptions about the internet.

The qualitative research consisted of:

- In-depth interviews with 20 internet users and six non-users in the study locations.
- 11 focus group discussions (FGDs) with students of schools catering to children from low-income localities: two state-run e-learning schools, one government school with a civil society intervention for ICT skills training, three schools run by a trust predominantly for Muslim students, one madrassa and four state-run schools with no specific ICT intervention.
- Interviews with teachers at the above government and private schools.
- Interviews with three internet service providers, 12 cybercafé owners in the vicinity of the study settlements, 11 cable TV providers, and 23 mobile shop owners/recharge voucher sellers in and around the study locations.
- Interviews with government officials from the two municipal corporations, with a focus on those responsible for e-governance and IT services, and common service centre (CSC) staff.
- Interviews with representatives of three non-profit organisations conducting computer literacy classes for disadvantaged populations.
- Interviews with staff at centres for the Maharashtra State Certificate in Information Technology (MS-CIT) and the Maharashtra Knowledge Corporation Limited (MKCL), the nodal agency for promotion of computer literacy in the state.
- Interviews with members of marginalised groups including transgenders and the disabled, as well as teachers at institutions for the disabled.

FGDs were conducted with secondary school students

BOX 2.1
COMPUTATION OF WEALTH INDEX

HOUSE OWNERSHIP & LIVING ENVIRONMENT		HOUSEHOLD ASSETS	
Owned House	6	Four-wheeler	1
Rented	3	Three-wheeler	0.6
Room Density Inverse	1	Two-wheeler	0.5
Type of House		Bicycle	0.1
Pucca	1	Refrigerator	0.15
Semi-Pucca	0.5	Cooking Gas	0.15
Kutcha	0.4	Sewing Machine	0.1
Toilet Facility		DTH TV	0.15
Private	1	Cable TV	0.15
Public (Free)	0.5	Radio	0.05
Public (Paid)	0.5	Landline Phone	0.05
Shared Toilet	0.5	Mobile Phone	0.07
Open	0	Desktop Computer with Fixed Internet	0.2
Drinking Water		Dongle	0.05
Private	1	Cable Internet	0.05
Public	0.5	Desktop without Internet	0.15
Neighbour's	0.5	Laptop	0.15
Other	0.5	Tablet	0.07

House Ownership and Living Environment (0.6) + Household Assets (0.4) = 1.0

The summated value for **House Ownership** and **Living Environment** has been multiplied by **0.6** and the summated value for **Household Assets** has been multiplied by **0.4**. The two figures thus obtained have been added to get an overall value for each household

(Standards 6-9), within the school premises. Each group consisted of 8-12 students, mostly homogeneous with regards to gender. The questions for the FGDs were about the type of ICT training in the students' syllabus, the available infrastructure, their awareness of and exposure to the internet, their access to internet devices including at home, and their interaction with family members on awareness and use of ICTs.

Reportage, analysis, photography and short films by CCDS have supplemented the research and are available at netpehchaan.in. Women and transgenders contacted in the course of the fieldwork were encouraged to document their attitudes towards the internet and how they used it, in films that they were trained to shoot themselves. These films record their candid perspectives and are available on netpehchaan.in. Further insights were gathered in the course of conducting internet literacy workshops over the project period in different settlements.

Qualitative research, reportage and audio-visual documentation were not limited to the chosen six settlements. These were also conducted in several different low-income neighbourhoods across the city. Several insights were also gained from another, parallel CCDS project at one of the research locations, Mahatma Phule Nagar in the PCMC, where free Wi-Fi has been enabled all over the basti for an 18-month period, and a full-fledged computer training centre has been set up.

2.7 DATA ANALYSIS

Analysis of the quantitative data has been presented in the form of bivariate tables showing how internet awareness, attitudes and use relate to the socio-demographics of an individual and household. Internet use has been treated as a dichotomous variable: use and non-use. Internet non-use has further been broken down into two categories: 'heard of internet' and 'not heard of internet'. In order to assess the significant effects of various predictor variables on internet use (the outcome variable), binary logistic regression analysis has been done.

Information from in-depth interviews and reportage was used to illustrate or elaborate upon the findings of the quantitative survey and has been presented as narratives in boxes.

2.8 DURATION OF SURVEY

The quantitative survey was carried out between March and July 2014.

2.9 ETHICAL CONSIDERATIONS

The research proposal was reviewed by an independent ethicist and ethics clearance obtained. Informed consent was obtained from the respondents after they were told about the purpose of the research and that data from the study would be used to advocate for universal internet access and equal access for all. They were assured that their responses would be kept confidential, and that they had the right to withdraw at any time during the study. The completed forms in the quantitative survey were stripped of identifying details before they were entered into SPSS 21.0 by a professional service.

Permissions for the FGDs were obtained from the local authorities at each school. For municipal schools, additional permissions were sought and obtained from the PMC Education Board. Students were selected for the FGD by the teachers from among children who were willing to participate. The participating children were informed about the purpose of the FGDs, the procedure, and how the information collected would be used. They were informed that their participation was voluntary and that they could leave the focus group at any point if they were uncomfortable. The FGDs were between 45 minutes and one hour in duration. They were audio-recorded after getting consent from the authorities and assent from the children.

2.10 CHALLENGES IN FIELD WORK

1. Field work had to be conducted during late evenings and on weekly holidays when people would be at home. Many of the user respondents could be interviewed only after getting an appointment.
2. Early on in the fieldwork communal tensions in the city were stoked following the circulation of objectionable images on social networks. A Muslim IT professional unconnected to this controversy was lynched by members of a Hindu radical outfit. At this time, the fieldwork was being conducted at a settlement with a large number of Muslim residents. The residents were wary of participating in any survey that had to do with the internet.
3. It was difficult to get non-users to take our survey; they had to be convinced of the relevance of their responses even though they did not use the internet themselves.

2.11 STUDY LIMITATIONS

The study, conducted in six settlements identified through extensive profiling, attempted to include diverse groups in terms of population composition, socioeconomic and demographic characteristics and location. However, the sampling process in the PCMC settlements was based on data from more than a decade earlier. Further, within the households, the respondent was not randomly chosen. Though the study gives a fair understanding of internet access in these areas of Pune, the findings may not be generalised for all low-income settlements of Pune.

Internet penetration, the telecommunications market, and its offerings have been changing rapidly with the availability of cheaper devices and data plans. The study findings therefore hold true for the period of the survey.

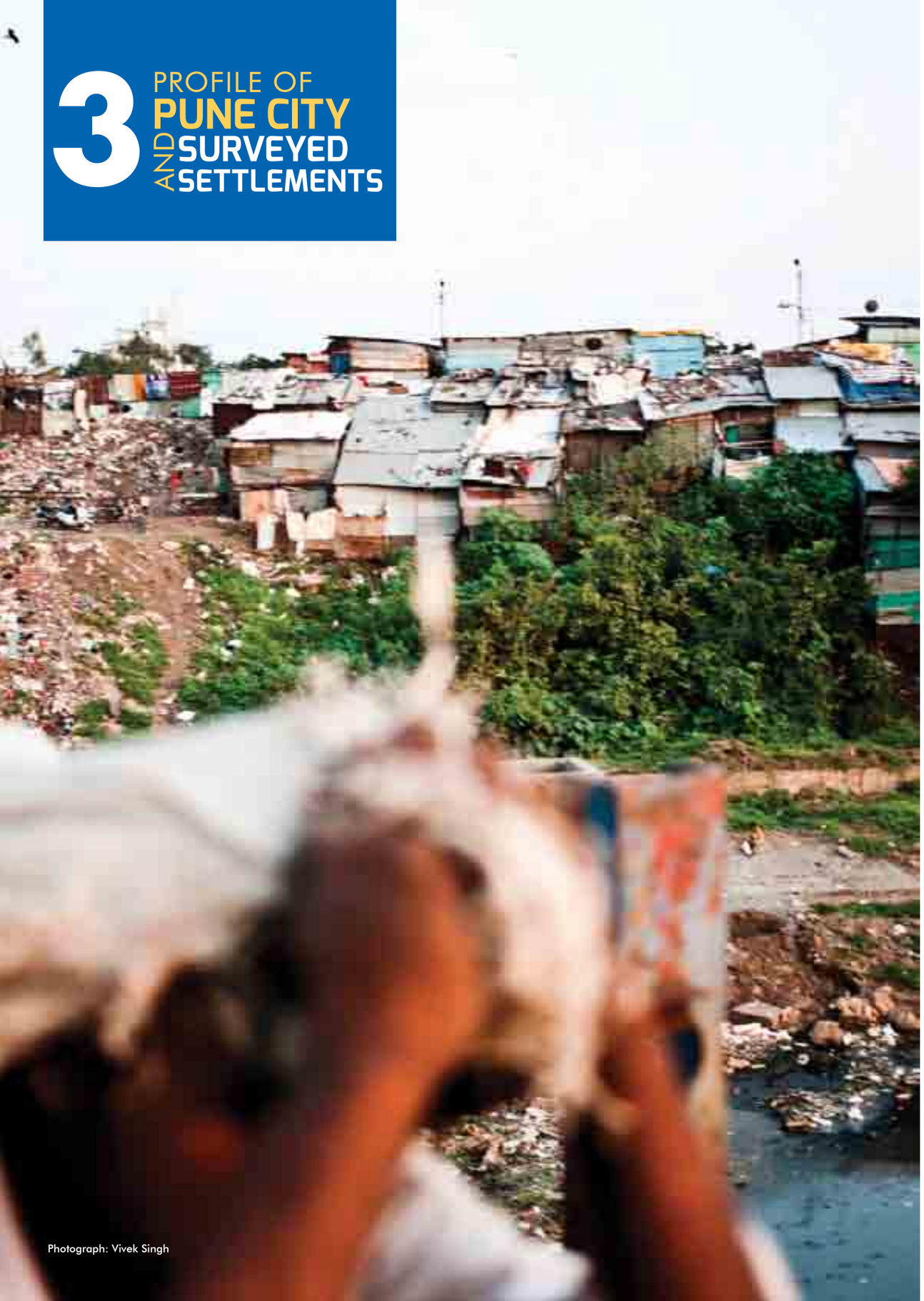
ENDNOTES

1. 'Slum', 'basti' or 'informal settlement' are used interchangeably in this report to refer to housing colonies 'characterised by lack of durable housing, insufficient living area, lack of access to clean water, inadequate sanitation and insecure tenure'. (http://www.censusindia.gov.in/2011-documents/slum-26-09-13.pdf)

2. The Indian Constitution has provisions for people who belong to certain deprived communities. Dalits or those in the Scheduled Castes, have suffered extreme social, educational and economic deprivation because of their caste. Adivasis or indigenous people belonging to the Scheduled Tribes have no land holdings, and often earn a living as landless labourers or through casual work. Other Backward Classes (OBC) refer to other socially and educationally disadvantaged groups. Those on the government list of SC and ST are entitled to reserved seats in government education, employment and political representation. Reservations may be recommended for those on the list of OBCs. Other categories include Nomadic Tribes (NT) and Denotified Tribes (DNT)

3. Cooperative Housing Foundation International, now known as Global Communities

3 PROFILE OF PUNE CITY AND SURVEYED SETTLEMENTS



Photograph: Vivek Singh

3.1 INTRODUCTION

Pune is one of India's fastest-growing metropolises, the second largest in the state of Maharashtra and the eighth largest urban agglomeration in India. Over the last three decades it has emerged as a thriving hub for the automotive, information technology and education sectors. The city attracts a large number of migrants from various parts of the country and from all economic classes, many of whom live in poorly constructed informal settlements or bastis.

This chapter profiles the city and its socioeconomic situation. The chapter is arranged in four sections. The first section provides the introduction. The second discusses the demographic, social and economic characteristics of Pune. The third profiles the low-income settlements that have been chosen for the study. The fourth section concludes the chapter and summarises the analysis.

3.2 CITY PROFILE

3.2.1 Demographic Profile

The city of Pune has witnessed substantial growth since the early-1990s, though the overall growth rate for the Pune Urban Agglomeration (UA)[1] declined in 2001-11. Migration increased from 3.7 lakh in 2001 to 6.6 lakh in 2011. The population density in the city increased from 10,405 persons per sq km in 2001 to 12,770 persons per sq km in 2011 (Pune Municipal Corporation, 2012). Population density, especially in the heart of the city, is very high.

Of the total population of 50.5 lakh in Pune UA, Pune City houses 31 lakh (61%) (Table 3.1). Pimpri-Chinchwad is another major city in the Pune UA. The population of the city is 17 lakh, which is 34.3% of the population of the urban agglomeration.

According to demographic projections made by the city-based Gokhale Institute of Politics and Economics (Mulay, [no date]), the population of Pune City alone is projected to reach 55-60 lakh by 2027. Nearly half of this population is likely to be living in low-income informal settlements or bastis.

AGE-SEX STRUCTURE OF THE SLUM POPULATION

The age-sex pyramid in Figure 3.1 shows the very young demographic in Pune's low-income settlements. Around 25% of the population is in the 16-26 age-group; another 19% is between 26 and 36 years of age. The majority of internet users come from these age-groups.

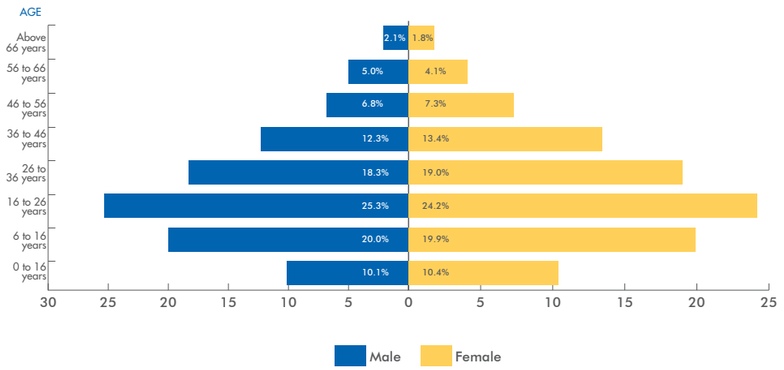
MUNICIPAL CORPORATION/ CANTONMENT BOARD	TOTAL POPULATION (INCLUDING INSTITUTIONAL AND HOMELESS POPULATION)
Pune Municipal Corporation	31,24,458
Pune Cantonment Board	71,781
Kirkee Cantonment Board	78,684
Pimpri-Chinchwad Municipal Corporation	17,27,692
Dehu Road Cantonment Board	48,961
Dehu Census Town	6,133
PUNE UA	5,051,576

TABLE 3.1
POPULATION IN PUNE URBAN AGGLOMERATION (2011)

Source: District Census Handbook: Pune, Village and Town-wise Primary Census Abstract, Census of India 2011

FIGURE 3.1
AGE STRUCTURE IN PUNE SLUMS

Source: Socioeconomic profile of slums in Pune under UTTHAN project, CHF International, August 2011



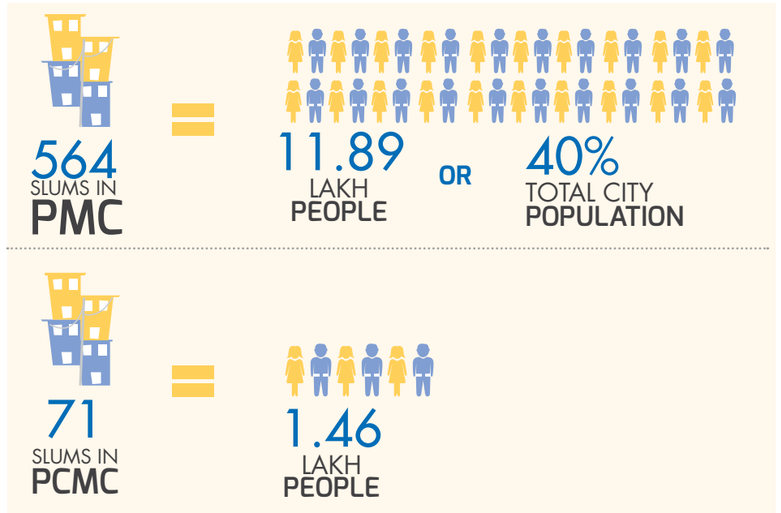
3.2.2 Urban poverty & slums

The purpose of this study is to understand how the urban poor use the internet. However, commonly used measures of poverty use definitions that are obsolete or inadequate or both.

In a survey of Pune's slums in 2005, the PMC identified just 10,088 families as living on less than Rs 591.75 per person per month, the official criterion for identifying Below Poverty Line (BPL) families at the time. However, over the last decade it has been accepted that this income poverty line is a starvation line at best, and this estimate of the number of poor is completely off the mark.
In India, another identifier of economic status is the government ration card, issued to facilitate application to various government entitlements and subsidies, including subsidised foodgrain and fuel from the Public Distribution System (PDS). Ration cards are colour-coded by household income. The yellow card represents Below Poverty Line (BPL) families with incomes below Rs 15,000 per year. An orange card represents Above Poverty Line (APL) families with incomes below Rs 100,000 per annum, and the white card is for households with incomes above Rs 100,000 per annum. In 2008-09, 4.38% of households with ration cards in the city held yellow/BPL ration cards and 87% had orange ration cards, according to a survey by the Karve Institute of Social Service (*Socio-Economic Survey of Pune City – 2008-09*). However, these income qualifiers were laid down several years ago and are unrealistic today. Further, it is widely acknowledged that incomes are not always accurately reported by households applying for ration cards.

'The narrow approach of the income-poverty line overlooks the multifaceted nature of human deprivation,' says academic Meera Bapat (Bapat, 2009, p 7) who has made an extensive study of urban poverty and poverty and social exclusion in Pune. She points out: **'The official poverty line, when applied to Pune, suggests that only 2% of the population is poor, yet at least 40% of the population lives in poverty,'** (Bapat, 2009, p 3).

Bapat's longitudinal study of slum settlements shows that there is very limited upward mobility in the city's working class. Despite periods of rapid economic growth in Pune, the urban poor cannot be confident of a steady and stable growth in their incomes, and the opportunities for households to escape their deleterious environments in slums are very limited. 'Lack of secure employment together with the lack of sufficient assets makes access to housing of adequate quality impossible. Hence, despite moderate increases achieved in income, these households are effectively trapped in degraded environments,' she concludes (Bapat, 2009, p 41).



The CCDS study on barriers to internet access goes beyond income poverty to look at the digital inequality of those households that live in multidimensional poverty. The poor face multiple disadvantages, including poor health, malnutrition, lack of clean water or toilets, poor quality of work or little education. These disadvantages affect the way in which income is converted into good living (Amartya Sen, quoted in *The Economist*, July 2014).

THE SLUM POPULATION OF PUNE

There are 564 slums in the PMC, with a total population of approximately 11.89 lakh. Approximately 40% of the city's total population resides in these slums. The population density in slums is six times that of non-slum areas of the city (Population Foundation of India, 2012). The average housing unit is 10-15 square metres (Shelter Associates, 2010, cited from Gokhale, 2014).

In Pimpri-Chinchwad, the first slum survey carried out by the Municipal Council in 1976 registered 35 slum pockets (5,621 hutments) with a population of 26,470. By 2002 the number of slums had increased to 71 (35,412 hutments) with a population of 1,46,054 persons. Most of these pockets (46 out of 71) are located on land owned by the Maharashtra Industrial Development Corporation (MIDC), the state government, the PCMC and the Pimpri-Chinchwad New Town Development Authority (PCNTDA). Though the proportion of the population living in these settlements decreased from 27% in 1971 to 13% in 2001, in absolute terms the slum population has increased markedly.

LITERACY RATE

Table 3.2 overleaf shows literacy rates among low-income settlements in the PMC and the PCMC vis-a-vis those of the urban areas of the district, state and country (according to Census of India 2011). With a literacy rate of 86%, Pune ranks seventh among all districts in Maharashtra in literacy. The literacy rate in PMC slums is 2-7% behind literacy rates in urban India, urban Maharashtra and urban Pune. However, slum settlements in the PCMC lag much further behind in literacy achievements.

TABLE 3.2
LITERACY RATE (2011)

Note* Urban Pune comprises 35 towns including Pune City

Source: Census of India 2011

LITERACY RATE	URBAN INDIA	URBAN MAHARASHTRA	PUNE DISTRICT	URBAN PUNE*	SLUMS	
					PMC	PCMC
TOTAL	84.1	88.7	86.2	89.4	81.7	72.8
MALE	89.7	92.1	90.8	92.5	87.3	80.7
FEMALE	79.9	84.9	81.1	86.1	75.9	64.3

CASTE COMPOSITION

Pune District (Urban) records 14.3% SCs and 1.6% STs, according to Census of India 2011. Census of India 2011 shows a much higher percentage of SCs in slums (31.5%) in the Pune Urban Agglomeration.

TABLE 3.3
COMPOSITION OF POPULATION BY SOCIO-RELIGIOUS GROUPS IN URBAN PUNE AND SLUMS IN THE CITY

Note: KCB – Kirkee Cantonment Board; DCB – Dehu Road Cantonment Board. No slums were reported in Pune Cantonment Board which is also part of the Pune UA. Pune District (Urban) is the same as Pune Urban

Source: Census of India 2011
*Data not available by religious groups for slums

SOCIO-RELIGIOUS GROUPS	PERCENT
SCs in the total population (Pune District: Urban)	14.3
STs in the total population (Pune District: Urban)	1.6
SCs in slums (PMC, PCMC, KCB, DCB)	31.5
STs in slums (PMC, PCMC, KCB, DCB	1.5
Muslims in the total population (Pune District: Urban)*	9.8

ACCESS TO BASIC AMENITIES IN SLUMS

The areas designated 'slums' in Pune UA house families that fall into strikingly different socioeconomic strata. There are daily-wagers living in kutcha or poor quality housing with common water connections, 'borrowed' electricity connections, and public toilets, as well as families living in pucca houses made of bricks and cement, with one or two storeys, private toilets and private water connections, and equipped with a variety of white goods. The PMC's low-income settlements are on a par with those in the rest of urban India and urban Maharashtra with respect to water supply, access to communication facilities and possession of assets (Table 3.4). However, the proportion of households with telephone and mobile connections in the low-income areas of Pune (PMC) is higher than in urban India and urban Maharashtra. Access to communication devices and possession of assets in PCMC areas is lower than in the PMC. The sanitation situation is poor in PMC as well as in PCMC areas. The City Development Plan 2006-12 states that the average person to toilet ratio in declared slums is 84:1. Open defecation is quite high in the PCMC area.

S NO	HOUSEHOLD AMENITIES	URBAN		SLUMS	
		INDIA	MAHARASHTRA	PMC	PCMC
A	Sanitation				
1	Latrine within premises	81.4	71.3	35.8	18.0
2	Latrine not within premises	18.6	28.7	64.2	82.0
3	Using open space for defecation	12.6	7.7	4.9	10.4
B	Water supply				
1	With bathing facility	87.0	95.4	95.0	89.0
2	With tap water	70.6	89.1	98.8	99.1
C	Source of energy				
1	Electricity	92.7	96.2	96.2	91.6
2	LPG/PNG as cooking fuel	65.0	74.1	73.8	38.8
3	Kerosene as cooking fuel	7.5	12.3	20.8	46.0
4	Firewood as cooking fuel	20.1	10.8	2.9	13.7
D	Access to communication facilities				
1	Telephone (landline and/or mobile)	82.0	86.4	83.8	64.4
2	Mobile only	64.3	64.2	73.4	61.7
3	Television	76.7	79.4	81.2	62.4
4	Computer/laptop without internet	18.7	11.9	6.8	2.1
5	Computer/laptop with internet	8.3	11.7	5.0	0.6
D	Possession of assets				
1	Two-wheelers (scooter/motorcycle/ moped)	35.2	32.6	35.4	14.3
2	Four-wheelers	9.7	10.1	5.5	1.0
3	None of the assets specified* by the Census	7.0	6.0	5.3	17.6

TABLE 3.4
ACCESS TO AMENITIES AND ASSETS (% OF HOUSEHOLDS)

Note: *Radio/transistor, television, computer/ laptop with or without internet access, telephone/ mobile phone, bicycle, scooter/motorcycle/moped/ car/jeep/van

Source: Census of India 2011

3.3 PROFILE OF STUDY SETTLEMENTS

3.3.1 Location of study settlements

The six settlements are located in different parts of the city, four in the PMC and two in the PCMC area. Table 3.5 provides their location in the city.

3.3.2 Profile of study settlements

The following sections give a brief profile of each of the six settlements with respect to their location, physical characteristics, and availability of basic amenities and facilities. The information was collected through field visits

SLUM SETTLEMENT	LOCATION
AMBEDKAR NAGAR	Near Market Yard, the centre of the wholesale vegetable and fruit trade
ANAND NAGAR	Between Pune-Mumbai highway and railway lines, Nigdi Pradhikaran Zonal Ward (PCMC)
JANATA VASAHAT	At the foot and on the slopes of Parvati Hill in the central and old part of the city
LAXMI NAGAR	Northwest of the city in Yerawada
MAHATMA PHULE NAGAR	Adjoining the Bhosari Maharashtra Industrial Development Corporation estate (PCMC)
PATIL ESTATE	Shivaji Nagar area, located along the Mula River

TABLE 3.5
SLUM SETTLEMENTS SELECTED FOR STUDY

FIGURE 3.2
LOCATION OF SURVEYED
SLUM SETTLEMENTS

and discussions with informed persons from the community such as workers at anganwadis or government centres for mother and child care. The population of the settlements from the most recent surveys has been cited. Some of these surveys are more than 10 years old and with an overall increase in the city's population, the population in the study sites will also have increased. However, Ambedkar Nagar, Anand Nagar and Patil Estate are located in congested areas and are surrounded by other construction, leaving little room for expansion.

Ambedkar Nagar, Market Yard

Ambedkar Nagar is located adjacent to Market Yard, the centre of the city's wholesale grocery trade. Established in 1980, the settlement has survived many demolition attempts. Ambedkar Nagar's recorded population is 10,780 in 2,156 dwellings (Slum Atlas, 2011). Most of the houses along narrow lanes are kutcha structures of tin and corrugated iron. The community is predominantly Scheduled Caste, as the name suggests, along with Scheduled Tribes and religious minorities (mostly Muslims). Most residents have migrated to the city from other parts of Maharashtra. But this basti also houses interstate migrants from Karnataka, Uttar Pradesh, Bihar, Andhra Pradesh and Rajasthan. Most of the working population is engaged in unskilled labour in the surrounding wholesale markets. Some work as sweepers and trash collectors with the municipality.

Sanitation and waste management are particularly poor in this basti, which is surrounded by garbage dumps, and where very few homes have private toilets. Most of the children go to the nearby corporation schools; some go to private schools located further away. There is no public internet facility in the settlement and no infrastructure for wired telephone or broadband connections. However, almost all the households have TVs using cable connections or direct-to-home (DTH) services, and mobile phones. This is one of the poorest of our study settlements in terms of socioeconomic indices.

Anand Nagar, Chinchwad

Anand Nagar in the PCMC is one of the oldest slum pockets in this area. It was established in 1972, and is strategically located along the old Mumbai-Pune highway near Chinchwad railway station. The last publicly available survey, by MASHAL in 2002, records 2,282 households and a population of 9,000 to 10,000; 30% of houses are pucca, the rest kutcha or semi-pucca (with brick walls but corrugated iron/acrylic roofs). The population comprises Hindus, Buddhists and Muslims speaking Marathi, Telugu, Kannada and Hindi. Most people have migrated here more here than 25 years ago from Karnataka, Andhra Pradesh and Rajasthan, and from other parts of Maharashtra. The majority are self-employed (at beauty parlours, tailoring shops, grocery stores, motor garages, etc). Some people work as unskilled construction workers and labourers in the MIDC estate. Some are in private jobs and others do skilled labour. Some women work as domestic help in nearby housing societies. Women are also seen making and selling traditional grinding stones and vegetables. A few residents have jobs in the nearby malls and multinational food chains.

Most households here have LCD TVs and a few have computers and laptops. A cable TV provider located in the basti provides cable TV connections to most of the households. There is no wired internet connection in the basti except for one in the corporator's office. There are three cybercafés around 500 metres from the basti. Talktime and internet recharge vouchers are available at many shops inside the settlement.

Janata Vasahat, Parvati

This huge settlement is situated in the old city area at the base of Parvati Hill and sprawled over the hillside. Adjacent to the settlement is the Mutha Canal (also known as Ambil Odha). The first settlers moved here around 1965. The Slum Atlas (2011) records 4,542 houses in the settlement with a population of 23,250. This is a better-off settlement, with around 90% pucca/semi-pucca houses. The population is predominantly Hindu (mostly Marathi-speaking) with a few Muslim and Buddhist families. The majority are self-employed (at beauty parlours, tailoring shops, grocery shops, sweet shops, shoe shops, bakeries,

chicken shops, lottery shops, paan shops, eateries, computer training institutes, mobile and computer repair shops, and tuition classes). Some residents sell balloons, peanuts and other snacks around Saras Baug Garden and near the Parvati hill and temple. A few also have government jobs (as drivers, bus conductors, cleaners or nurses) or private jobs. Some women work as domestic help in nearby housing societies.

There are 30-32 public toilet blocks, but a number of households have private toilets and 90-95% have private water connections. Waste disposal is also better organised with six garbage bins, and corporation garbage vehicles collecting garbage from the settlement. The settlement has closed drainage and 90-95% of the households have electricity meters. There are 10 ration shops within the settlement.

There are two corporation schools in the settlement up to the seventh standard, with separate divisions for girls and boys. Computer skills are taught from Standards 1 to 7 in these schools. Most children from the settlement, however, go to private schools.

There are seven-eight cable TV providers in the settlement. One of them stated that he used to provide wired broadband services through cable earlier, but withdrew it for lack of demand. There are several shops, including sweetmeat shops, that also sell mobile recharge vouchers. There are three cybercafés within 1 km of the settlement. These also provide scanning and printing facilities. One institute in this settlement offers courses like MS-CIT and training in the use of accounting software and other computer programs. The institute has Wi-Fi connectivity.

Laxmi Nagar, Yerawada

Laxmi Nagar, one of the biggest slums in the city, is located on the Pune-Ahmednagar Road close to upmarket areas such as Koregaon Park and Bund Garden and not far from the new IT hubs at Vimannagar and Kharadi. Established in 1972, the basti is surrounded by other slum pockets including Ashok Nagar, Kamraj Nagar, Ganesh Nagar and Wadar Vasti. The Slum Atlas (2011) put the population at approximately 4,000-5,000 households with roughly 20,000 residents. Most of the houses are pucca. The majority are Hindu (61%) and Marathi-speaking, but there is a sizeable proportion of Muslims (34%). 84% of the residents are migrants from within Maharashtra.

Most of the population is self-employed (tailoring, vegetable vending, grocery shop, mechanic, beauty parlour, tea stall, catering, etc). Some are in private jobs and others do skilled labour. Most of the employed women are domestic workers at the nearby housing societies.

There are 12 public paid toilets. Some households have private toilets. All households have a private tap. There are three garbage bins. The drainage is closed. Most households have electricity. A majority (80%)

of households have APL ration cards. There are two Urdu-medium PMC schools in the settlement (one for boys and one for girls) and two Marathi-medium PMC schools in the same building.

Most households have cable TV connections while others have DTH connections. Many households have LCD TVs. There are two cable providers in the area. One of them said that customers do not ask for wired internet connections as most use the internet on their mobiles. Some use dongles for computers and laptops. There are no cybercafés inside the settlement but there are two in the Yerawada Market located at a distance of 500 metres from the settlement. There are two mobile repair shops inside the settlement and many general stores selling talk time and net recharge vouchers.

Two computer training institutes are situated around the settlement near Yerawada Market, one of which is recognised by the government. They offer basic as well as advanced computer training courses.

Photograph: Vivek Singh

Mahatma Phule Nagar, Bhosari

Phule Nagar is a comparatively recent settlement established around 1991 and located in Bhosari, adjoining the MIDC estate in PCMC. The settlement has grown with the establishment of industry in these parts. It is also adjacent to the DY Patil College campus. The most recent available data are from a MASHAL survey in 2002 which enumerated 1,306 households and a total population of 5,168. The settlement has expanded since, and new hutments, mostly kutcha, can be seen towards its periphery. Most of the houses are kutcha or semi-pucca. The population is multicultural, with Buddhists, Hindus and Muslims, speaking Marathi, Kannada and Hindi. There are settlers of the Wadar nomadic tribe as well. Most of the men are engaged in unskilled labour doing packing, loading and unloading work at the nearby industries or construction sites. Others run small shops selling goods and vegetables. Most women are restricted to the home

and neighbourhood. Very few women work as domestic help. This settlement, like Ambedkar Nagar, ranks low on the wealth index.

There are four public toilets in poor condition. The drains are full of garbage. 90% of the homes have private taps. All the households have electricity; some have metered connections while others have borrowed it from neighbours. There is a corporation school up to Standard 7 and a senior secondary private school. This school provides computer education for a fee of Rs 150 per month.

Two cable providers in the area charge around Rs 200 per month for a cable TV connection. One of the cable providers remarked, 'People do not pay monthly cable bills on time so there is no hope of charging for internet too'. A mobile repair kiosk in the settlement also provides content downloaded from the internet (mostly songs) and sets up Facebook and WhatsApp accounts on mobile phones for people who need help. There are two cybercafés 500 metres away from the settlement, but not many residents use them. Many small shops and even vegetable vendors sell talk time and internet recharge vouchers of small value (Rs 15-20).

Patil Estate, Shivaji Nagar

Patil Estate is a compact settlement in the Shivaji Nagar area, established in 1988 along the Pune-Mumbai highway. The Mula River runs behind it and there is a canal on the other side, making it very vulnerable to flooding. Towards the road there are pucca and double-storey houses but as one moves into the interiors, 75% are shanties or kutcha houses with poor sanitation. A report by Shelter Associates (no date) recorded 1,213 households with an estimated population of 6,000 but this number would have gone up substantially in the last 15 years. Most of the people are Hindus from Scheduled Castes, but a sizeable proportion are Muslims. There are several Kannada-speaking households. The majority of the community is self-employed – mostly in scrap collection and sale – and the rest work as unskilled wage labourers. Many houses have scrap piled on their rooftops. There are three toilets of which one is a paid service and two are free. None of them is clean. There are no public taps. There are two garbage bins. The settlement has a closed drainage system. All the households have electricity meters. Most of the families have an orange ration card. Though the basic infrastructure is poor, Patil Estate stands higher on the wealth index than Ambedkar Nagar and Phule Nagar.

With regard to communication, there is no wired internet facility or public access point in the settlement. Some people use dongles on computers and laptops. The nearest cybercafé is 1 km away. There are no mobile voucher sellers/mobile shops in the basti. Recharge vouchers are bought from the basti opposite, across the Pune-Mumbai highway. The majority of households use DTH TV.

3.3.3 Demographic characteristics

GENDER DISTRIBUTION

Figures 3.3 and 3.4 show the male-female proportion in the surveyed settlements. In the 16-70 age-group there are more males than females. However, in the below-16 age-group, there are more females than males. The higher male population in the 16-70 age-group is possibly due to male in-migration in the settlements for work. In Mahatma Phule Nagar the proportion of males in the age-group 16-70 years is markedly higher than females, possibly because Phule Nagar is situated adjacent to an industrial area and attracts male-specific migration. In the below-16 age-group, all settlements with the exception of Janata Vasahat have higher female populations.

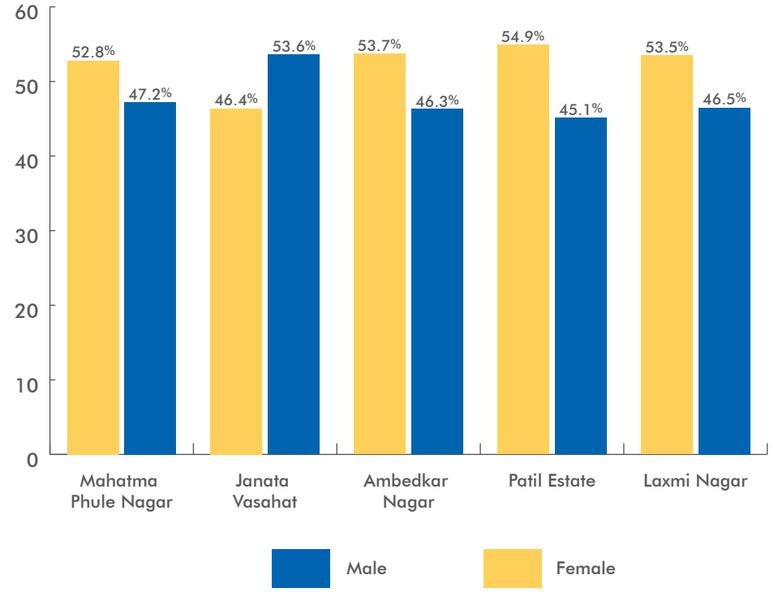


FIGURE 3.3
GENDER DISTRIBUTION OF HOUSEHOLD POPULATION FOR PERSONS BELOW 16 YEARS OF AGE (N=1,921)

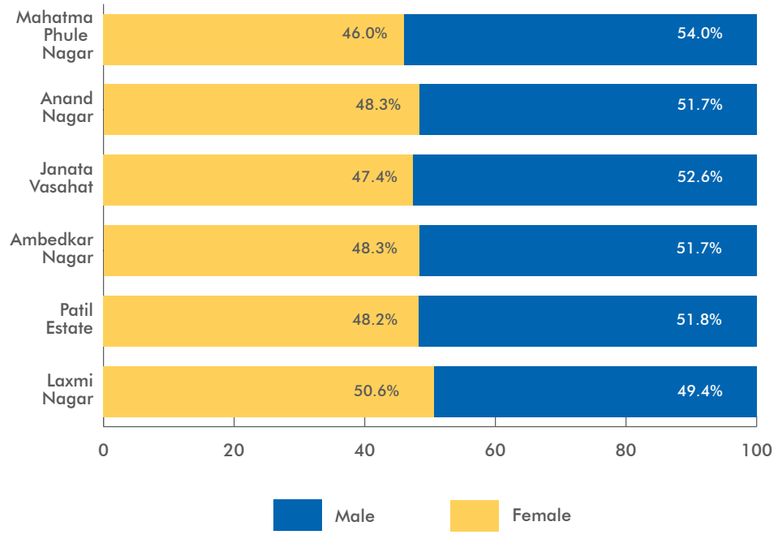


FIGURE 3.4
GENDER DISTRIBUTION OF HOUSEHOLD POPULATION FOR PERSONS AGED 16-70 YEARS (N=5,999)

AGE STRUCTURE

Our survey data corroborates other reports of the age-structure of the population in low-income settlements in the city (Figure 3.1). The 16-25 age-group constitutes 29.5% of the surveyed population in the six survey locations. Another 17.5% belong to the 26-35 age-group (Figure 3.5).

MARITAL STATUS

64.1% of the population is married, 29% unmarried and 6.3% widowed. 88% of the widowed are women.

There are no major variations in marital status between the surveyed settlements (Table 3.7).

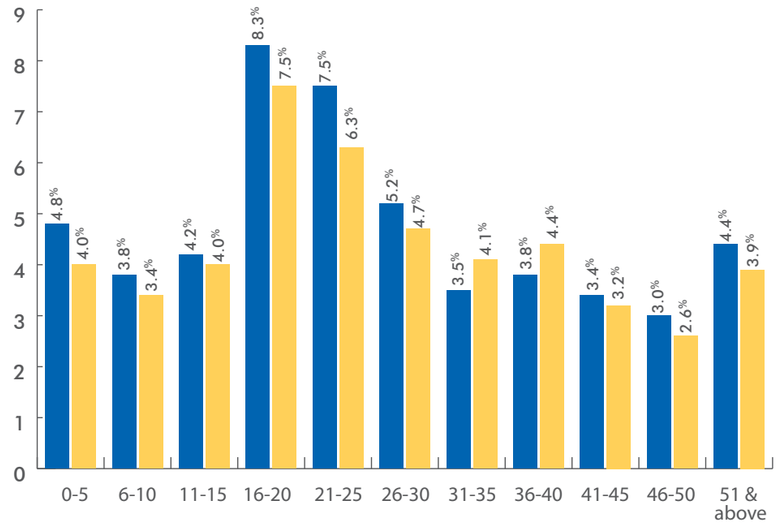


FIGURE 3.5
AGE-SEX DISTRIBUTION OF SURVEYED POPULATION AGED 0-70 YEARS (% OF HOUSEHOLD MEMBERS)

Note: Excludes persons below age 16 for Anand Nagar

	MAHATMA PHULE NAGAR	ANAND NAGAR*	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
AGE (IN YEARS)							
0-5	11.6	–	8.7	11.6	11.4	9.4	8.8
6-10	11.2	–	7.0	8.9	8.9	7.6	7.2
11-15	9.0	–	9.5	11.2	7.9	8.8	8.3
16-20	13.7	–	14.9	15.0	15.1	13.5	15.8
21-25	12.2	–	14.2	11.9	17.5	12.4	13.7
26-30	9.3	–	8.9	9.1	8.6	10.4	9.9
31-35	8.8	–	7.1	7.0	6.9	7.8	7.6
36-40	7.2	–	8.6	6.9	6.9	8.4	8.1
41-45	4.4	–	7.4	6.1	5.4	6.4	6.6
46-50	5.4	–	5.1	5.4	4.6	6.1	5.6
51 & above	7.2	–	8.6	7.0	6.8	9.1	8.3
TOTAL	100.0	–	100.0	100.0	100.0	100.0	100.0

TABLE 3.6
AGE DISTRIBUTION OF SURVEYED POPULATION AGED 0-70 YEARS BY SETTLEMENT (% OF HOUSEHOLD MEMBERS)

Note: *Information for children 0-15 years not available for Anand Nagar

	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
MARITAL STATUS	n=502	n=933	n=1,610	n=846	n=542	n=1,566	N=5,999
Married	67.9	59.5	65.1	65.1	59.8	66.0	64.2
Unmarried	26.5	33.8	29.5	26.8	30.6	27.5	29.1
Widowed	5.2	6.7	5.0	7.9	8.9	5.9	6.3
Separated/ Divorced	0.4	0.0	0.4	0.1	0.8	0.5	0.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 3.7
MARITAL STATUS OF HOUSEHOLD MEMBERS AGED 16-70 YEARS (% OF HOUSEHOLD MEMBERS)

3.3.4 Socio-religious groups

This study attempts to understand the digital behaviour of marginalised groups – including SC, ST and religious minorities – within the urban poor, find out whether they experience any particular barriers in internet access, and recommend policy changes for digital inclusion. Many of the unskilled migrants who come to the city to earn a livelihood belong to socially excluded communities. They end up in the city's slums. As mentioned in the methodology, settlements which have larger numbers of socially excluded communities have been purposively selected for this survey.

The CCDS survey reports a very high percentage of SC/STs in Anand Nagar, Mahatma Phule Nagar, Ambedkar Nagar and Patil Estate. Overall, 31.5% of the slum population in the Pune UA belongs to the Scheduled Castes (Census of India 2011). **In the settlements surveyed, between 42% and 85% belong to the Scheduled Castes.** Moreover, Patil Estate, Laxmi Nagar and Ambedkar Nagar report 27% to 36% households belonging to the religious minority (Muslim) community. In Janata Vasahat, which is one of the oldest settlements in the city, more than 50% of the population belongs to either OBC (26%) or SCs (24%). Around 10% of the population in both Janata Vasahat and Anand Nagar belong to Scheduled Tribes.

The settlements also represent linguistic diversity. Most of the people in these settlements speak Marathi, followed by Hindi and other languages.

SOCIO-RELIGIOUS GROUPS*	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
	n=147	n=238	n=451	n=245	n=132	n=421	N=1,634
General	13.6	0.4	32.8	11.8	6.8	11.2	15.5
Other Backward Classes	12.2	1.3	26.2	3.7	3.0	7.1	11.1
Scheduled Castes	56.5	84.9	23.9	49.8	52.3	42.3	46.6
Scheduled Tribes**	7.5	10.5	10.0	7.3	2.3	8.1	8.3
Religious minorities	9.5	2.9	6.7	26.5	35.6	31.1	18.0

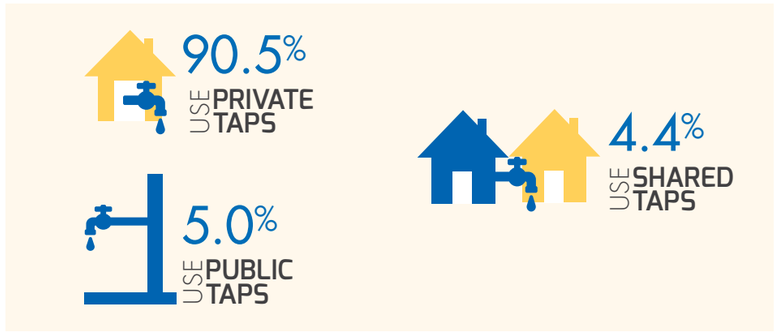
TABLE 3.8
SOCIO-RELIGIOUS GROUPS (% OF HOUSEHOLDS)

Note:*Caste not reported for 6 households, 1 each in Mahatma Phule Nagar and Laxmi Nagar, and 2 each in Janata Vasahat and Ambedkar Nagar
**Includes NT/DNT

3.3.5 Access to basic amenities

WATER SUPPLY

Most of the homes in these settlements have individual piped water connections. The exception is Mahatma Phule Nagar in the PCMC area where only 41.5% of households have private water connections (Figure 3.6) and the remaining households are dependent on public (or the neighbour's) taps.



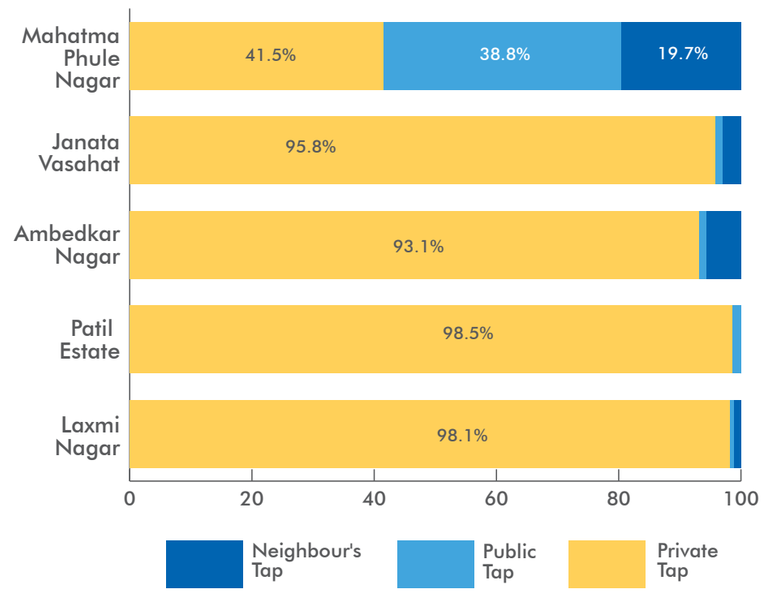
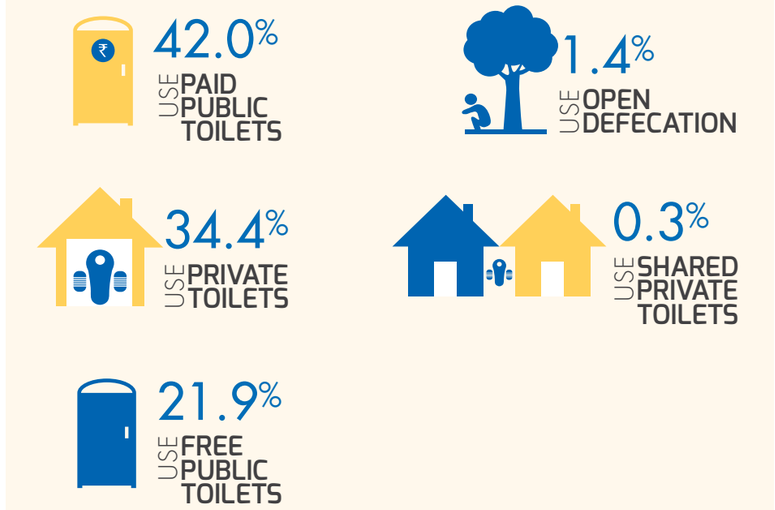


FIGURE 3.6
ACCESS TO WATER SUPPLY
(% OF HOUSEHOLDS)

Note: Information not gathered for Anand Nagar



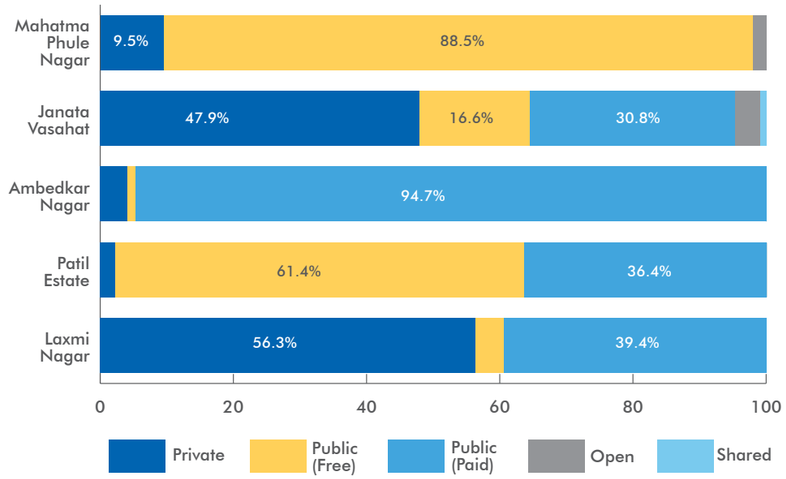


FIGURE 3.7
ACCESS TO SANITATION
(% OF HOUSEHOLDS)

Note: Information not gathered for Anand Nagar

SANITATION

The vast majority of the population has no access to private toilets and depends on free public or community toilets. Nearly 1.4% of the households surveyed reported that they were forced to defecate in the open (Figure 3.7).

Access to a toilet facility is directly correlated with the number of rooms per family. Laxmi Nagar and Janata Vasahat households have more rooms and also more private toilets.

DRAINAGE

Most households in these settlements have access to closed drainage with the exception of Phule Nagar, where only 35% of the drains are covered (Figure 3.8). Laxmi Nagar and Janata Vasahat are the two settlements better served with drainage facilities.

These are the oldest as well as the better-off settlements in terms of the number of households that fall in the higher wealth quintiles.

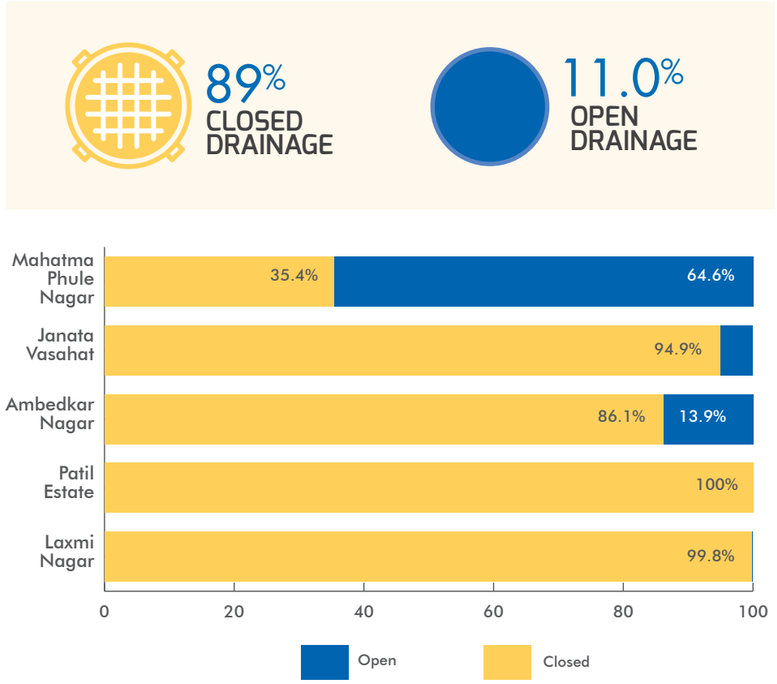


FIGURE 3.8
DRAINAGE
(% OF HOUSEHOLDS)

Note: Information not gathered for Anand Nagar

HOUSING

The majority (88%) of households report ownership of their homes. Few of the houses in the settlements under study are rented (Table 3.9). These settlements were established several decades ago, and many of the residents are second- and even third-generation residents of the city.

With respect to the type of houses in these settlements, Mahatma Phule Nagar in Pimpri-Chinchwad and Ambedkar Nagar in Pune report a higher percentage of kutcha households, viz, 73% and 62% respectively, while Laxmi Nagar has only 1.2% of kutcha houses (Table 3.10). As in the case of home ownership, the age of the settlement is seen to have a direct relationship with the type of housing. Ambedkar Nagar and Mahatma Phule Nagar were established comparatively recently, in 1980 and 1991 respectively. Laxmi Nagar and Janata Vasahat were established more than 40 years ago.

46% of the houses in these settlements are single-room structures. The proportion of such single-room houses is largest in Anand Nagar, Mahatma Phule Nagar and Ambedkar Nagar (Table 3.11).

More than 70% of the households have a room density of 3 or more persons, and more than one-fourth have a room density of more than 5 persons (Table 3.12). These congested environments make it difficult to store desktop/laptop computers. In Anand Nagar and Mahatma Phule Nagar, more than 25% of the households have a room density of 4-6 persons.

	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
TYPE OF OWNER-SHIP	(n=147)	(n=238)	(n=451)	(n=245)	(n=132)	(n=421)	(N=1,634)
Owned	82.3	89.1	87.4	83.3	93.2	91.9	88.2
Rented	17.7	10.9	12.2	16.3	6.8	7.8	11.6

TABLE 3.9
OWNERSHIP OF HOUSE
(% OF HOUSEHOLDS)

Note: 4 families (2 in Janata Vasahat, 1 in Ambedkar Nagar and 1 in Laxmi Nagar) did not report ownership as they were staying with relatives. Thus, the figures in these columns do not add up to 100

	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
TYPE OF HOUSE	(n=147)	(n=238)	(n=451)	(n=245)	(n=132)	(n=421)	(N=1,634)
Pucca	10.9	15.1	32.8	8.6	18.9	76.2	34.7
Semi-pucca	27.2	55.9	58.3	18.4	50.0	22.6	39.3
Kutcha	61.9	29.0	8.9	73.1	31.1	1.2	26.0

TABLE 3.10
TYPE OF HOUSE
(% OF HOUSEHOLDS)

	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
NUMBER OF ROOMS	(n=147)	(n=238)	(n=451)	(n=245)	(n=132)	(n=421)	(N=1,634)
1	62.6	64.7	43.2	61.2	37.1	27.3	46.2
2	31.3	29.4	49.2	36.3	59.1	55.1	45.1
3 and above	6.1	5.9	7.5	2.4	3.8	17.6	8.7

TABLE 3.11
NUMBER OF ROOMS PER HOUSE
(% OF HOUSEHOLDS)

	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
ROOM DENSITY	(n=147)	(n=238)	(n=451)	(n=245)	(n=132)	(n=421)	(N=1,634)
1 to 2	17.0	14.3	33.5	14.7	21.2	41.3	27.4
2 to 4	51.0	48.7	46.8	52.7	53.0	41.1	47.4
4 to 6	28.6	32.4	16.2	24.5	18.2	14.7	20.7
>6	3.4	4.6	3.5	8.2	7.6	2.9	4.5

TABLE 3.12
ROOM DENSITY
(% OF HOUSEHOLDS)

Note: Room density is the number of persons living in a room

3.3.6 Educational status of surveyed population

Almost 80% of the population in the surveyed settlements report some education (Table 3.13). However, just 21.6% have completed any higher education beyond Standard 10. Educational categories in our study are based on the level of enrollment reached, ie each category includes those who have completed or are pursuing education at the specified level. For example, higher secondary includes individuals who have completed Standard 12 as well as students who are enrolled at the higher secondary level but are yet to complete Standard 12.

Educational attainment is higher in the relatively older settlements such as Janata Vasahat and Laxmi Nagar (Table 3.14). The proportion of the population in these settlements who are graduates is higher (8.5% and 9.6% in Janata Vasahat and Laxmi Nagar respectively). Moreover, the proportion of the population in the upper wealth quintiles is higher and this is directly reflected in educational attainment. The levels

TABLE 3.13
EDUCATIONAL STATUS OF HOUSEHOLD MEMBERS AGED 16-70 YEARS BY GENDER (% OF HOUSEHOLD MEMBERS)

Note: *28 missing cases

EDUCATIONAL ATTAINMENT*	FEMALE	MALE	TOTAL
	n=2,897	n=3,074	N*=5,971
No education	29.9	12.7	21.1
Primary school (up to Standard 5)	14.3	13.4	13.9
Secondary school (Standard 6-9)	24.6	28.7	26.7
High school (Standard 10)	13.8	19.5	16.7
Higher secondary (Standard 11-12)	10.8	14.9	12.9
Graduation (BSc/BA/BCom)	5.2	8.0	6.7
Professional degree	0.4	1.0	0.7
Diploma/Vocational	0.4	0.9	0.6
Post-graduation and above	0.4	1.0	0.7

TABLE 3.14
EDUCATIONAL STATUS OF HOUSEHOLD MEMBERS AGED 16-70 YEARS BY SETTLEMENT (% OF HOUSEHOLDS)

Note: *28 missing cases

EDUCATIONAL ATTAINMENT	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
	n=502	n=933	n=1,585	n=844	n=542	n=1,565	N*=5,971
Primary school (up to Standard 5)	12.9	13.7	12.6	16.9	15.9	13.1	13.9
Secondary school (Standard 6-9)	29.1	29.4	26.0	29.4	27.7	23.3	26.7
High school (Standard 10)	17.1	14.7	18.0	13.0	16.6	18.5	16.7
Higher secondary (Standard 11-12)	11.4	11.5	15.5	7.8	11.3	15.0	12.9
Graduation BSc/BA/BCom)	5.0	3.7	8.5	3.7	4.2	9.6	6.7
Professional degree	0.4	0.3	1.5	0.0	0.2	0.9	0.7
Diploma/Vocational	1.0	0.5	0.8	0.1	0.4	0.8	0.6
Post-graduation and above	0.0	0.4	1.1	0.5	0.7	0.9	0.7

of educational attainment also seem to be related to the social characteristics of the population. Slums with a higher presence of religious minorities or SC or ST, such as Ambedkar Nagar and Anand Nagar, show lower levels of educational attainment.

Information pertaining to school-going children in the surveyed households was also gathered (separate from those 16 and above included in 5,999). A total of 1,170 children aged 6 years and above were recorded. Around 54% of the children go to government schools (Table 3.15). The primary medium of instruction for 62% of the students is Marathi (Table 3.16). **Around 65% of the children are reported to be receiving computer training in school** (Table 3.17); 68% of these are students of private schools and 56% go to government schools (not shown in table).

TABLE 3.15
DISTRIBUTION OF SCHOOL-GOING CHILDREN UNDER 16 YEARS OF AGE BY TYPE OF SCHOOL (% IN EACH TYPE OF SCHOOL)

Note: Balwadi: childcare centre; Anganwadi: mother and child centre

SCHOOL TYPE	MALE	FEMALE	TOTAL
	(n=609)	(n=561)	(N=1,170)
Private school	47.6	42.1	45.0
Government school	51.1	57.6	54.2
Balwadi/ Anganwadi	1.0	0.4	0.6
Don't know	0.3	0.0	0.2
TOTAL	100.0	100.0	100.0

TABLE 3.16
MEDIUM OF INSTRUCTION IN SCHOOLS FOR CHILDREN (% IN EACH MEDIUM)

Note: *Term used by respondents when certain subjects like science and math are taught in English and others in the regional language

MEDIUM OF INSTRUCTION	CHILDREN (6-12 YEARS)	CHILDREN (13-15 YEARS)	TOTAL
	(n=804)	(n=366)	(N=1,170)
Marathi	57.6	71.3	61.9
English	25.0	10.4	20.4
Semi-English*	4.7	5.5	5
Urdu	10.8	11.2	10.9
Hindi/Other regional languages	1.9	1.1	1.6
Don't know	0.0	0.5	0.2
TOTAL	100.0	100.0	100.0

TABLE 3.17
COMPUTER TRAINING IN SCHOOL FOR CHILDREN UNDER 16 YEARS OF AGE

COMPUTER TRAINING IN SCHOOL	MALE	FEMALE	TOTAL
	(n=609)	(n=561)	(N=1,170)
Yes	65.7	64.3	65.0
No	33.2	35.3	34.2
Don't know	1.1	0.4	0.8
TOTAL	100.0	100.0	100.0

3.3.7 Employment and occupation

Information on the employment or occupation status of the 5,999 household members, along with their educational attainment, helps to understand the present and potential economic status of households in these settlements. This in turn has a bearing on their financial access to and affordability of the internet. Table 3.18 shows that of the adults (ages 16-70) in the six settlements, 34.3% (ranging from 31% to 38%) are not working. Thus, more than a third of the population is not earning directly and is likely to have limited access to money. Those working are largely self-employed (20%), in service (19%) or students (12%). The proportion of daily-wagers is low (8%) in the study sites. It is lowest in Janata Vasahat and Laxmi Nagar where the numbers in the service and self-employed categories are higher. The percentage of those working as domestic help is comparatively low. Employment in service is highest in Mahatma Phule Nagar as the residents find jobs at the nearby industrial estate. Its location in the industrial area (MIDC estate) also explains why very few here are employed as domestic help. In Patil Estate, where the dominant occupation is waste recycling, many residents, especially women, work as scrap collectors.

TABLE 3.18
OCCUPATION OF ADULT HOUSEHOLD MEMBERS (% OF HOUSEHOLD MEMBERS)

Note:
*With regular government or private jobs in the formal or informal sector
**Artisans, skilled workers such as plumbers/ electricians, and those engaged in business
***'Not working' includes homemakers, young adults who have completed their education or have dropped out of school and are not engaged in any economic activity, and the elderly

OCCUPATION	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
	n=502	n=933	n=1,610	n=846	n=542	n=1,566	N=5,999
Service*	32.9	16.2	22.3	14.5	15.3	15.9	18.8
Self-employed**	12.7	13.8	21.0	23.0	26.4	21.0	20.0
Daily-wager	7.8	13.4	5.0	11.3	4.8	6.0	7.7
Student	11.4	14.4	13.4	9.3	10.0	13.1	12.4
Domestic help	4.6	8.0	7.6	7.2	5.5	6.1	6.8
Not working***	30.7	34.2	30.7	34.5	38.0	37.9	34.3

3.3.8 Wealth status

Overall, there is an even distribution of households across wealth quintiles. There is, however, a difference between settlements with respect to income levels. There is substantial concentration of households in the 1st and 2nd quintiles (1st representing the poorest quintile) in Mahatma Phule Nagar and Ambedkar Nagar. In contrast to these two settlements, about 58% of the households in Laxmi Nagar fall in the two uppermost (4th and 5th) quintiles (Table 3.19).

WEALTH QUINTILE	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
	n=147	n=238	n=451	n=245	n=132	n=421	N=1,634
1st quintile (lowest)	28.6	19.7	18.6	31.0	21.2	11.6	20.0
2nd quintile	37.4	23.1	15.7	34.7	18.2	10.7	20.5
3rd quintile	19.0	17.2	21.5	14.3	25.8	20.0	19.5
4th quintile	9.5	21.0	22.8	10.6	18.9	27.6	20.4
5th quintile (highest)	5.4	18.9	21.3	9.4	15.9	30.2	19.6

TABLE 3.19
WEALTH QUINTILES BY SETTLEMENT (% OF HOUSEHOLDS)

Note: The methodology for arriving at wealth quintiles has been described in Box 2.1

3.3.9 Household assets

About 89% of the households own a television, while 86% have cooking gas connections. Two-wheelers and refrigerators are other major assets found in the households and more than two-fifths of the households own them. **Only 1.1% of households have a landline phone**; these are usually households from which a business is run. It is easier to acquire a mobile phone as compared to a landline phone. **26.4% of households have DTH TV connections and 62.5% have cable TV.** The high percentage of households with cable TV indicates that there is a potential for internet access through the existing cable infrastructure.

Ownership of internet-related devices is limited among the households. **Only about 11% of households have desktop or laptop computers while 3.6% have tablets.** Only 1.2% of households have a desktop computer with fixed/wired internet, while 3.2% have laptops and 4% have a dongle/data card (Table 3.20). However, **96.5% of households have a mobile phone**.

3.3.10 Ration cards and government schemes

About 22% of the households in the settlements report yellow or 'BPL' ration cards, while 69% possess orange (APL) ration cards. Anand Nagar has a larger share of households with BPL cards. Mahatma Phule Nagar reports the largest proportion of households (22%) without a ration card, probably because it has more recent in-migrants. Laxmi Nagar reports the fewest households without ration cards. Laxmi Nagar reports the highest percentage of households with white cards, but these are still below 10% of the total households surveyed. Laxmi Nagar and Janata Vasahat, which have higher percentages of households in the higher 4th and 5th wealth quintiles, report very high percentages of households with orange/APL and white cards.

The government has several individual and family welfare schemes for the economically and socially disadvantaged. These include education scholarships, housing and employment schemes, self-help groups (SHGs) and vocational training. Surprisingly, only 7.6% of the households reported availing of government schemes other than subsidised food and non-food items under the PDS scheme. With regard to the type of schemes availed of, the most common are SHGs (47 households), housing schemes (28 households), educational scholarships (only 27 households) and vocational training and employment schemes (only three each). Awareness levels, which are proportionate to educational and wealth levels, also determine the number of families availing of these schemes. It is not surprising that the highest percentages of households that have availed of government schemes are from Laxmi Nagar and Janata Vasahat which are better off than the other settlements (Figure 3.9). Education and housing-related schemes figure high as seen in Table 3.22.

While only 121 of 1,634 households accessed these government schemes, formal or informal financial loans were taken by almost 20% of the households, ranging from 10.6% of households in Ambedkar Nagar to 26.7% in Patil Estate (Figure 3.10).

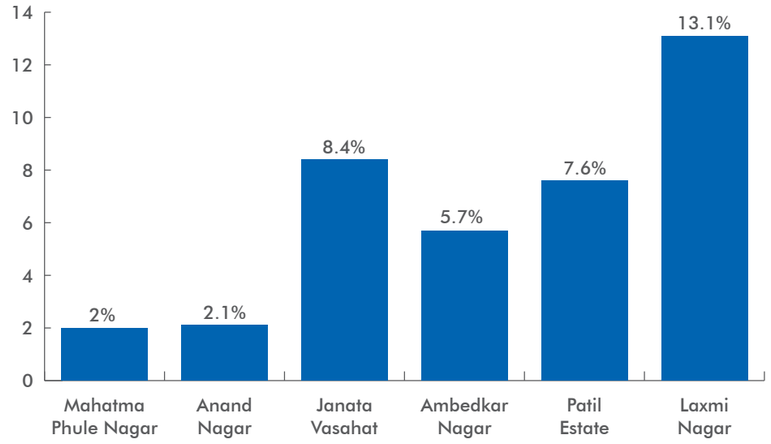
HOUSEHOLD ASSETS	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
Transportation assets							
Bicycle	39.5	18.5	35.7	21.6	18.2	26.1	27.5
2-wheeler	27.9	26.9	56.5	35.1	50.8	56.8	46.0
3-wheeler	0.7	3.4	5.5	3.7	15.2	9.5	6.3
4-wheeler	0.7	2.1	4.4	3.3	4.5	5.2	3.8
Household equipment							
Cooking gas	68.7	80.7	89.1	75.5	87.9	95.5	85.6
Refrigerator	30.6	28.6	46.6	19.2	45.5	59.1	41.6
Sewing machine	17.7	17.6	19.3	16.7	15.9	24.9	19.7
ICT devices							
Dish TV (DTH)	23.8	18.5	24.0	21.2	43.9	31.8	26.4
Cable TV	62.6	70.2	63.0	66.5	47.0	59.9	62.5
Radio	2.0	3.4	7.7	2.9	9.1	5.7	5.4
Landline phone	0.0	0.8	1.5	0.4	2.3	1.2	1.1
Desktop computer with fixed internet	0.0	0.4	1.5	0.8	1.5	1.7	1.2
Desktop computer without internet	4.8	2.9	8.4	3.3	4.5	10.5	6.7
Laptop	1.4	1.3	3.3	1.6	3.0	5.7	3.2
Dongle/Data card	2.7	1.7	3.7	1.6	3.0	7.8	4.0
Mobile phone	95.2	93.7	96.9	97.1	98.5	96.9	96.5

TABLE 3.20
HOUSEHOLD OWNERSHIP OF ASSETS (% OF HOUSEHOLDS OWNING EACH ASSET) BY SETTLEMENT

RATION CARD	MAHATMA PHULE NAGAR	ANAND NAGAR	JANATA VASAHAT	AMBEDKAR NAGAR	PATIL ESTATE	LAXMI NAGAR	TOTAL
Yellow	25.2	57.0	13.5	12.2	38.6	11.2	22.1
Orange	49.7	38.8	80.7	75.9	53.8	80.8	69.0
White	2.0	0.4	3.1	5.7	4.5	6.9	4.1
Do not have ration card	22.4	3.8	2.7	5.7	3.0	1.2	4.7

TABLE 3.21
TYPES OF RATION CARD HELD BY HOUSEHOLDS (% OF HOUSEHOLDS)

*2 cases reported 'other', 1 each in Mahatma Phule Nagar and Ambedkar Nagar



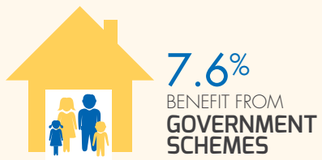


FIGURE 3.9
HOUSEHOLDS THAT HAVE AVAILED OF GOVERNMENT SCHEMES OTHER THAN PDS (% OF HOUSEHOLDS)

TABLE 3.22
NUMBER OF HOUSEHOLDS THAT ARE BENEFICIARIES OF GOVERNMENT SCHEMES OTHER THAN PDS

Note: *By department of urban community development

GOVERNMENT SCHEMES	NUMBER OF BENEFICIARIES
SHG	47
Housing schemes	28
Educational scholarships	27
Pension schemes	7
Vocational training*	3
Employment scheme	3
Other	6

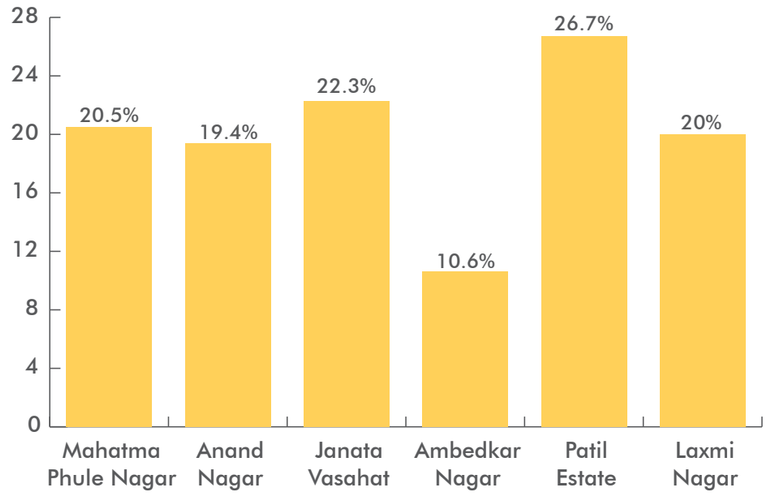


FIGURE 3.10
HOUSEHOLDS AVAILING OF FORMAL/INFORMAL LOANS (% OF HOUSEHOLDS)

Photograph: Vivek Singh

3.4 SUMMARY

This chapter has presented a profile of Pune city, of low-income settlements spread across the PMC and the PCMC, and of the six study settlements. The six settlements have been purposively selected to represent a diversity of caste, religious and income groups in order to provide a picture of the digital exclusion of marginalised urban communities.

Forty percent of Pune city, and a significant number in Pimpri Chinchwad, lives in informal or slum settlements. Slums in the city have seen a high rate of growth over the last two decades. The Census of India (2011) estimates that people from Scheduled Castes make up 31.5% of slums in Pune UA, compared to 14.3% in urban Pune as a whole. People from Scheduled Castes make up 46% of the settlements studied, and there is a high percentage of religious minorities as well.

As the city grows rapidly, the slum population – with a young demographic and 50% youth – will grow correspondingly. These populations must have equal access to affordable and high-quality internet services. Eighty percent of the surveyed population reports some education, and 65% of the under-16 school-going children receive some form of computer training at school.

People in Pune's slums have access to basic amenities including electricity and water supply, and they possess a variety of household assets. The majority of the surveyed households own their homes and have security of tenure. Room density, however, is high, and sanitation and garbage-clearance is very poor. Ninety-five percent of households in the surveyed settlements have ration cards, but only 7.6% of them avail of government welfare schemes other than subsidised food and non-food items under the PDS.

While the study settlements lack access to wired telephone and internet connections, 89% own televisions (62.5% with cable TV connections and the rest with DTH connections) and almost every household has a mobile phone. Three percent of households have laptops and 4% have dongles or data cards. Very few have desktop computers with internet.

The next chapter discusses media consumption and internet penetration and use in the study locations, in the context of this profile.

ENDNOTE

1. Pune UA comprises Pune Municipal Corporation, Pimpri-Chinchwad Municipal Corporation, Dehu Road Cantonment Board, Kirkee Cantonment Board, Pune Cantonment Board, and Dehu Census Town

4 MEDIA AND INTERNET PENETRATION

4.1 INTRODUCTION

This chapter discusses media and internet consumption patterns in the study settlements. The chapter has been divided into five sections, beginning with the communication media that are used in the study settlements, with a focus on digital media including television and mobile telephony, moving on to the sources of information that are most important for respondents, and the extent to which the internet has come to be a source of information in these settlements. It also includes spending on media consumption by households. The third and fourth sections explain internet penetration levels at the household and user levels respectively. This survey, however, does not cover the cost of procurement of internet-accessible devices. The fifth section concludes the chapter.

4.2 MEDIA EXPOSURE

4.2.1 Sources of information

People in the settlements under study have access to information from multiple sources. **Television (TV) is a major source of information for 80.2% of households** (Figure 4.1). Newspapers are a major source of information for around 36% of the households. Interaction with neighbours is also a major source of information in these closely-knit and dense settlements. However, **the internet is a major source of information for only 11.1% of the households**. Radio as a separate device is listened to by only 3.5% of the households. However, radio (FM) is heard through mobiles as well, and this survey has not looked at the proportion of households listening to radio through mobile phones.

4.2.2 Internet as a source of information

There is no significant variation in the internet as a source of information across religious/social groups (Figure 4.3). But there is a significant variation by wealth quintile. **Only 5.8% of households from the first or lowest quintile report the internet as a source of information, whereas nearly 17% in the fifth quintile access information through the internet** (Figure 4.2). There is a direct correlation between economic status and the internet as a source of information.

4.2.3 Type of information sought

Entertainment-related information is what is most commonly sought by all households (Figure 4.4). This is followed by information on

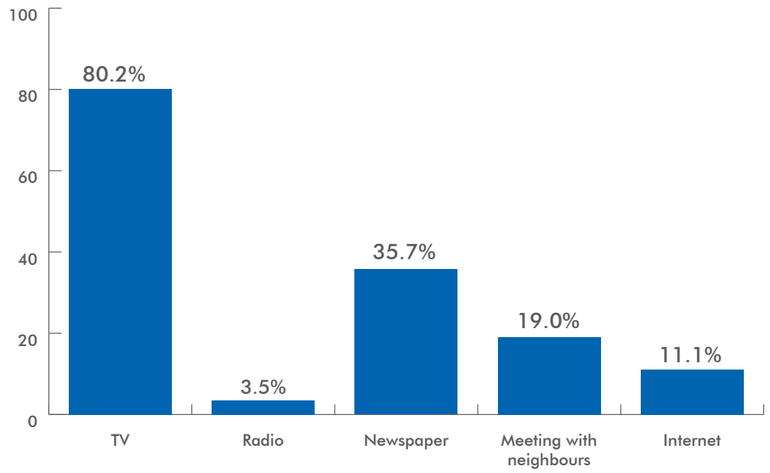


FIGURE 4.1
MAJOR SOURCES OF INFORMATION FOR HOUSEHOLDS
(% OF HOUSEHOLDS, N=1,634)

Note: In addition to the specified sources,19 respondents mentioned SMS, 31 respondents mentioned announcements and meeting with local bodies, 24 respondents mentioned local bulletin boards, 2 respondents mentioned meeting with CBCs and CBOs, while 36 respondents mentioned other sources. Other sources specified include SHG, school, anganwadi worker, friends, shop, mobile, corporator's office, office, and market

FIGURE 4.2
THE INTERNET AS A SOURCE OF INFORMATION BY WEALTH QUINTILE
(% OF HOUSEHOLDS, N=1,634)

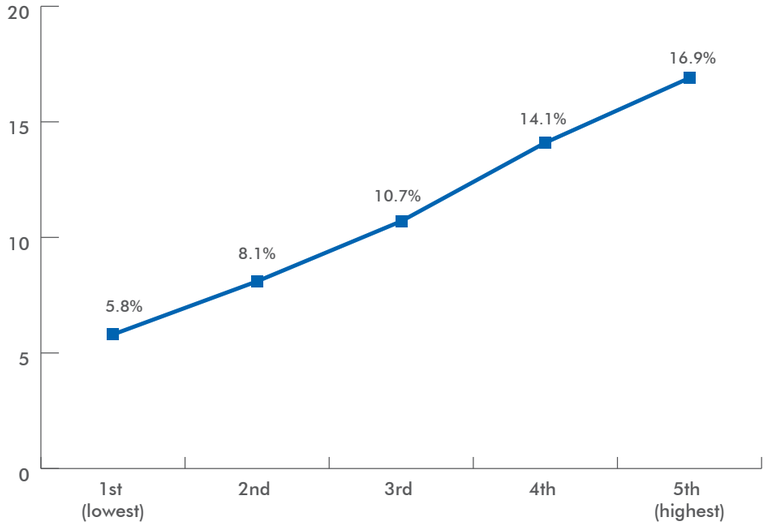


FIGURE 4.3
THE INTERNET AS A SOURCE OF INFORMATION BY SOCIO-RELIGIOUS GROUPS
(% OF HOUSEHOLDS, N=1,634)

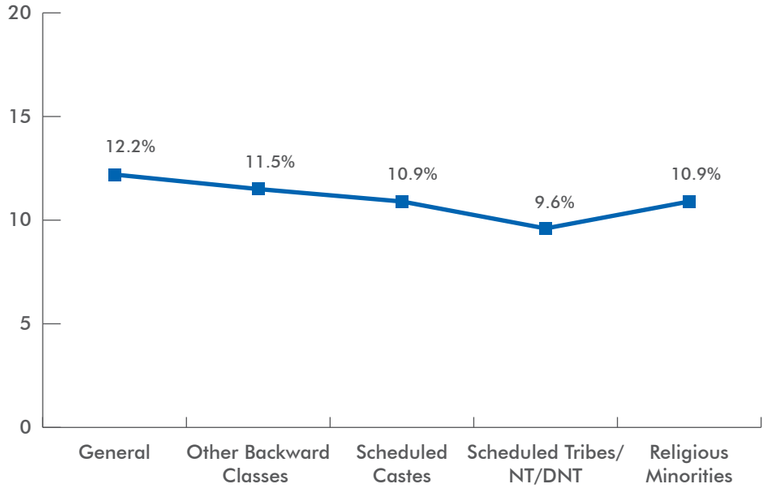
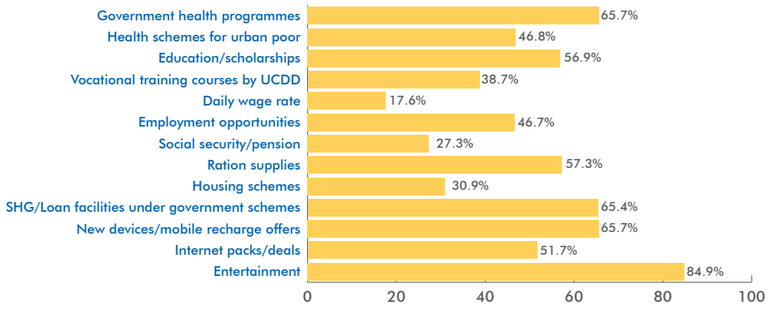


FIGURE 4.4
TYPE OF INFORMATION SOUGHT FROM SOURCES OF INFORMATION
(% OF HOUSEHOLDS, N=1,634)



mobiles and other communication devices, including internet/ mobile packages. Information on government health programmes, self-help groups, loan facilities and education scholarships are other topics that people want to know about. Forty-seven percent of households seek information on employment opportunities.

4.3 USER/NON-USER HOUSEHOLD PROFILE

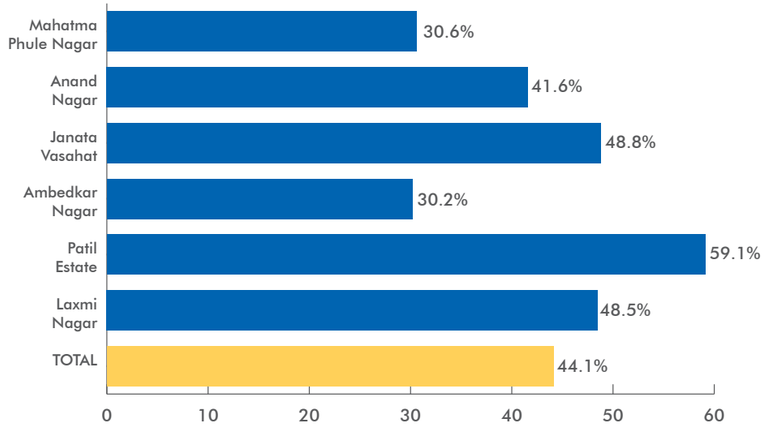
4.3.1 Internet use and non-use

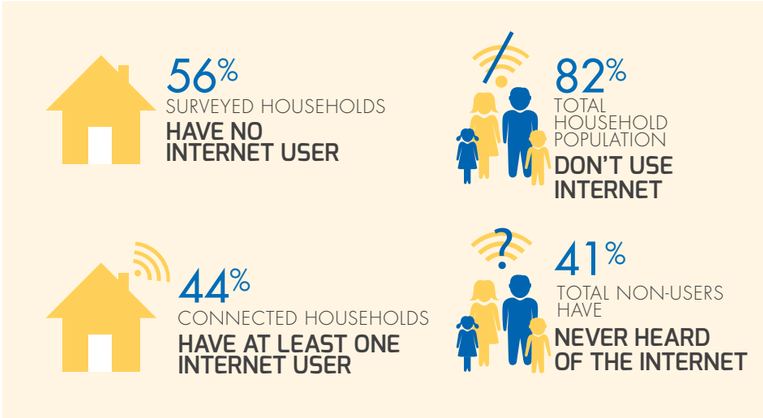
This section examines use or non-use of the internet in households

TABLE 4.1
INTERNET USERS IN THE HOUSEHOLD

S NO	CATEGORY	NUMBER
A.	TOTAL SURVEYED HOUSEHOLDS	1,634
1	No internet users in the household	914 (55.9%)
2	At least one user in the household	720 (44.1%)

FIGURE 4.5
PERCENTAGE OF HOUSEHOLDS WITH AT LEAST 1 INTERNET USER BY SETTLEMENT (N=1,634)





from the study settlements, providing insights into the degree and nature of internet penetration in low-income settlements. Table 4.1 shows the level of internet penetration in the settlements under study. 56% of households do not have any internet users[1]. 44% of households are 'connected households', that is they have at least one user.

Looked at in terms of the total population, **82% of the people surveyed[2] do not use the internet** (Table 4.7). This figure points to the extent of the digital divide in the city[3]. **Of the 82% who do not access the internet, 41% have never even heard of the internet** (Table 4.8).

Among the settlements, Patil Estate has the highest percentage of households using the internet, followed by Janata Vasahat and Laxmi Nagar. Ambedkar Nagar and Mahatma Phule Nagar have the least share of households connected to the internet (Figure 4.5).

A further break-up of the user households reveals that of the total households, 27.5% have 1 user, 13% have 2 users, 2.8% have 3 users and only 0.8% have 4 or more users (Figure 4.6). A further

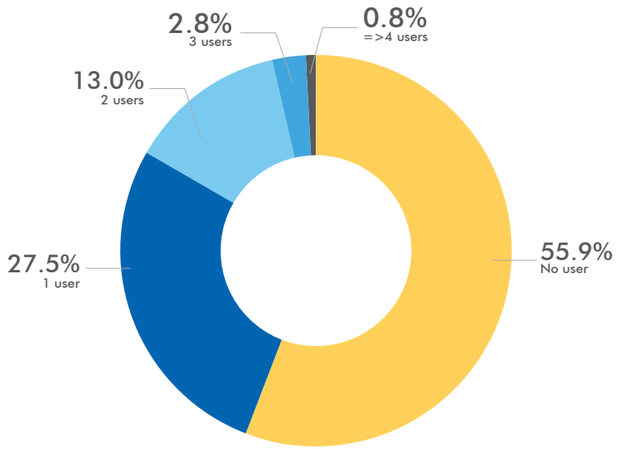


FIGURE 4.6
NUMBER OF INTERNET USERS PER HOUSEHOLD (% OF HOUSEHOLDS, N=1,634)

analysis of the household pattern of internet use has been done in the following sections.

4.3.2 Socioeconomic status

The user/non-user profile of households has been analysed from three aspects, viz socioeconomic status of the households, possession of mobile phones in the household, and households with computer usage (Table 4.2).

Education and financial status show a direct correlation with internet connectivity.

Only 15% of households where no member has completed or is studying in Standard 10 are internet user households. **Where at least one member has completed schooling, the proportion of connected households increases to more than 55%.**

Similarly, **the proportion of internet-connected households is higher in the higher wealth quintiles.** Monthly family expenditure on mobiles shows a direct correlation with internet use. Households spending more on mobile phones are also more likely to be connected to the internet.

There is no direct link, however, between socio-religious status and internet use. In fact, the proportion of Scheduled Tribe households connected to the internet is more than that of households falling in the General category.

Internet connectivity is thus emerging as a function of education and affordability.

HOUSEHOLD (HH) CHARACTERISTICS	CONNECTED HOUSEHOLDS (PERCENT)	HOUSEHOLDS NOT CONNECTED (PERCENT)	NUMBER OF HOUSEHOLDS
Educational status of the HH			
No HH member has completed Standard 10 or is enrolled in Standard 10	14.9	85.1	471
At least 1 HH member has completed Standard 10 or is enrolled in Standard 10	55.9	44.1	1163
Socio-religious group			
General	50.4	49.6	254
Other Backward Classes (OBC)	46.2	53.8	182
Scheduled Castes (SC)	41.7	58.3	762
Scheduled Tribes (ST)/NT/DNT	52.2	47.8	136
Religious minorities	40.5	59.5	294
Wealth quintile			
1st quintile (lowest)	29.4	70.6	326
2nd quintile	31.0	69.0	335
3rd quintile	43.9	56.1	319
4th quintile	53.6	46.4	334
5th quintile (highest)	62.8	37.2	320
Monthly family expenditure on mobile phones			
No expenditure/not applicable*	15.0	85.0	120
Rupees 100 or less	24.2	75.8	248
Rupees 101-500	41.8	58.2	838
Rupees 501-1,000	64.0	36.0	292
Rupees 1,001 and above	77.2	22.8	136
TOTAL	44.1	55.9	1,634

TABLE 4.2
PERCENT DISTRIBUTION OF CONNECTED AND UNCONNECTED HOUSEHOLDS BY SOCIOECONOMIC CHARACTERISTICS

Note: *Not applicable for households with no mobile phone

4.3.3 Possession of mobile phones and internet use

Table 4.3 shows internet connectivity vis-à-vis possession of mobile phones. **The proportion of connected households is highest in households possessing smartphones (77%). Internet connectivity is also higher in the case of households possessing any internet-accessible phone.** The possession of such phones (either smartphone or feature phones) is a function of the household's income status.

HOUSEHOLD CHARACTERISTICS	CONNECTED HOUSEHOLDS (PERCENT)	HOUSEHOLDS NOT CONNECTED (PERCENT)	NUMBER OF HOUSEHOLDS (N=1,634)
Any mobile phone			
No phone	7.5	92.5	40
Basic mobile phone[4]	14.7	85.3	564
Any internet-accessible phone (including smartphone)	61.6	38.4	1,030
Smartphones			
Do not possess smartphone[5]	29.8	70.2	1,141
Possess smartphone	77.1	22.9	493

TABLE 4.3
PERCENT DISTRIBUTION OF CONNECTED AND UNCONNECTED HOUSEHOLDS BY POSSESSION OF TYPES OF MOBILE PHONES

4.3.4 Households possessing computer skills

Seen across settlements, Janata Vasahat, and Laxmi Nagar, which have higher percentages in the upper wealth quintiles, have more households where at least one member uses computers (Figure 4.7). **Around 32% of households across settlements report the use of computers** (computers are owned by only 11% of households, so clearly a significant number use computers elsewhere, including at work or school/college).

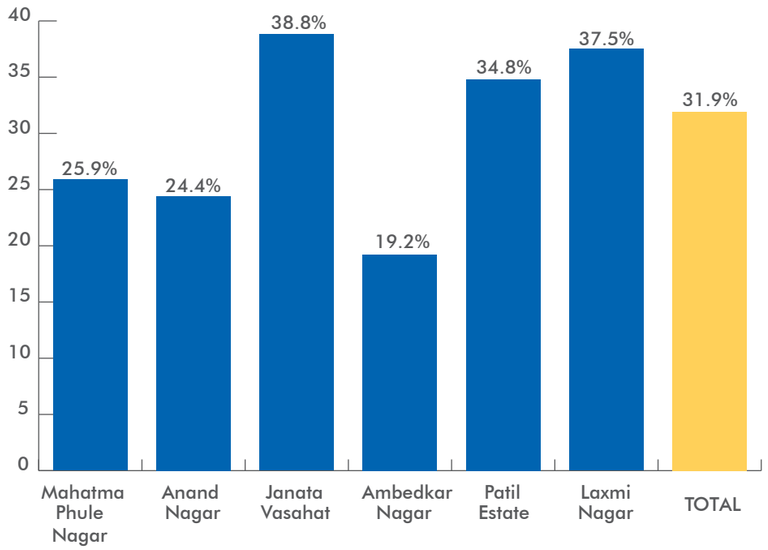


FIGURE 4.7
USE OF COMPUTERS IN THE HOUSEHOLD BY SETTLEMENT (% OF HOUSEHOLDS WHERE AT LEAST ONE HOUSEHOLD MEMBER USES A COMPUTER)

The use of computers by female members of the household is lower than by male members of the household[6]. Fifty-eight percent of connected households report use of computers by male members only and 29% of households report use by female members only (Figure 4.8). Only about 11% of households report that both men and women in the household use computers. This points to sharp gender differentials in the use of computers at home.

The use of computers by at least one household member and computer training for at least one household member are directly related to internet connectivity.

Those with the ability to use a computer are more likely to be connected households, ie households where at least one person uses the internet (Table 4.4). However, households with children learning computers at school are not necessarily among the internet-connected ones.

4.3.5 Expenditure on media consumption

One indicator of the importance given to digital communications by low-income households is their monthly expenditure on television[7], mobile telephones[8] and the internet. A large proportion of households spend up to Rs 300 on television (Figure 4.5). Very few households spend more than this. The normal rates for cable television in the city vary between Rs 200 and 300, which covers most Hindi as well as regional language (Marathi) channels.

Almost 45% of internet user households spend less than Rs 100 on the internet. Another 25.5% spend Rs 100-200. Taken together, more than 70% of connected households spend less than Rs 200 on the internet. The proportion of households spending more than Rs 300 is much lower. It seems that households access the internet mainly through basic data packs. This aspect has been explored further in Chapter 5.

Assessment of expenditure on mobile and cell phones across wealth quintiles shows that households from the lower quintile spend less on mobile phones (talk-time and SMS) in comparison to those in the higher quintiles (Table 4.6). For instance, more than 58% of households from the 1st quintile spend Rs 300 or less on the internet monthly, in contrast to about 36% of households in the 5th quintile. In the 5th quintile, nearly 40% of households spend more than Rs 500 on mobile services. Economic status certainly seems to be a factor in expenditure pattern on communication.

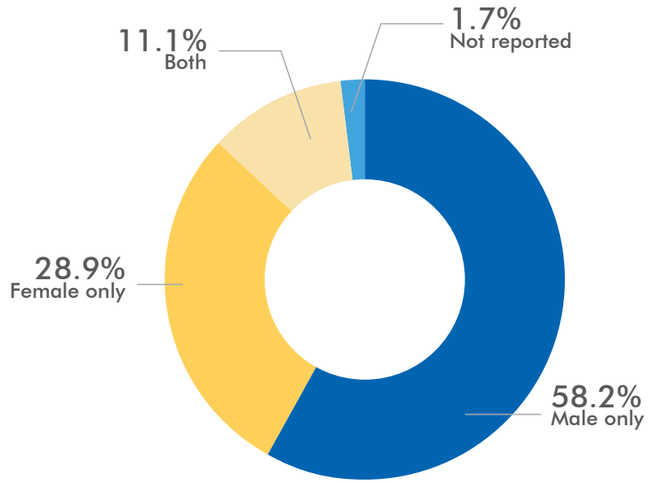


FIGURE 4.8
USE OF COMPUTERS BY GENDER (% OF HOUSEHOLDS, n=522)

USE OF COMPUTERS	CONNECTED HOUSEHOLDS (PERCENT)	HOUSEHOLDS NOT CONNECTED (PERCENT)	NUMBER OF HOUSEHOLDS
Any HH member uses computer/laptop*			
No	27.9	72.1	522
Yes	78.5	21.5	1,112
Any HH member has received computer training*			
No	30.6	69.4	1,129
Yes	74.1	25.9	505
Any child with computer training in school**			
No	55.4	44.6	929
Yes	13.9	86.1	467

TABLE 4.4
COMPUTER SKILLS IN CONNECTED AND UNCONNECTED HOUSEHOLDS

Note: *N=1,634, **N=1,396 as the child roster was not administered in Anand Nagar

EXPENDITURE (RUPEES/MONTH)	INTERNET N=577	TV N=1,425	MOBILE PHONES N=1,514*
Up to 200	70.4	42.6	36.3
201-300	14.0	51.7	15.1
Above 300	15.6	5.7	48.6

TABLE 4.5
MONTHLY FAMILY EXPENDITURE ON INTERNET, TELEVISION AND MOBILE PHONE – TALKTIME AND SMS ONLY (% OF HOUSEHOLDS)

Note: *Percentages have been calculated for households that incurred expenditure in accessing these devices. Households that reported 'no expenditure' either because the household did not own the device(s) or because the cost was covered by the employer have been excluded from the analysis

TABLE 4.6
FAMILY EXPENDITURE ON MOBILE PHONES (TALKTIME AND SMS ONLY) BY WEALTH QUINTILE (PERCENT OF HOUSEHOLDS)

*40 households had no mobile phones and another 80 households reported no expenditure on mobiles

RUPEES/ MONTH	WEALTH QUINTILE					TOTAL
	1st	2nd	3rd	4th	5th	N=1,514*
100 or less	20.9	24.1	19.5	11.4	6.9	16.4
101 to 200	19.4	28.0	18.5	19.1	14.7	19.9
201 to 300	17.3	13.7	17.4	13.5	14.1	15.1
301 to 400	10.1	10.7	11.4	11.4	12.1	11.2
401 to 500	9.4	7.5	5.7	10.5	12.4	9.1
Above 500	23.0	16.0	27.5	34.2	39.9	28.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Monthly expenditure on communication (television, mobile telephony and the internet) has been assessed to understand the importance given to digital communications in the lives of low-income communities. Such spending appears to form a fairly sizeable proportion of total monthly spending. **Forty-five per cent of households spend up to 5% of their income on TV, mobile telephony and internet while 37% spend 5-10% of their total family income on these communication services.** Ten percent and 7% of households actually spend 10-15% and above 15% respectively of their family income on communications (Figure 4.9). (The method for computing the family income has been described in Chapter 2.)

4.4 USER/NON-USER POPULATION PROFILE (5,999 HOUSEHOLD MEMBERS)

4.4.1 Internet awareness

Internet awareness is an indicator of not only present levels of digital inclusion but also the future potential for digital inclusion of low-income urban households. We see that only 18% of household members in the 16-70 age-group are users. 82% are non-users (Table 4.7). Of these non-users, only 59% have heard of the internet (Table 4.8). Others have not heard of the internet at all.

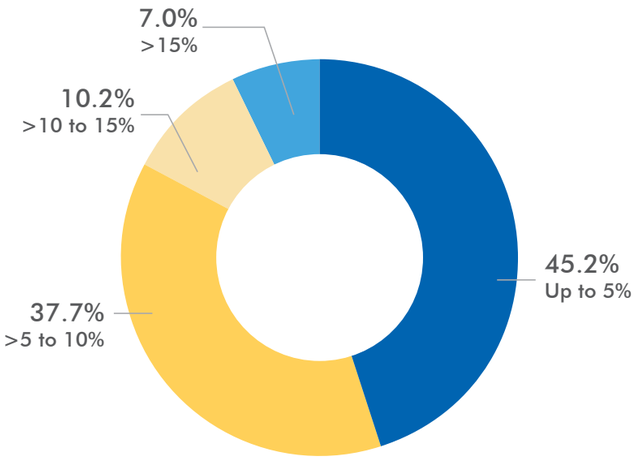


FIGURE 4.9
EXPENDITURE ON MEDIA AS A PROPORTION OF TOTAL FAMILY INCOME (% OF HOUSEHOLDS)

TABLE 4.7
INTERNET PENETRATION AT THE LEVEL OF HOUSEHOLD MEMBERS

CATEGORY	NUMBER (PERCENT)
Total household members in surveyed households	5,999
User members	1,066 (18%)
Non-user members	4,933 (82%)

TABLE 4.8
INTERNET AWARENESS AMONGST NON-USERS AT THE LEVEL OF HOUSEHOLD MEMBERS

CATEGORY	NUMBER (PERCENT)
Total non-user household members in surveyed households	4,933
Heard of the internet	2,886 (59%)
Never heard of the internet	2,047 (41%)

4.4.2 How users were introduced to the internet

Most users (47%) were introduced to the internet by their friends (Figure 4.10). Thirty-eight per cent reported learning about the internet at school/college. However, this does not imply that formal training on computers/internet is available to all of them. While schools have computer literacy as part of their curriculum, students are rarely given hands-on or adequate exposure to computers (especially in state-run schools).

Less than 5% of users reported that they learned of the internet at their place of work or from colleagues. This suggests limited exposure to the internet at the workplace, not surprising since most of the respondents are employed in the informal sector where the internet is not commonly used.

It is also important to understand users' awareness of the different uses and functions of the internet. The majority of individual users reported that the internet could be used for social networking (67%),

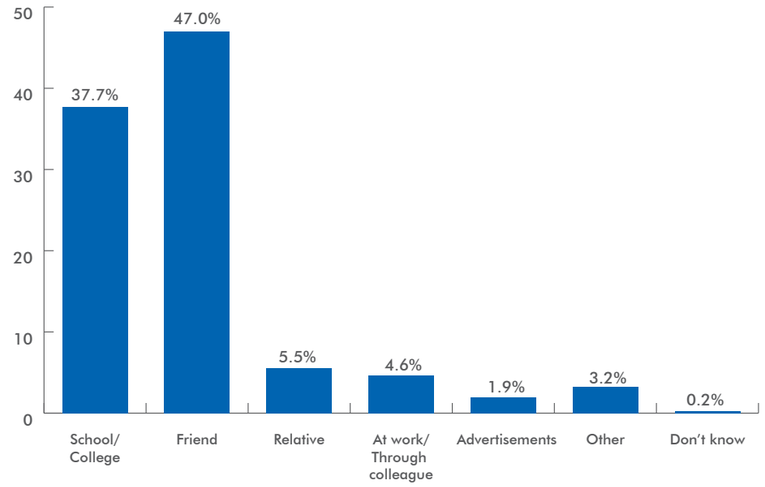


FIGURE 4.10
HOW USERS WERE EXPOSED TO THE INTERNET (% OF INTERNET USER RESPONDENTS, n=564)

Note: 'Other' includes computer class, cybercafe, self

Computer literacy training in state-run schools

Interviewer: Did they teach you computers?

Respondent: Yes, they taught computers but we never actually handled computers… The teacher gave us a lot of notes.

Interviewer: You had no practical training, only theory?

Respondent: We had some computers, but the class was of only 40 minutes… We had 100 students in our class so it was difficult for everyone to get time on the computer.

(Female16, student, Standard 11)

BOX 4.1

entertainment (66%) and seeking news and information (62.8%) (Figure 4.11). We found that the term 'internet' is not recognised by many, including those who are users. They know 'Facebook' and 'WhatsApp' and refer to these specific services when discussing their use or non-use. Forty per cent of user respondents reported that the internet helps in seeking jobs, education and online transactions. Only 12% of respondents reported that the internet can be used for e-mail/ communication.

Users' awareness about the purpose of internet use by gender shows that a higher proportion of men than women know about social networking and entertainment (Table 4.9). A 26-year-old male internet user from Anand Nagar working in a private job said, 'Women do not know about the internet in this settlement. Most men also do not use it... People in these settlements are more concerned with basic survival, so they use the mobile only for calling. They do not know the value of the internet. Even boys use the internet only for timepass. They do not know any other purposes of the internet'. Awareness about the purpose of internet use does not show any distinct pattern by age-groups. But awareness of online services and of use of the internet for jobs, education, news and information-search is strongly related with educational attainment. Fifty percent of users who are college graduates (BA/BCom/BSc) responded that the internet can be used to hunt for jobs and for online education.

Nearly all socio-religious groups show a greater awareness of internet use for social networking. Caste or religious affiliation shows no bearing on levels of awareness about the internet and its functions.

Occupation, however, is linked with awareness about the potential uses of the internet. A higher proportion of users with regular jobs in the formal/ informal sector (ie service) said that the internet could be used to search for information on jobs/ education and for online services. Daily-wagers, the self-employed and students are more aware of its use for entertainment.

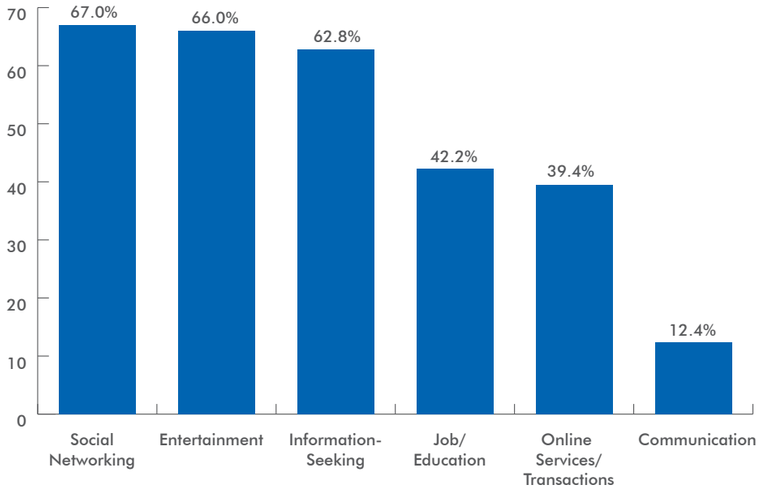
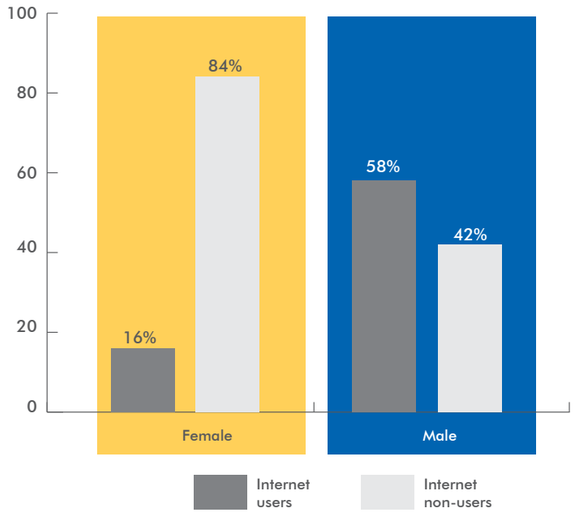


FIGURE 4.11
AWARENESS OF PURPOSE OF INTERNET USE (% OF INTERNET USER RESPONDENTS, n=564)

BACKGROUND CHARACTERISTICS	SOCIAL NETWORKING	ENTERTAINMENT	INFORMATION-SEEKING	JOB/ EDUCATION	ONLINE SERVICES	COMMUNICATION
Gender						
Female	56.8	55.5	65.1	43.2	35.6	11.0
Male	70.6	69.6	62.0	41.9	40.7	12.9
Age-group						
16-20	67.9	69.5	65.9	43.7	38.4	9.9
21-25	68.8	66.7	64.5	43.5	39.9	12.3
26-30	60.6	59.2	47.9	36.6	43.7	21.1
31-35	70.4	74.1	70.4	33.3	40.7	14.8
35+	61.5	30.8	50.0	42.3	34.6	15.4
Education status						
No education/Primary school (up to Standard 5)	36.4	45.5	45.5	27.3	18.2	9.1
Secondary school (Standard 6-9)	64.6	78.1	49.0	30.2	27.1	13.5
High school (Standard 10)	66.0	64.2	65.1	34.0	40.6	6.6
Higher Secondary (Standard 11-12/ Diploma/Vocational courses)	71.7	68.5	66.3	47.3	39.1	10.9
Pursuing/Completed graduation & above	65.9	58.7	66.5	49.7	47.3	17.4
Socio-religious groups						
General	67.0	56.0	57.0	37.0	40.0	13.0
Other Backward Classes (OBC)	64.3	57.1	64.3	40.0	41.4	12.9
Scheduled Castes	70.0	71.2	66.3	44.9	35.8	13.6
Scheduled Tribes/ NT/ DNT	62.7	76.3	64.4	44.1	42.4	11.9
Religious minorities	64.1	63.0	57.6	41.3	44.6	8.7
Occupation						
Service	68.9	58.8	64.2	47.3	50.0	21.6
Self-employed	59.3	61.0	33.9	28.8	28.8	13.6
Daily-wager	71.4	85.7	64.3	35.7	21.4	7.1
Student	69.5	70.2	67.9	44.7	37.8	9.2
Not working	60.5	65.4	64.2	35.8	35.8	6.2

TABLE 4.9
AWARENESS OF INTERNET USERS ABOUT THE PURPOSES OF INTERNET USE BY SOCIOECONOMIC AND DEMOGRAPHIC CHARACTERISTICS (n=564)

FIGURE 4.12
INTERNET ACCESS OF INDIVIDUAL RESPONDENTS BY GENDER (% OF RESPONDENTS, N=1,634)



4.4.3 Internet users and non-users by socioeconomic characteristics

The following sections give a comparative user/non-user profile of (1,634) individual respondents by:

1. Gender
2. Age
3. Marital status
4. Caste and religious group
5. Educational status
6. Occupation, and
7. Wealth status

Figure 4.12 shows internet use by gender. **The percentage of internet non-users is much higher among women (84%) than men (42%).** There is therefore a clear gender divide in internet use. This gender divide has been analysed further in Chapter 6 on barriers to internet access.

A very clear pattern emerges in internet use by age (Figure 4.13). **The proportion of internet users declines as age increases. The majority of users – 64% – are in the 16-20 age-group.** There is a sharp decline in the proportion of internet users in higher age-groups. **Thus only 7% of respondents above 35 years use the internet.** Younger age-groups are more open to new technologies. Literacy is higher amongst younger populations today with more children in school. Also, computer literacy is now part of school education, so the younger age-groups are far more likely to be computer literate. (Internet users in the under-25 age-group are profiled later in the report.)

A higher number of married respondents are non-users (Figure 4.14). However, this is because most internet users are in the young age-groups and not yet married. It is likely that within the next few years there will be a shift and the proportion of married population using the internet will increase. A high proportion of the widowed population is not online as they are more likely to belong to the older age-groups.

Caste and religion do not influence internet access in the population studied (Figure 4.15). The proportion of non-users among all population groups, whether General, Scheduled Caste, Scheduled Tribe or religious minorities, is nearly the same. **It would seem, therefore, that technology is indeed caste- and religion-neutral. Seen thus, the**

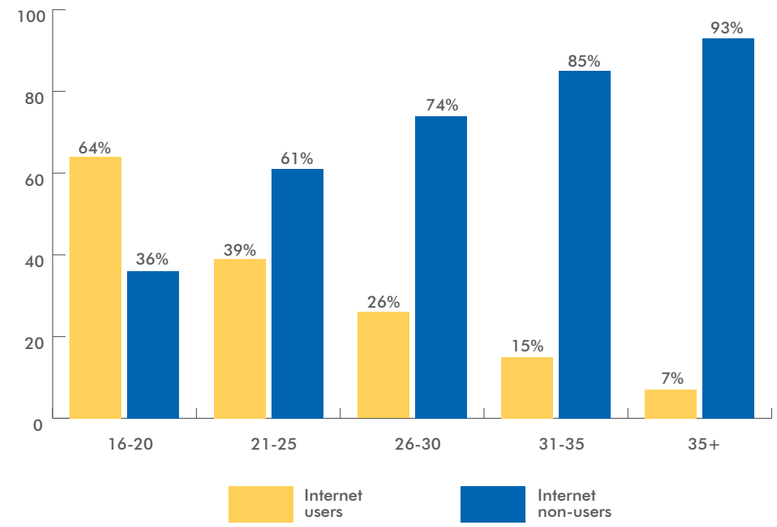


FIGURE 4.13
INTERNET ACCESS OF INDIVIDUAL RESPONDENTS BY AGE (% OF RESPONDENTS, N=1,634)

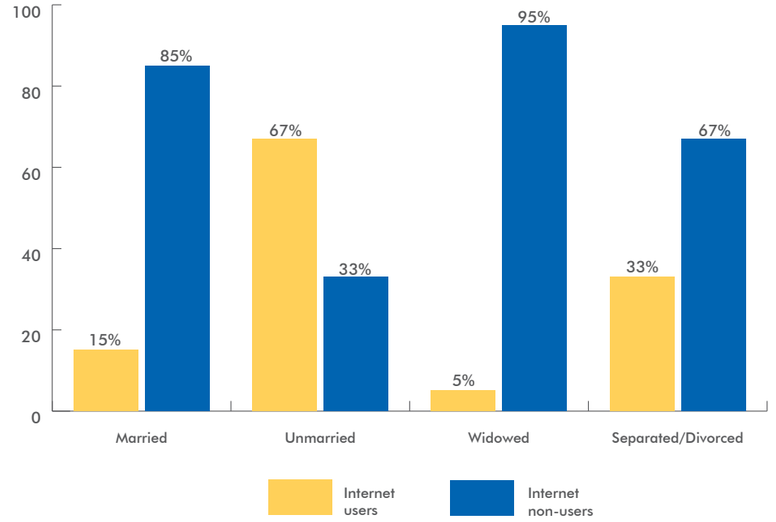


FIGURE 4.14
INTERNET ACCESS OF INDIVIDUAL RESPONDENTS BY MARITAL STATUS (N=1,634)

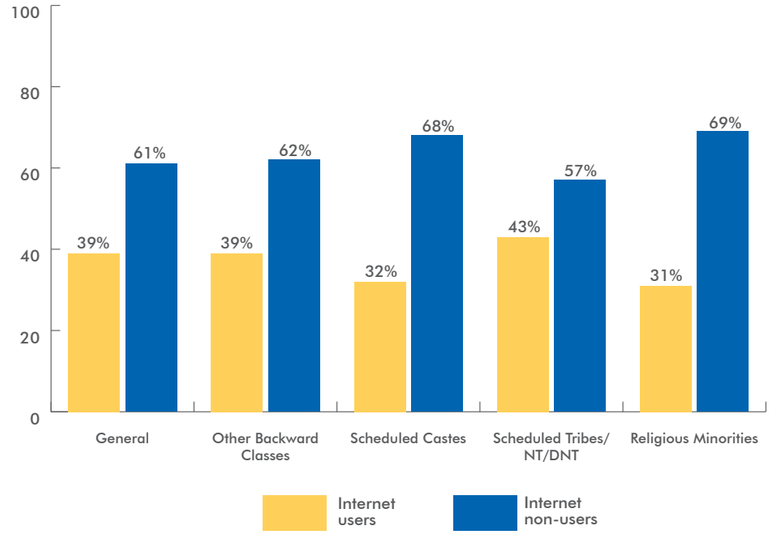


FIGURE 4.15
INTERNET ACCESS OF INDIVIDUAL RESPONDENTS BY SOCIO-RELIGIOUS GROUPS (% OF RESPONDENTS, N=1,634)

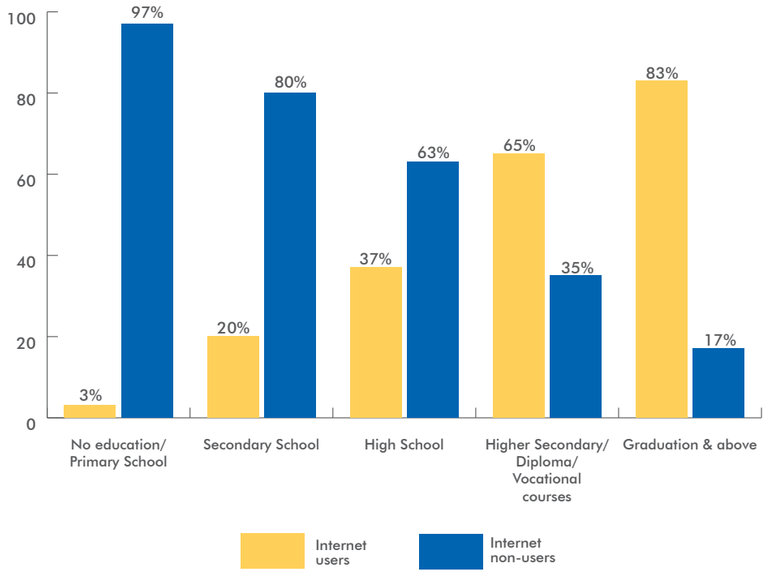


FIGURE 4.16
INTERNET ACCESS OF INDIVIDUAL RESPONDENTS BY EDUCATIONAL STATUS
(% OF RESPONDENTS, N=1,634)

internet is an important tool for social inclusion.

Level of education is a direct determinant of internet use. **The number of users shows a sharp increase with increasing level of education** (Figure 4.16). Very few persons with no education access the internet (though there were 11 users with no education who were able to use the internet for audio-video functions including watching movies and listening to music online). On the other hand, nearly 80% of the population who are graduates or above use the internet.

The proportion of internet users is high in the case of students and those in service (Figure 4.17). Non-users are higher in the case of the non-working population and daily-wagers. While students may use the internet in school/college, those in service probably have access to the internet at the place of work is much lower. Also, this section of the population may not be able to afford internet. The proportion of self-employed people using the internet is higher as compared to daily-wagers.

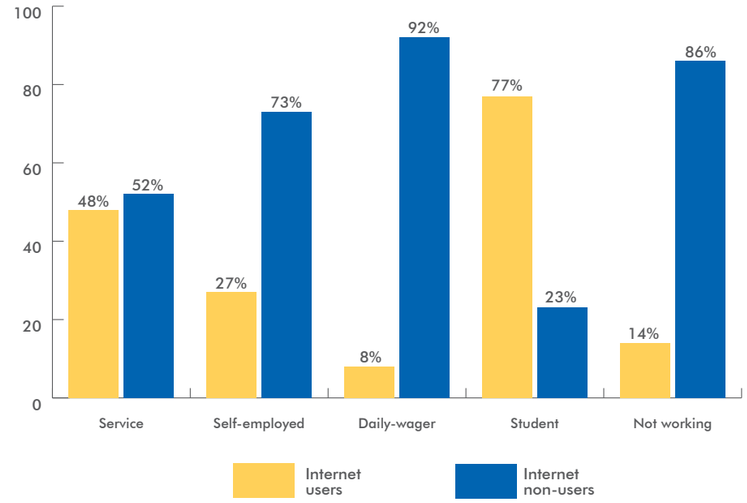


FIGURE 4.17
INTERNET ACCESS OF INDIVIDUAL RESPONDENTS BY OCCUPATION
(% OF RESPONDENTS, N=1,634)

Internet use shows a direct correlation with wealth quintiles. The number of internet users increases with higher economic status (Figure 4.18). Students belonging to economically better-off families also use the internet more. The internet is a facility that not only requires an initial expenditure (in the form of a feature phone, smartphone, tablet, computer, laptop, modem or dongle) but also regular monthly expenditure. Access is therefore strongly determined by affordability. Increasing access will require making high-speed and quality internet connectivity more affordable (as against the basic access that most of these populations have on their mobile phones). In Chapter 5, modes of access to the internet and the quality of access have been studied in detail.

4.5 INTERNET USER PROFILE

4.5.1 Gender

Amongst the total internet user

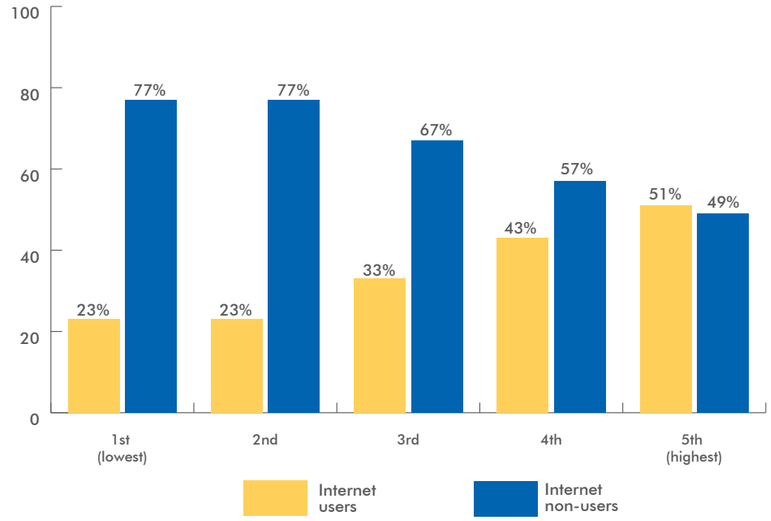


FIGURE 4.18
INTERNET ACCESS OF INDIVIDUAL RESPONDENTS BY WEALTH QUINTILE
(% OF RESPONDENTS, N=1,634)

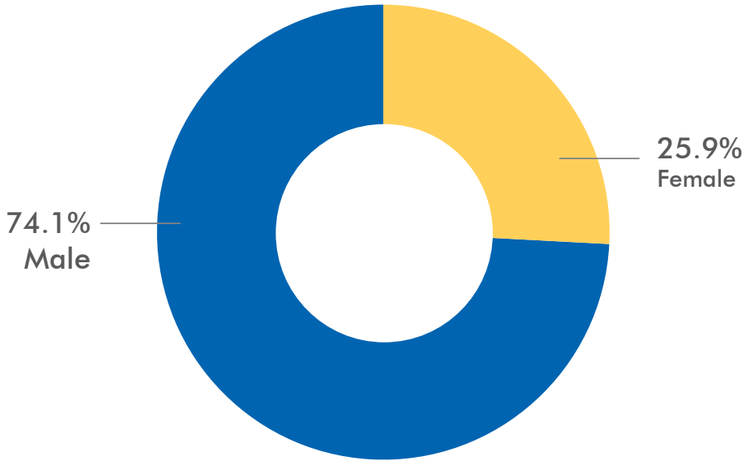


FIGURE 4.19
GENDER DISTRIBUTION:
INTERNET USERS (n=564)

respondents in our study, **25.9% were female and 74.1% were male,** clearly pointing to the gender divide in internet access (Figure 4.19).

4.5.2 Age

Age is an important determinant of internet use. A detailed examination of the profile of users shows that the majority (53.5%) are in the age-group 16-20, followed by 24.5% in the age-group 21-25 (Figure 4.20). Together these two age-groups make up nearly 75% of the users. The proportion of internet users decreases as age increases but what is clearly evident is that **95% of internet users in this study are below the age of 35**. This conforms to global trends that show that as age increases, use of the internet decreases.

Irrespective of gender, most internet users were in the younger age-groups (<30 years) and unmarried (three-fourths of total users). The number of male users (14.2%) in the above-30 age-group is higher than the number of female users (7.6%). Female internet users are concentrated in the younger age-groups indicating that they are recent entrants to the world of the internet.

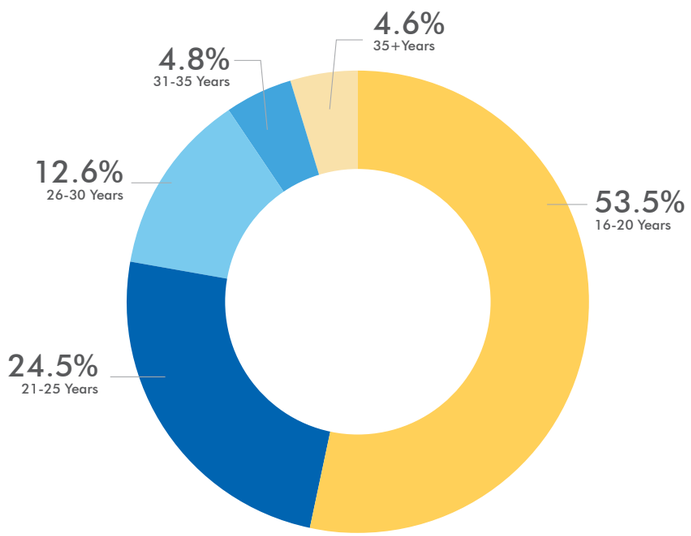


FIGURE 4.20
AGE DISTRIBUTION:
INTERNET USERS (n=564)

Photograph: Vivek Singh

4.5.3 Educational status

68.4% of internet users in our sampled households had completed secondary, high school or higher secondary education; 29.6% were graduates. Those with no formal education or with education up to primary school would find it difficult to use the internet: only 2% of sampled internet users belonged to this category (Figure 4.21).

4.5.4 Occupation

The largest percentage of users are to be found in the student category, followed by the service sector. Daily-wagers are the least in number. Not surprisingly, three-fourths of the internet users in the youngest age-group (16-20) and 24% in the next age-group (21-25) are students (not shown). There appears to be a strong correlation between age, occupation and internet use. More than 80% of internet users in the age-group 26-35 years are employed. All internet users from the 35+ age-group are gainfully employed, either in service or self-employed. There are very few users amongst daily-wagers, regardless of age.

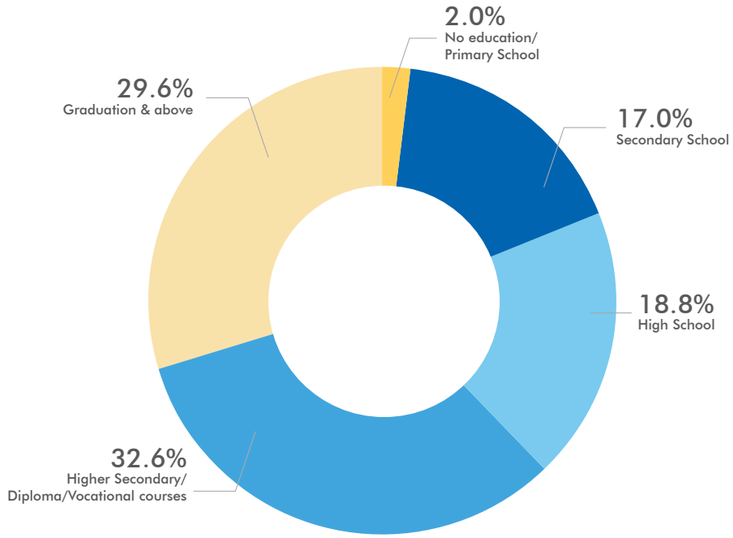


FIGURE 4.21
EDUCATIONAL STATUS:
INTERNET USERS (n=564)

FIGURE 4.22
OCCUPATIONAL DISTRIBUTION: INTERNET USERS (n=564)

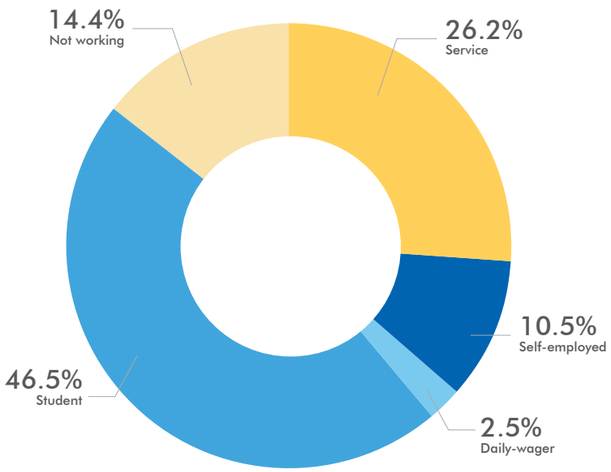
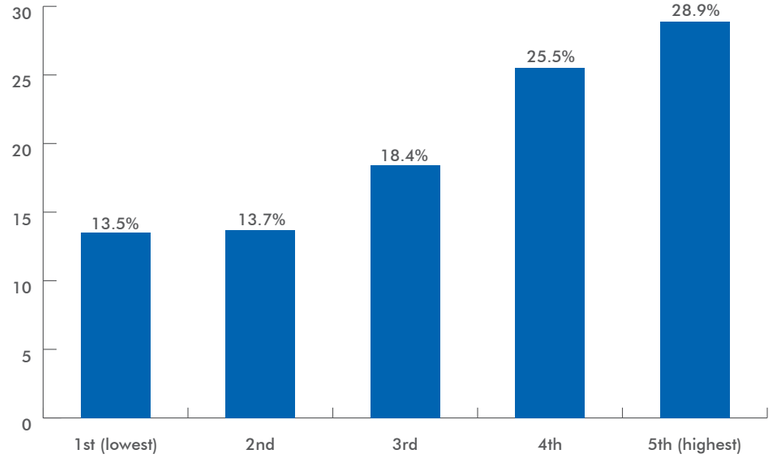


FIGURE 4.23
WEALTH QUINTILES: INTERNET USERS (n=564)



4.5.5 Wealth quintile

In our study, wealth emerges as a primary enabler of internet access. Nearly 55% of internet users belong to the fourth and fifth wealth quintiles, while less than 30% belong to the first and second quintiles (Figure 4.23).

4.6 SUMMARY

ICT penetration in the low-income settlements under study began with television and moved on to mobile telephony (leapfrogging landline connectivity) at the household level. The internet has made a recent entry into these neighbourhoods with the arrival of feature phones, smartphones and cheap data packages. However, the internet user population shows the following characteristics:

1. First, only one-tenth of households reported the internet as an important source of information although 44% of households have at least one internet user. A whole 82% of the adult population in low-income settlements is not online.
2. Second, of the 82% who are offline, 41% have never even heard of the internet, indicating that awareness is itself a major barrier to internet access.
3. Third, there is a sharp gender divide in internet use with a greater proportion of men using the internet.
4. Fourth, availability of infrastructure is strongly related to internet access. Households that have enabling infrastructure including computers, smartphones and feature phones are far more likely to be online.
5. Fifth, educational level is a direct enabler of internet access. Even households in the poorer wealth quintiles but with more educated members show higher internet use. Households with members who have ICT skills are more likely to be online.
6. Sixth, wealth is an enabler of internet access. Households in the higher wealth quintiles show greater internet connectivity.
7. Seventh, there is a wide age divide in internet access. Internet use is focused among the younger age-groups, and declines with increasing age.

In light of the above, it is important to study in detail a) the modes of internet access, quality of access and cost of access and b) barriers to digital inclusion of the urban poor with respect to gender, education and wealth status. Both these aspects have been studied in detail in the subsequent chapters.

ENDNOTES

1. The question on internet usage in the questionnaire pertained to current use of internet with a cut-off of usage in the previous 3 months. Infrequent users (not even once in the last 3 months) are considered non-users

2. Internet use has been surveyed among populations in the age-group 16-70

3. In comparison, the city-wide statistics provided in the 2014 IAMAI-IMRB Internet in India survey show that 63% of Pune's population accessed the internet in 2013. The IAMAI-IMRB survey uses the socioeconomic category classification for Indian consumers, which is based on two parameters – educational level of chief wage-earner/head of the household and assets owned by the household. The survey covered different socioeconomic categories and is therefore inclusive of low-income and other groups. It was conducted across PMC (80% of respondents) and PCMC (20%)

4. Basic mobile phones provide voice communication, text and multimedia messaging. Feature phones provide limited internet services

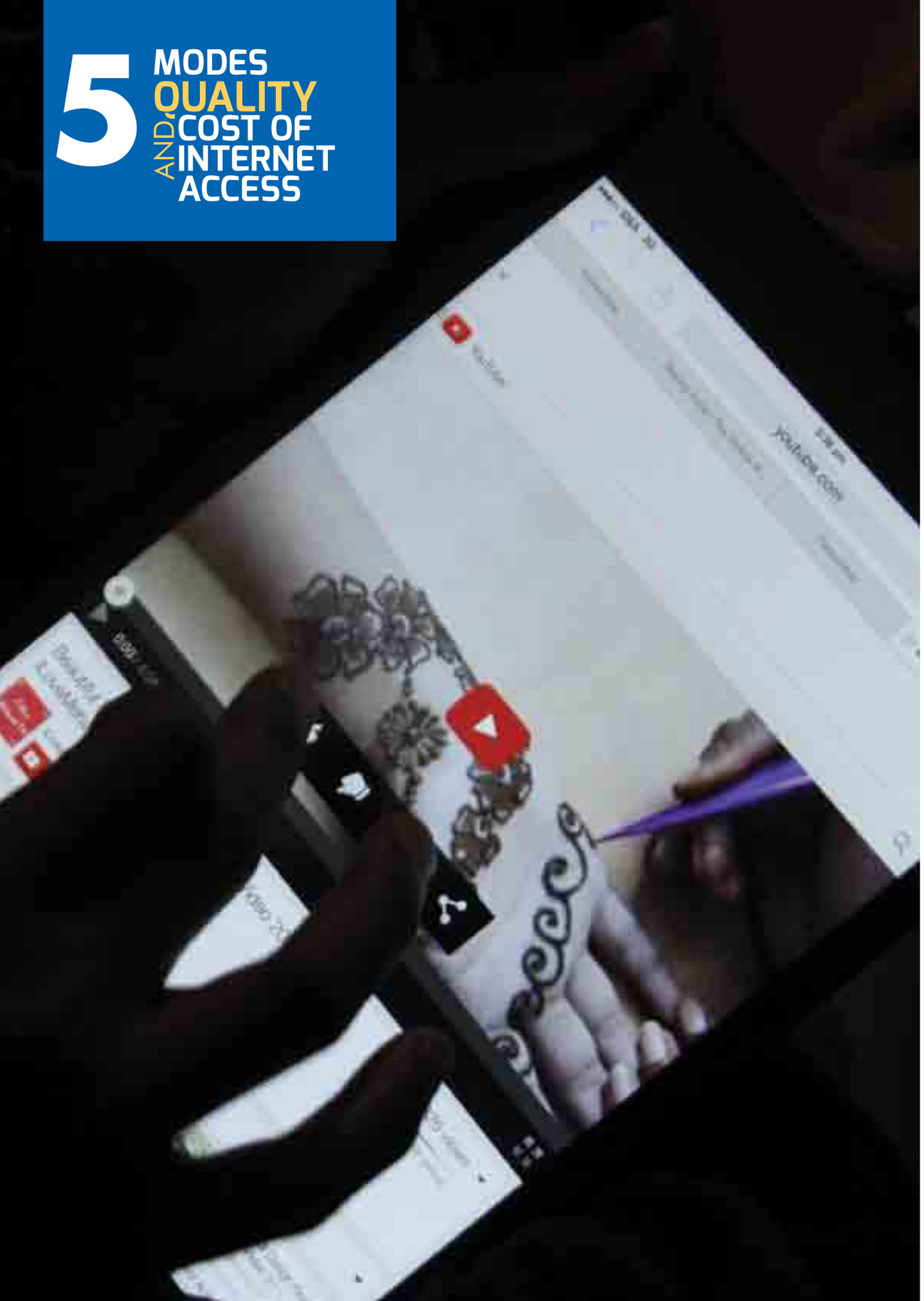
5. Smartphones have some features of handheld computers and permit greater use of the internet

6.The figures under 'Male' and 'Female' signify computer use by male members only and female members only, respectively. If both male and female members of a household have reported use of computers, it has been put under the category of 'Both'

7. Here the expenditure on television is not the actual cost of the equipment but the monthly payment on the cable and dish services

8. Similarly, in the case of mobile phones, the cost of the instrument is not taken into account here, only the amount spent on talktime and SMS

5 MODES QUALITY AND COST OF INTERNET ACCESS



5.1 INTRODUCTION

'Recent discussions have focused on a "two-speed" internet. Today the internet may be an internet of 2.9 billion different "speeds", in terms of how the individual internet user relates to online networks and society as an online citizen,' (Broadband for All 2014, ITU).

A holistic understanding of the digital divide necessarily involves studying not just access to an internet-accessible device, but also what the access entails in terms of cost, internet speed at which this access is available, frequency of use and the use made of the internet.

This chapter therefore focuses on internet users in the study settlements and details the modes/devices of access, the cost and quality of internet services used in these low-income urban neighbourhoods, as well as the frequency and patterns of use. The chapter is organised in nine sections. Sections 2 and 3 discuss the frequency and purpose of internet use. Sections 4 and 5 describe the points of access and type of services available/preferred. Section 6 describes the modes/devices used. Section 7 focuses on the expenditure incurred on internet services. The quality of internet access is discussed in Section 8. Section 9 concludes the chapter.

5.2 FREQUENCY OF INTERNET USE

Sixty-six percent of internet users have reported daily use of the internet (Figure 5.1), while 13% of users access the internet only one to three times a month. Around 10% of users access the net once a week and another 9% two to five times a week. **Seventy-one percent of male users access the internet every day as against 52% of female users (Figure 5.2). Twenty-five percent of female users have reported access to internet only one to three times a month.** In the following paragraphs, the frequency of internet use has been studied with respect to age, occupation and wealth status.

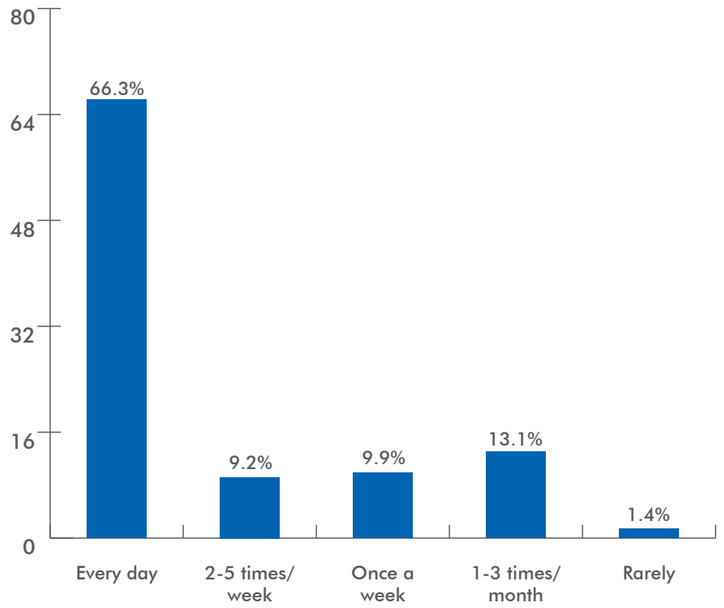
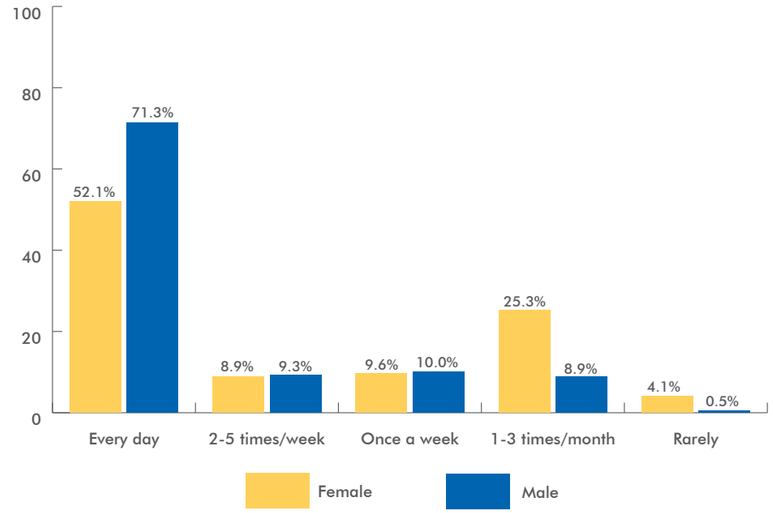


FIGURE 5.1
FREQUENCY OF INTERNET USE
(% OF USER RESPONDENTS, n=564)

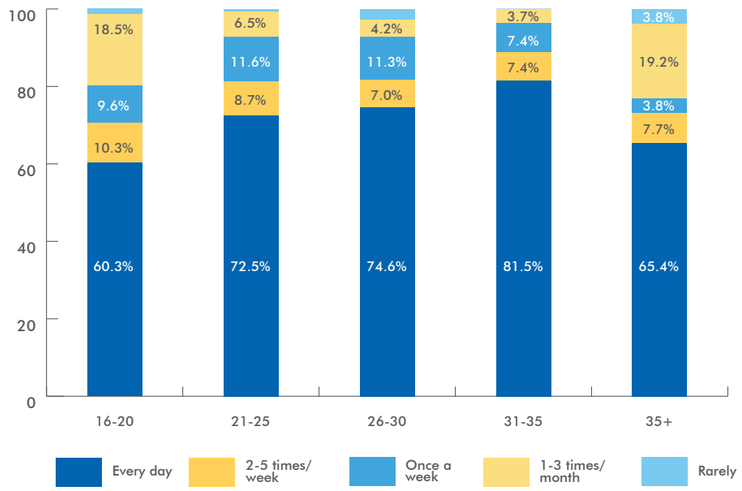
FIGURE 5.2
FREQUENCY OF
INTERNET USE BY GENDER
(% OF USER RESPONDENTS, n=564)

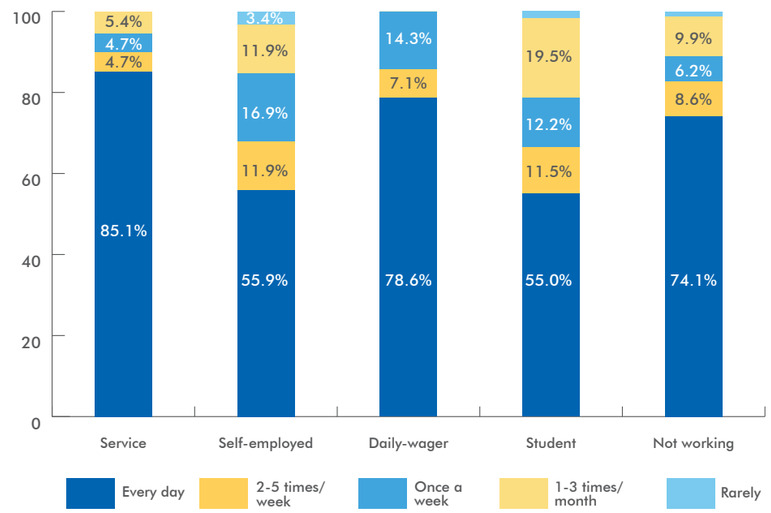


The largest proportion of users who access the net every day fall into the 31-35 age-group – around 82%. The smallest proportion of daily users is in the 16-20 age-group (Figure 5.3), though more than half of all internet users belong to this age-group (Figure 4.20).

Similarly, although students form the biggest segment of internet users, their frequency of use is the lowest (Figure 5.4). Nearly 20% of students use the internet only one to three times a month. Affordability is the key here. Although the younger age-groups and students are the biggest chunk of users in the study settlements, they may not have the financial resources to own personal devices for access or be able to afford access to the internet every day. Moreover, they may not need to use it every day. Working people, especially those in service (in both the organised and unorganised sectors) are more likely to use the net every day. It is possible that they access the internet at their workplace. However, a large number of daily-wagers and non-working populations also access the internet every day. This is probably for the social networking services that are so popular.

FIGURE 5.3
FREQUENCY OF INTERNET
USE BY AGE
(% OF USER RESPONDENTS, n=564)





Wealth status shows a direct relationship with frequency of internet use. Everyday use increases with improving economic status. In the lower wealth quintiles, the proportion of those who use the internet only one to three times a month is comparatively higher (Figure 5.5). However, note that 62% of users in the lowest wealth quintile feel the need to use the internet every day even though the cost would be a higher proportion of their income.

5.3 PURPOSE OF INTERNET USE

The largest proportion of users access the internet for entertainment (80%) and social networking (76%). Fifty percent of users access news and information and 47% use it to look for jobs and education (Figure 5.6). **Only 12% reported the use of online services, including applications to government entitlements and services, e-banking and e-commerce.**

FIGURE 5.4
FREQUENCY OF INTERNET
USE BY OCCUPATION
(% OF USER RESPONDENTS, n=564)

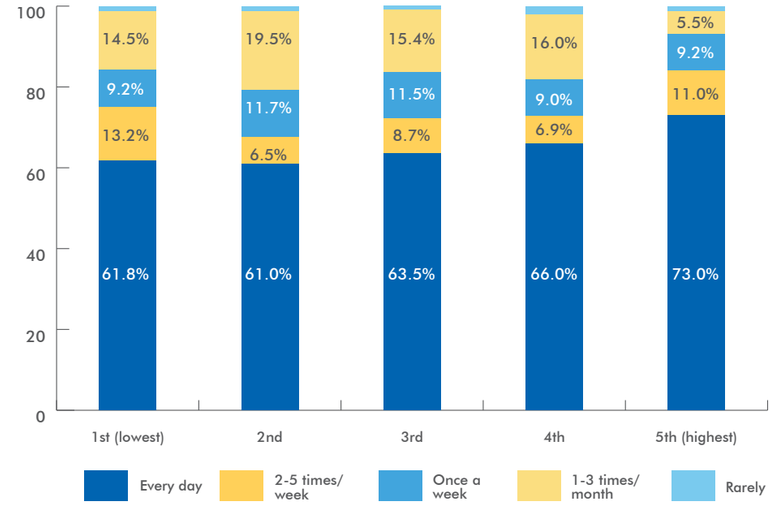
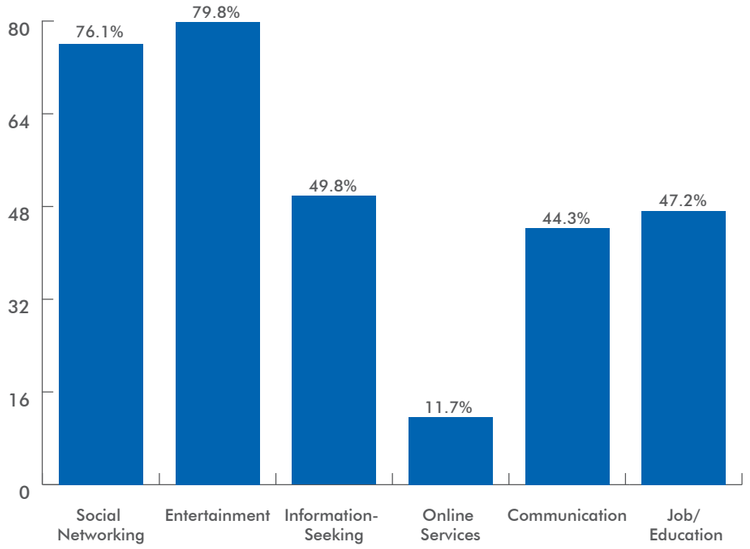


FIGURE 5.5
FREQUENCY OF INTERNET
USE BY WEALTH QUINTILE
(% OF USER RESPONDENTS, n=564)

FIGURE 5.6
PURPOSE OF INTERNET USE
(% OF USER RESPONDENTS, n=564)

Note: Multiple response



Purpose of use

Most people here use the internet only for Facebook and WhatsApp. Most of the people use it for 'timepass'. I use the internet to check official mails. I forward clients' complaints by e-mail to my seniors. I also use the internet for online banking. I pay online for my post-paid connection and recharge family members' mobiles online. I make online money transfers and shop online.

(Male internet user, 26, married, college graduate)

I use the internet only for Facebook and WhatsApp... But my lecturer told me about the Maharojgar online site where one can register for government jobs. He told me there is an app that allows anybody to pay their light bill... No, I don't know about any other e-governance sites and e-seva kendras.

BOX 5.1

(Male internet user, 17, unmarried, first-year BCom)

The purpose of internet use across gender shows that more men than women use it for social networking and entertainment (Figure 5.7). A larger proportion of women than men, however, reported that they use the internet for jobs and education. There is no significant difference across gender in use of the internet for information search. A slightly higher proportion of men use the internet for online services and communication.

The purpose of internet use remains more or less standard across age-groups. In all age-groups, the principal use of the internet is reported to be entertainment and social networking. In the 26-30 and 31-35 age-groups (Figure 5.8), the internet is used (comparatively) more for online services and communication (e-mails, Skype, etc). The proportion of people using the internet for information search is also high in these age-groups.

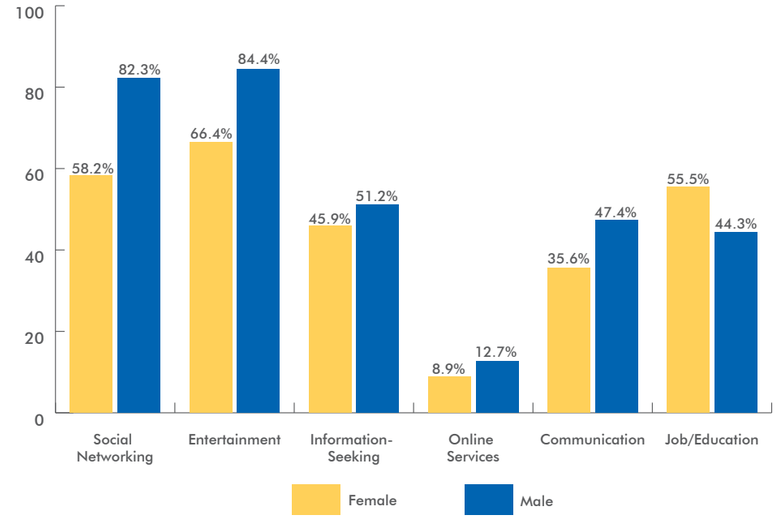


FIGURE 5.7
PURPOSE OF INTERNET USE
BY GENDER
(% OF USER RESPONDENTS, n=564)

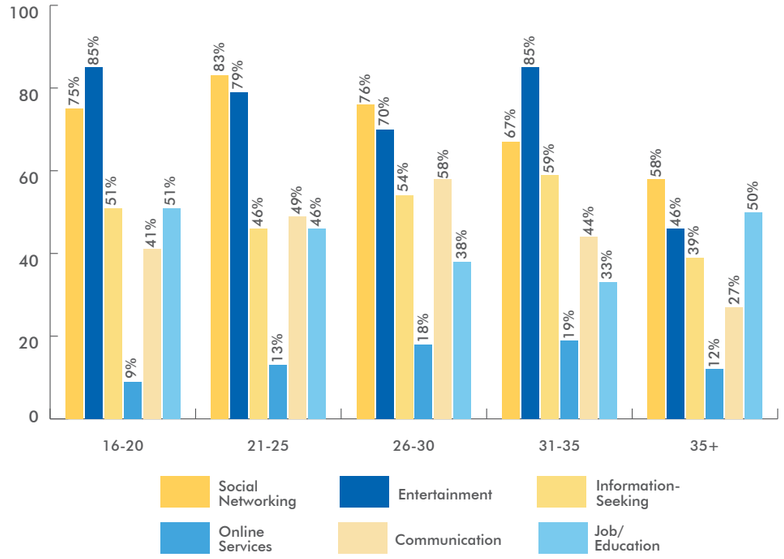


FIGURE 5.8
PURPOSE OF INTERNET USE BY AGE
(% OF USER RESPONDENTS, n=564)

Note: Multiple response

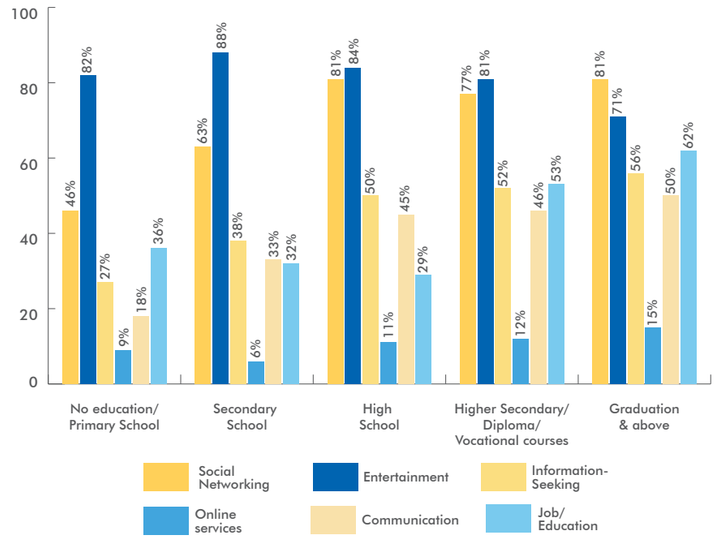
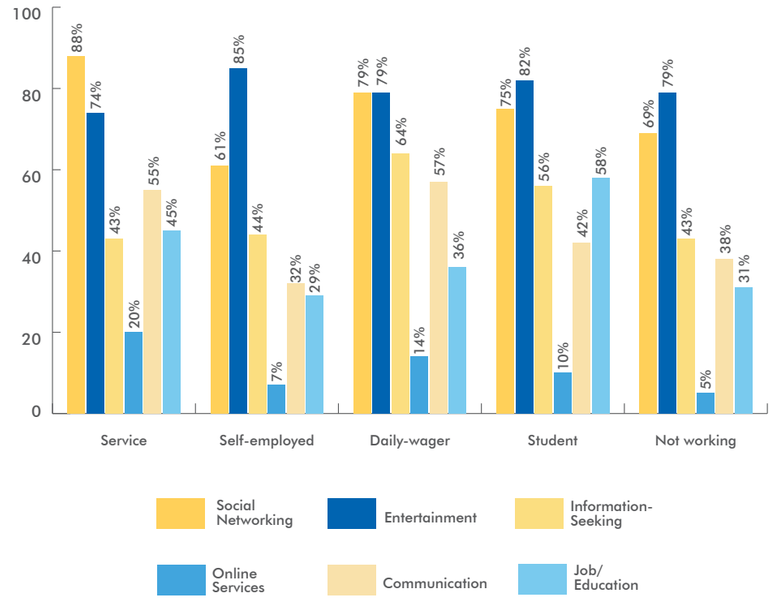


FIGURE 5.9
PURPOSE OF INTERNET USE
BY EDUCATIONAL STATUS
(% OF USER RESPONDENTS, n=564)

Note: Multiple response

FIGURE 5.10
PURPOSE OF INTERNET USE BY OCCUPATION
(% OF USER RESPONDENTS, n=564)

Note: Multiple response



Entertainment is the main purpose of use for all respondents regardless of educational attainment (Figure 5.9). Social networking is used less by persons with no education or very basic primary education (these users mostly use the internet for audio-visual entertainment). **Those who have been educated up to higher secondary/diploma and above also use the internet for educational research, job search and information-seeking**. But use of online services does not see appreciable change across education levels, suggesting that e-governance or online facilities are either not available or difficult to use.

Students however report significant internet usage for job/education and information-seeking (Figure 5.10). There is not much variation in purpose of use by wealth quintiles, though the internet is used comparatively more for online services by persons belonging to the higher wealth quintiles (15% of the top quintile as against 5% of the lowest quintile; figures not shown).

5.4 POINT OF INTERNET ACCESS

Mobile (feature or smart) phones are the major access point for the internet in low-income neighbourhoods. Mobiles are affordable (almost all the households studied had a mobile phone of some sort), in comparison to laptops or computers, and they can be carried anywhere and accessed from anywhere. Mobiles are also easier to use than computers for those with no ICT skills. Additionally, mobiles are the only option for data access for internet users in resource-poor environments (Box 5.2). There is an almost complete absence of wired broadband in these bastis, and cable TV providers do not extend internet services to these areas because the costs of wired broadband (plans offered are at Rs 599-1,100 a month) are much higher than mobile internet, and consequently there is little demand. Increasingly, cybercafés are closing down in the city, partly because they are no longer economically viable given the popularity of mobile internet, and partly because of the cumbersome records they

BOX 5.2

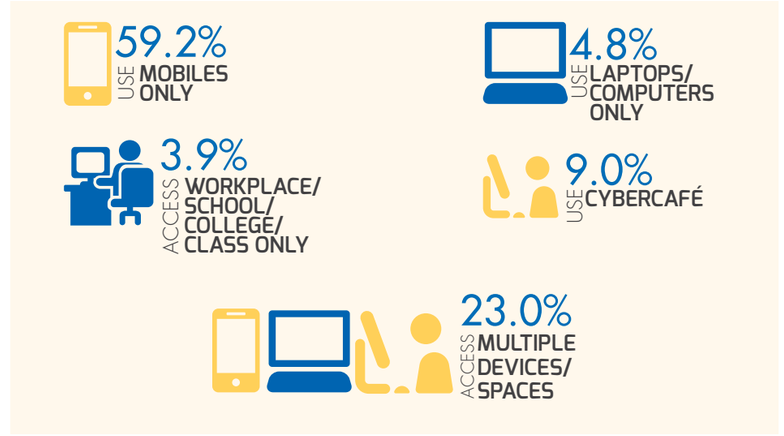
Why the mobile phone is the preferred access point

I feel that mobile internet gives one access to information exactly when it is needed. Otherwise one would have to visit the cybercafé and finish all one's work before leaving the place. So mobile internet is a better way to stay connected.

(Female internet user, 28, married, educated up to Standard 10, homemaker)

I prefer to use the internet on a touchscreen mobile. It's easier to use than laptops and PCs. Cybercafés are about half-a-km away from the settlement and they do not allow for privacy of use. So the mobile is the best option.

(Male internet user, 26, married, college graduate, service job)



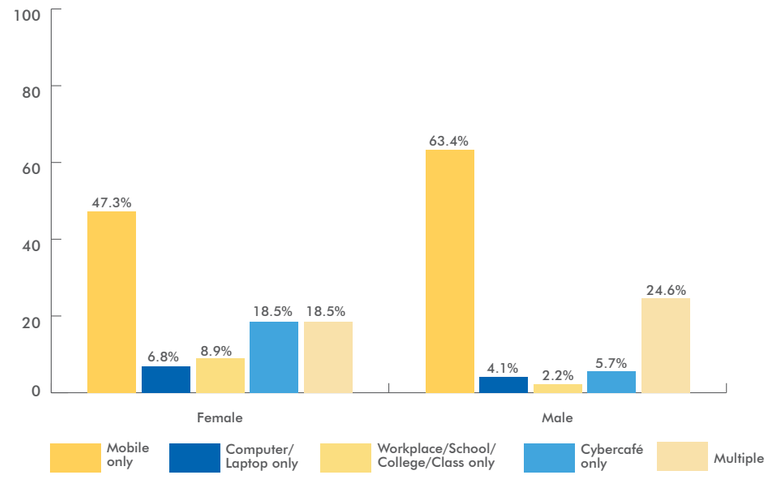
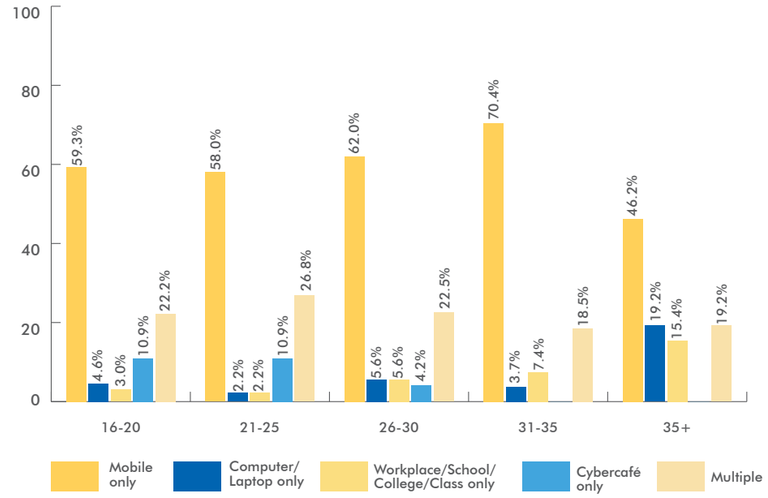


FIGURE 5.11
POINTS OF INTERNET ACCESS
(% OF USER RESPONDENTS, n=564)

are required to maintain. There are no other public access points.

Of the 564 internet users, 59.2% access the internet on mobile phones only. Nine percent use the internet at cybercafés, 4.8% on computers or laptops, and 3.9% at the workplace, school, college or computer class (Figure 5.11). The proportion of men accessing the internet on the mobile phone is higher than women. More women depend on cybercafés and

FIGURE 5.12
POINTS OF INTERNET ACCESS BY AGE
(% OF USER RESPONDENTS, n=564)

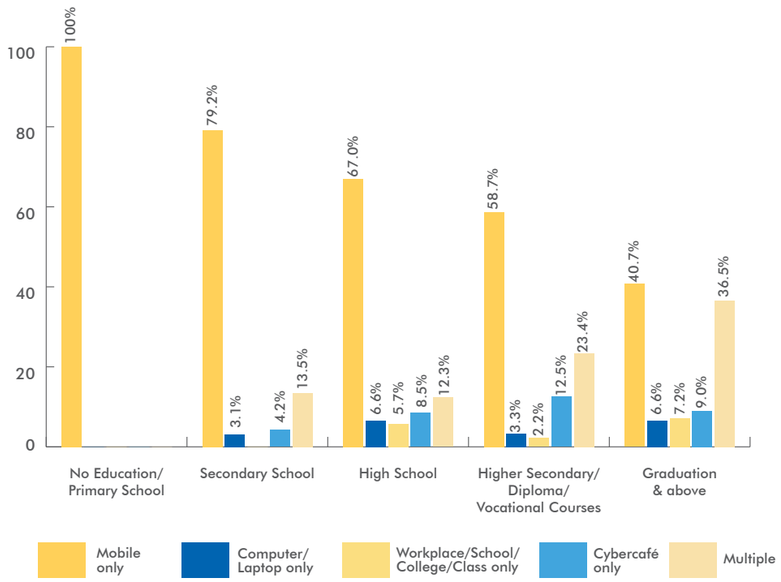


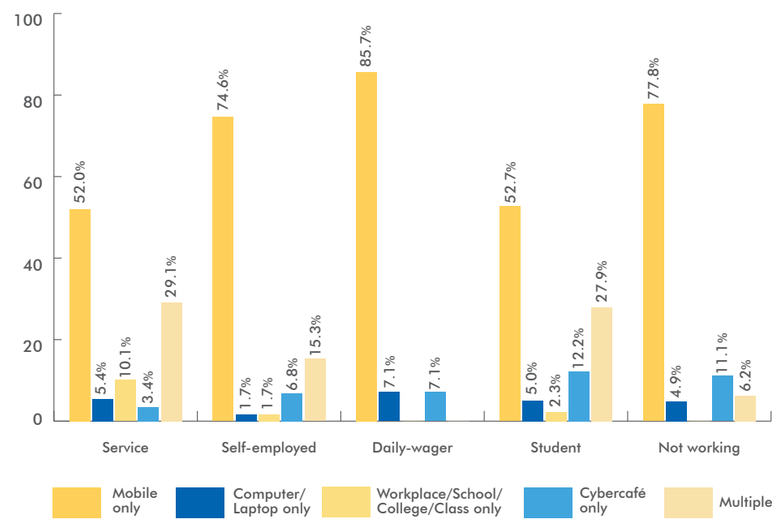
the workplace for access to the internet.

The younger age-groups make greater use of cybercafés. The older age-groups (above 30) do not use cybercafés at all and a significant proportion of this age-group uses the internet at the workplace (Figure 5.12). These internet users are more likely to be better-educated and in service.

Interestingly, the use of mobile phones for internet access declines with increasing education (Figure 5.13), when multiple access points increase. The mobile phone is the only access point for users with no education, which is not surprising since it is both more affordable and simpler to use than a computer. Those who are educated up to higher secondary school and above use multiple access points.

FIGURE 5.13
POINTS OF INTERNET ACCESS BY EDUCATIONAL STATUS
(% OF USER RESPONDENTS, n=564)





While mobile phones are the major access points for the internet across all occupations, users who have regular jobs in the formal or informal sector (classified as service) and students access the internet from multiple points (Figure 5.14). Students also access the internet at cybercafés.

Affordability is clearly a determining factor in access. Those in the lower wealth quintiles are restricted to data access on mobile phones and cybercafés while the upper wealth quintiles have a larger share of users accessing the internet through computers and laptops. Those in the fifth quintile (31.9%) have the capacity to access the internet from multiple points (Figure 5.15).

FIGURE 5.14
POINTS OF INTERNET ACCESS BY OCCUPATION
(% OF USER RESPONDENTS, n=564)

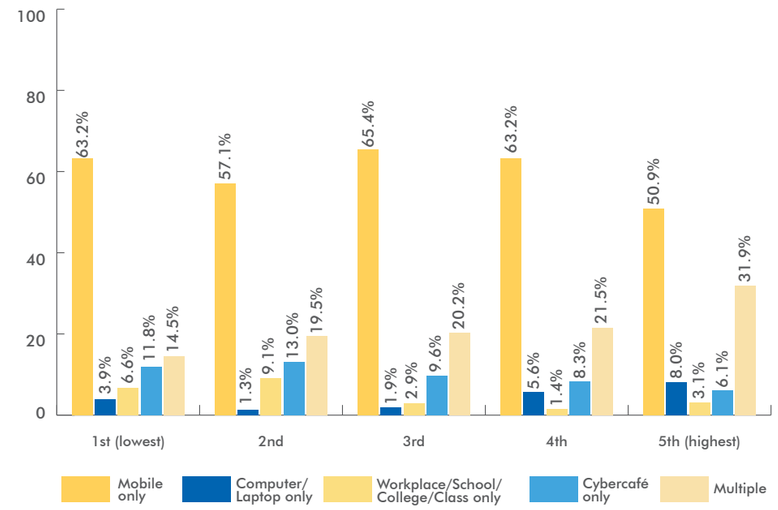


FIGURE 5.15
POINTS OF INTERNET ACCESS BY WEALTH QUINTILE
(% OF USER RESPONDENTS, n=564)

The privacy problem

Nineteen-year-old Satish B, a Standard 11 student from a low-income settlement in Pune's Aundh area, uploaded pictures of himself and his girlfriend on Facebook as part of a private album. Some of these pictures found their way onto his friends' timelines.

Satish generally accesses the internet from his friends' mobile phones, since he cannot afford a smartphone himself.

'The pictures were not visible to anyone but me. I use my friends' mobiles to access Facebook (*Facebook karna*, in colloquial terms), and I think I may have forgotten to log out from my account on one such occasion,' he says.

The relationship between the public and private is fragile for those accessing the internet in low-income settlements. Many people without economic and technological resources rely on others' phones to go online, and privacy can easily be breached, for 'fun', revenge or one-upmanship.

Kishore is a 17-year-old school drop-out who works at his uncle's mobile repair shop in a PCMC settlement. He downloads content from the internet and copies it onto clients' phones for a fee of Rs 30-50. 'I knew nothing about the internet one-and-a-half years ago,' he says. 'My uncle, who runs the shop, taught me the basics.'

Kishore has set up and installed Facebook accounts on the mobiles of many residents of his settlement, charging up to Rs 100 for the service. His clients are mostly first-timers on the internet, with little or no knowledge of English.

The arrangement that allows Kishore to earn a livelihood also allows privacy to be compromised. It is unclear how many of his clients figure out how to change their passwords. As the creator of his clients' accounts and passwords, Kishore could, if he wished to, play around with their private data.

Sanjeev is a part-time mobile phone repairer in the same settlement. 'People come to me because I am good at repairing mobiles, and I charge Rs 100 for a job that would cost at least Rs 300 at a proper shop,' he says. Sanjeev learnt the basics of mobile phone repairing while studying at an industrial training institute in 2010, though he dropped out of the course after six months.

But Sanjeev's clients may pay a price for this low-cost repair. 'Whenever I have to repair a mobile phone, I tell clients that it cannot happen without the memory card. I tell them I need the memory to check for viruses. They willingly agree to leave the card with me, inside the phone,' he says. 'I love finding out what is in people's memory cards… I browse through and copy whatever interests me. Mostly, it is images, wallpapers and videos,' he says.

~ Aritra Bhattacharya, www.netpehchaan.in, February 2015

BOX 5.3

Photograph: Vivek Singh

5.5 INTERNET SERVICES USED

52.3% of users access the internet on mobiles with 2G services, 24.5% on mobiles with 3G services. Nine percent use cybercafés and only 7.3% use wired broadband (Figure 5.16), this last most likely at work, school/college since, as we have seen, there is no wired broadband in the bastis. The mobile phone, though convenient, has several limitations and constraints including poor connectivity, slow speeds, small screens and limited data storage. Those in the upper wealth quintiles rely more on dongles and 3G services.

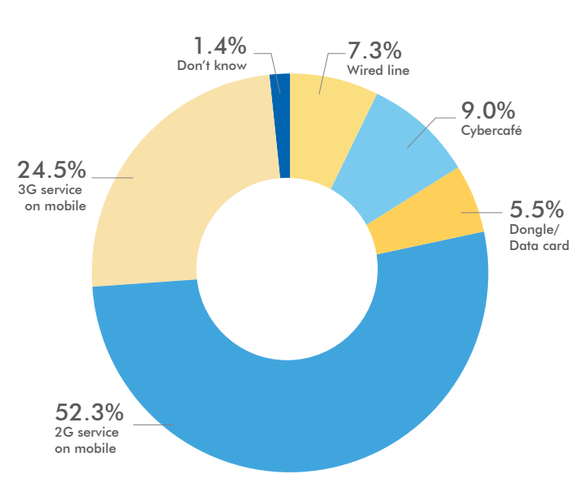


FIGURE 5.16
MEDIUM OF INTERNET ACCESS
(% OF USER RESPONDENTS, n=564)

Medium of internet access

I had a dongle which I stopped using. It was too expensive. The cybercafé is there but there is no privacy to use the internet. So the mobile is the best option.

(Male internet user, 26, married, college graduate, service job)

The cybercafés don't have sufficient computers and often they would be crowded, so we had to wait to get our turn. The speed would be slow; the PCs were old, pages didn't load. Sometimes half-an-hour would be wasted like this.

(Female internet user, 23, single, college graduate, service job)

BOX: 5.4

5.6 MODES OF INTERNET ACCESS

5.6.1 Devices

Ownership or non-ownership of internet-enabled devices is an important determinant of access to the internet. As we have seen earlier, **96.5% of households in the study locations own at least one mobile phone** (Table 5.1); 34.5% of households own basic mobile phones capable of voice communication/SMS only, while 62% have feature phones on which the internet in some form can be enabled, often limited to certain internet functions that are bundled in by the service provider. **Only 30% have smartphones which allow fuller use of the internet than feature phones**.

5.6.2 Internet packs

Internet data packs are offered and chosen according to the purpose of use. They are of two kinds. One categorised by the duration or validity and the other by volume of data transfer. The use of both these has been analysed in the following paragraphs.

INTERNET PACKS BY DATA TRANSFER

These internet packs vary from up to 300 MB to above 1 GB. The lower data packs primarily cater to messaging services and social media. Limited data and information download would be possible in data packs up to 300 MB. **More than one-third of internet users in the six study locations used internet recharge packs that allow them data transfer of up to 300 MB only** (Figure 6.10). **Internet users who used data transfer above 1 GB form a small percentage (8.5%) of users.** Nearly 30% of users were not aware of the details of the internet packs they bought, indicating that for the bulk of consumers, cost/affordability determines the purchase of data packs. The limited data transfers also suggest

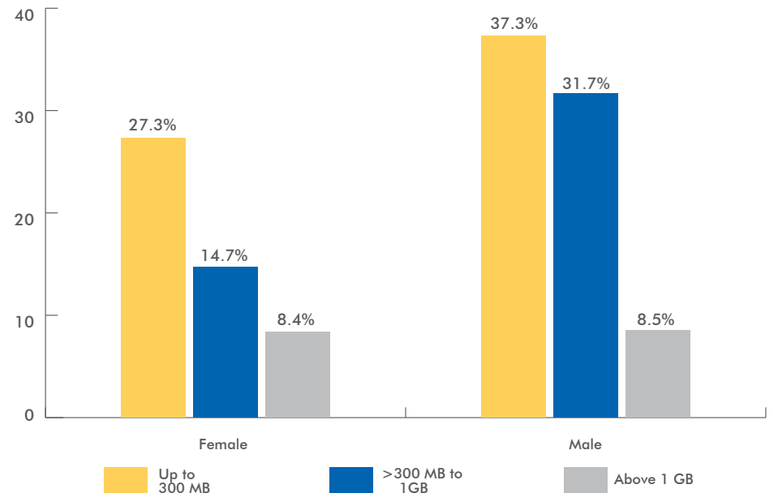


FIGURE 5.17
DATA PACKS BY GENDER (DATA TRANSFER LIMIT)

Note: 49.6% of females and 22.5% of males reported 'don't know'

that these packs are used mainly for social media and messaging services, and to a limited extent for entertainment. Even entertainment involves download of audio/video and calls for higher data transfers.

A large proportion of the female users are unaware of details about the data packs available. The graph shows only those who have reported the use of data packs (n=390). 32% of male users report using data packs of 300 MB-1GB (Figure 5.17). No gender difference is observed among the small number of internet users who use data packs above 1 GB. Internet users in the 20-36 age-group show consumption of higher data packs (Figure 5.18). It is possible that this age-group is working and able to afford more data transfers. In the 16-20 age-group, 44% of users use packs of less than 300 MB which suffice for social networking and entertainment.

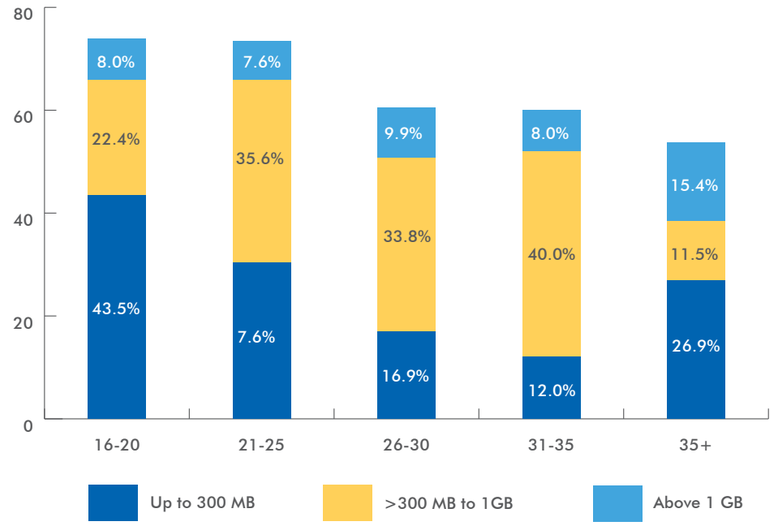
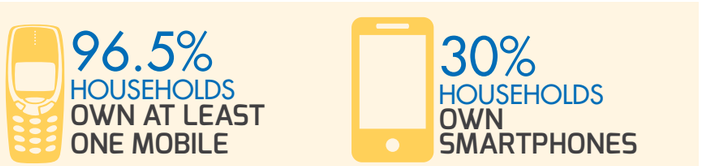


FIGURE 5.18
DATA PACKS BY AGE (DATA TRANSFER LIMIT)

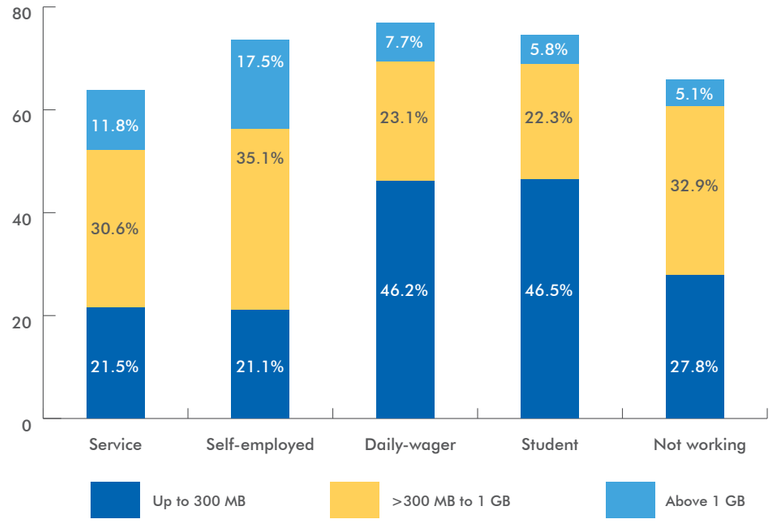


Devices for voice calls only	Percent
No phone	3.5
Landline phone	1.1
Possession of mobile phone	
Yes	96.5
No	3.5
Mobile phone types	
Basic mobile phones	34.5
Any internet-accessible phone (includes feature phones and smartphones)	61.9
Devices that can be connected to the internet but are not connected	
Desktop computer	6.7
Laptop	3.2
Devices for internet connection/connected to the internet	
Desktop computer with fixed internet	1.2
Feature phones with internet	41.7
Other	
Tablet/Phablet	0.7
Dongle/Data card	4.0

TABLE 5.1
OWNERSHIP OF DEVICES THAT CAN CONNECT TO INTERNET (% OF HOUSEHOLDS)

Note: Mobile phone includes all phones including basic phones and internet-accessible phones. The responses are multiple and do not total 100

FIGURE 5.19
DATA PACKS
BY OCCUPATION



With respect to data usage across occupations, self-employed workers use the largest (above 1 GB) data packs (Figure 5.19). Those in service also use higher data packs. Daily-wagers and students use small data packs up to 300 MB. This could be due to both the cost factor as well as the limited purpose of use.

INTERNET PACKS BY PERIOD OF VALIDITY

Fifty-one percent of users prefer 1-7-day packs (Figure 5.20). Affordability seems to be the primary reason for this choice. Lower data validity also implies lower data transfer limits. These packs are primarily used for social networking. Around 44% of users select packs of over 20 days' validity. These cost more and also give higher data transfers. Women are seen to be using data packs with shorter validity. In male-dominated households, women are likely to have little disposable income. In addition, when cost is a factor, male family members seem be the ones spending more on data packs. Nearly 47% of men use packs of more than 20 days' validity (Figure 5.21). Young internet users in the 16-20 age-group buy data packs of shorter validity (Figure 5.22). There could be several reasons for this but the most important is that they have limited amounts of money to spend. In contrast, older users opt for packs with longer validity.

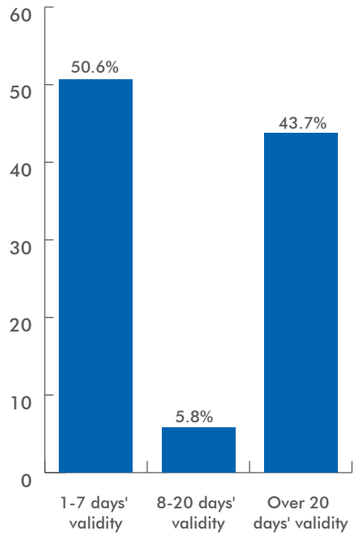


FIGURE 5.20
TYPE OF INTERNET PACKAGES
(DAYS' VALIDITY)

Note: Not applicable/Don't know=113 cases

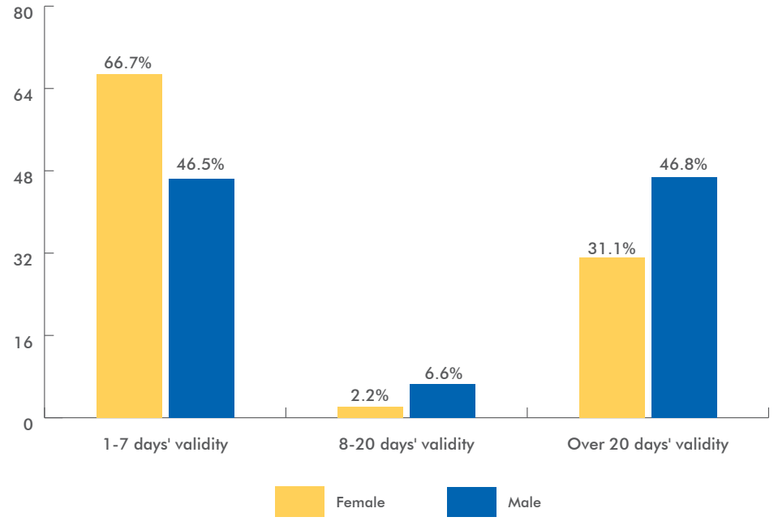


FIGURE 5.21
DATA PACKS BY GENDER

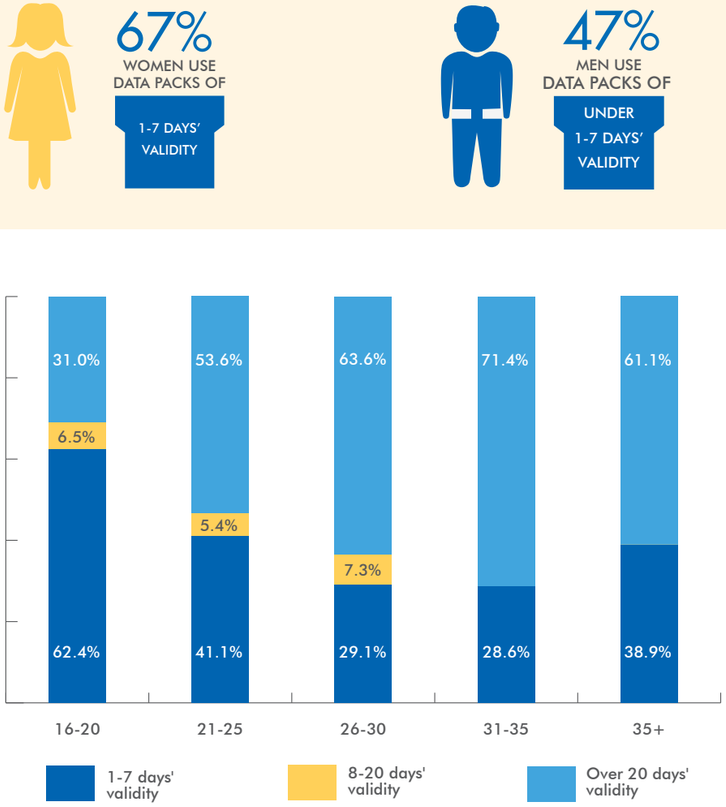
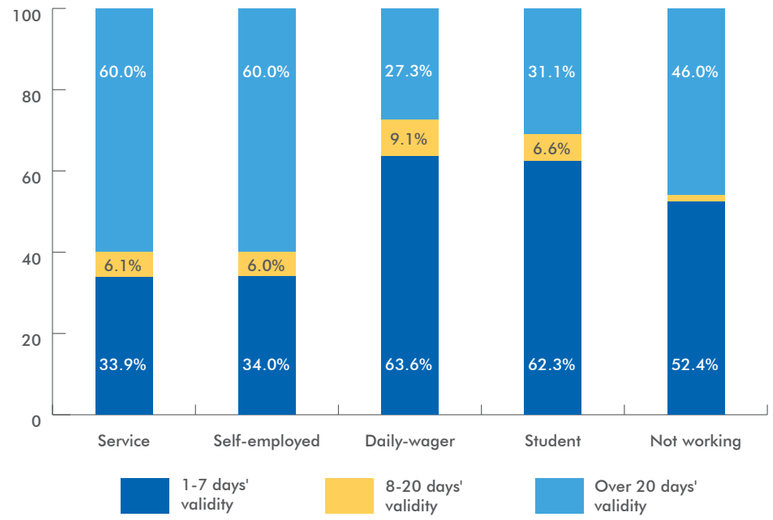


FIGURE 5.22
DATA PACKS BY AGE

FIGURE 5.23
DATA PACKS
BY OCCUPATION

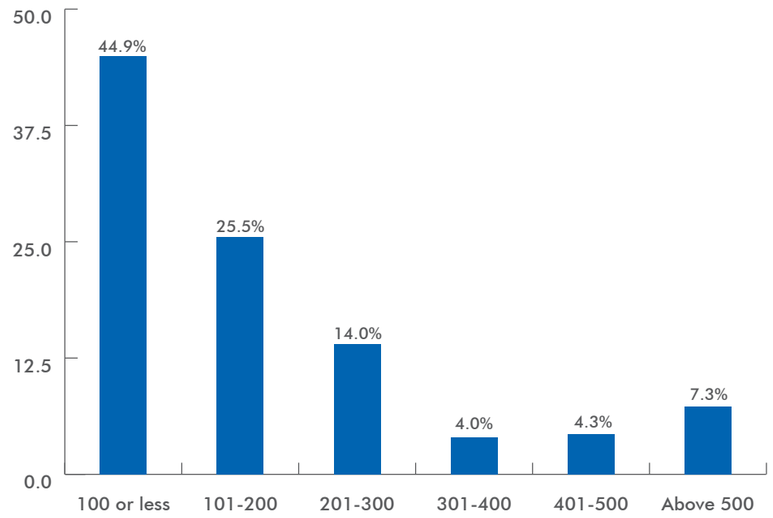


In terms of occupation too, those in service and the self-employed opt for internet packs with higher validity (Figure 5.23). This can be explained both on the basis of need and affordability. Those in service, as well as the self-employed, might need the internet for work; they are also likely to be able to afford to spend more on their data packs. Daily-wagers, students and non-working respondents buy only short-duration packs.

5.7 EXPENDITURE ON INTERNET SERVICES

Nearly 45% of the users spend less than Rs 100 per month on the internet (Figure 5.24). This correlates well with the above analysis. Users buy basic internet packs with lower data transfers and validity. Box 5.5 shows the cost of data packs provided by a private telecom service provider whose services are extremely popular in the study settlements, largely because of their affordability. An unlimited WhatsApp pack for a day can cost as little as Re 1. Unlimited Facebook access for a month costs Rs 18. Such packs suffice for users who cannot afford to pay more and whose internet use is in any case limited to social networking and entertainment. The data packs serve to expose users to the internet, but of course the intention of the service provider is to give new entrants a taste of the internet and hook them in the long term.

FIGURE 5.24
EXPENDITURE (₹/MONTH)
ON THE INTERNET



5.7.1 Expenditure on internet by family income

Internet users belonging to households with higher family incomes (above Rs 10,000 per month) report higher expenditure on the internet (Table 5.2). A larger proportion of users in the lower income categories spend either less than Rs 50 or a maximum of Rs 100. Users in the higher income groups also show a large proportion spending nothing on the internet. This is possibly because these users access the net at their workplace, or because the service is paid for by elders in the family.

BOX 5.5
INTERNET PACKAGE RATES OF
A POPULAR PRIVATE TELECOM
SERVICE PROVIDER IN MID-2015

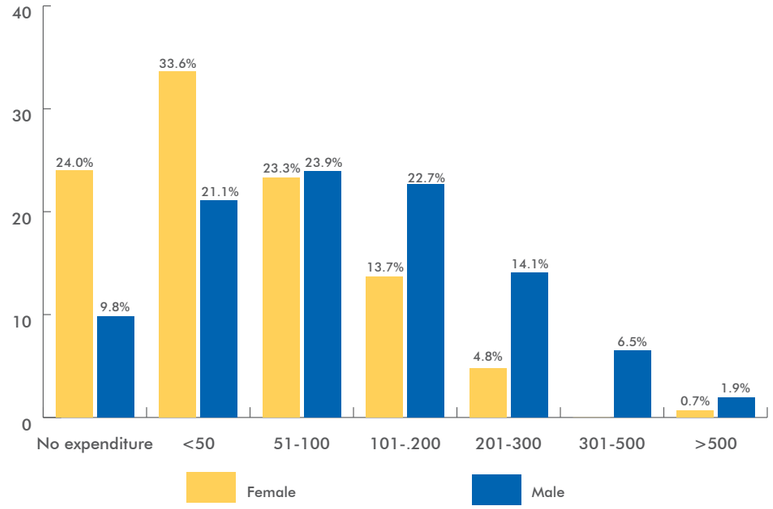
RATES FOR DATA PACKS (MRP)	VALIDITY (DAYS)	KEY BENEFITS
Rs 9	2	40 MB data
Rs 14	3	150 MB data
Rs 24	4	450 MB data
Rs 47	28	450 MB data
Rs 63	21	800 MB data
Rs 84	28	1 GB data
Rs 115	30	2 GB data
RATES FOR SOCIAL PACKS (MRP)	**VALIDITY (DAYS)**	**KEY BENEFITS**
Re 1	1	Unlimited WhatsApp pack
Rs 15	30	Unlimited WhatsApp access
Rs 18	30	Unlimited Facebook access
Rs 28	30	Facebook and WhatsApp monthly pack
Rs 42	21	Unlimited WhatsApp and Facebook and 250 MB data
Rs 62	28	Unlimited WhatsApp and Facebook and 500 MB data
Rs 147	90	Unlimited WhatsApp and Facebook and 1GB data

Photograph: Vivek Singh

TABLE 5.2
HOUSEHOLD EXPENDITURE ON
INTERNET BY FAMILY INCOME
(% OF HOUSEHOLDS)

	MONTHLY EXPENDITURE (IN RUPEES)						
Monthly family income (in Rs)	No expenditure	1-50	51-100	101-200	201-300	301-500	>500
0-5,000	13.0	38.9	27.8	9.3	7.4	3.7	0.0
5,001-10,000	7.1	30.0	30.0	18.8	8.8	4.1	1.2
10,001-15,000	14.7	22.4	22.4	21.7	11.9	5.6	1.4
15,001-20,000	22.0	19.5	19.5	19.5	15.9	3.7	0.0
20,001-30,000	13.3	13.3	17.3	29.3	17.3	5.3	4.0
Above 30,000	20.0	17.5	17.5	22.5	10.0	7.5	5.0
TOTAL	13.5	24.3	23.8	20.4	11.7	4.8	1.6

FIGURE 5.25
EXPENDITURE (₹/MONTH) ON THE INTERNET BY GENDER (% OF MALE AND FEMALE USER RESPONDENTS)



SOCIOECONOMIC CHARACTERISTICS

Male users spend more on internet access than female users (Figure 5.25). Almost a quarter of the female users do not incur any expenditure on accessing the internet. This could be because quite a few women access the internet on a family member's mobile phone. More than half the female users (57%) spend Rs 100 or less per month.

Users in the youngest age-group (16-20 years) who are more likely to be students spend up to Rs 100 per month (Table 5.3). Basic data packs suffice for their social networking and entertainment needs. Users aged 21-35, who are likely to be earning, spend more (up to Rs 300 per month) on internet.

Those who have no formal education or only primary education are not engaged in occupations where they would have access to computers (Table 5.4). They are thus required to spend for internet access and 45% of them spend less than Rs 100. A small proportion (1.6%) of users who have reported spending more than Rs 500 per month on internet access are those who are better educated (higher secondary or above).

TABLE 5.3
HOUSEHOLD MONTHLY EXPENDITURE ON INTERNET BY AGE (% OF HOUSEHOLDS)

AGE (IN YEARS)	NO EXPENDITURE	<50	51-100	101-.200	201-300	301-500	>500
16-20	12.9	30.1	26.5	16.2	9.3	4.3	0.7
21-25	9.4	21.7	18.8	26.1	17.4	5.8	0.7
26-30	19.7	11.3	29.6	18.3	12.7	5.6	2.8
31-35	14.8	11.1	14.8	33.3	11.1	7.4	7.4
35+	23.1	19.2	11.5	30.8	7.7	0.0	7.7
TOTAL	13.5	24.3	23.8	20.4	11.7	4.8	1.6

TABLE 5.4
HOUSEHOLD MONTHLY EXPENDITURE ON THE INTERNET BY EDUCATION (% OF HOUSEHOLDS)

EDUCATIONAL STATUS	NO EXPENDITURE	<50	51-100	101-200	201-300	301-500	>500
No education/ Primary school	0.0	9.1	36.4	45.5	0.0	9.1	0.0
Secondary school	12.5	17.7	31.3	18.8	15.6	4.2	0.0
High school	14.2	23.6	19.8	20.8	15.1	6.6	0.0
Higher secondary/Diploma/ Vocational courses	12.0	31.0	27.2	16.3	8.2	3.8	1.6
Graduation & above	16.2	22.2	17.4	24.0	12.0	4.8	3.6
TOTAL	13.5	24.3	23.8	20.4	11.7	4.8	1.6

TABLE 5.5
HOUSEHOLD MONTHLY EXPENDITURE ON INTERNET BY OCCUPATION

OCCUPATION	NO EXPENDITURE	1-50	51-100	101-200	201-300	301-500	>500
Service	21.6	12.2	17.6	22.3	15.5	6.1	4.7
Self-employed	3.4	15.3	27.1	33.9	13.6	5.1	1.7
Daily-wager	21.4	21.4	35.7	21.4	0.0	0.0	0.0
Student	11.5	33.2	27.5	15.6	8.0	3.8	0.4
Not working	11.1	24.7	18.5	22.2	17.3	6.2	0.0
TOTAL	13.5	24.3	23.8	20.4	11.7	4.8	1.6

Sixty-eight percent of users, across all occupational categories, spend less than Rs 200 on the internet. Roughly three-fourths of daily-wagers, the self-employed and students, and 65% of those not working, spend Rs 1-200 on the net.

No daily-wagers spend more than Rs 200. The smallest percentage of people spending no money on access are the self-employed; in other words they must spend to use the net. The largest percentage of people spending no money are daily-wagers and those in service. While those in service may use the internet at the workplace, it is possible that daily-wagers use the internet on borrowed devices.

Less than 2% spend more than Rs 500 on the net; almost 5% of those in service spend more than Rs 500 monthly.

5.8 QUALITY OF ACCESS

GETTING CONNECTED

Our mapping of the study sites revealed that there were no public access points in the settlements. The majority of users reported that they faced no difficulty at all in getting internet connections on their mobile phones. Those who reported difficulty in getting connected said they were unable to understand the application procedure. Others said they did not have the necessary documents. Still others reported the reasons as a) not having a good enough device, b) unaffordable rates, c) poor network coverage, and d) refusal to provide wired connection or postpaid mobile internet connections in the settlement.

PERCEPTIONS: QUALITY OF SERVICE AND AFFORDABILITY

User perceptions about the quality of connectivity and speed show that roughly 50% rate these as

Choice of internet data packs – negotiating costs

I have to manage the cost... I choose data packages consciously so that I get maximum data transfers in that many days of validity... I compare service providers and look for the most affordable options... I change providers... I prefer a prepaid pack as I have all the information about it from the service provider or the shop beforehand. And I can frequently change plans on prepaid.

(Female internet user, 23, unmarried, college graduate, service)

When I put in my SIM, I get a message saying, 'You have taken so and so rupees pack… you will get so many GB...' We can't afford postpaid plans, so I use a prepaid plan. I recently got a Rs 150 recharge for 1GB data, now they are charging Rs 300 for 1GB so my brother said we don't want this, I will use the internet in the office and whenever you want to use it, you go to the cybercafé.

(Female internet user, 20, unmarried, 1st-year Master's in Computer Management student)

BOX 5.6

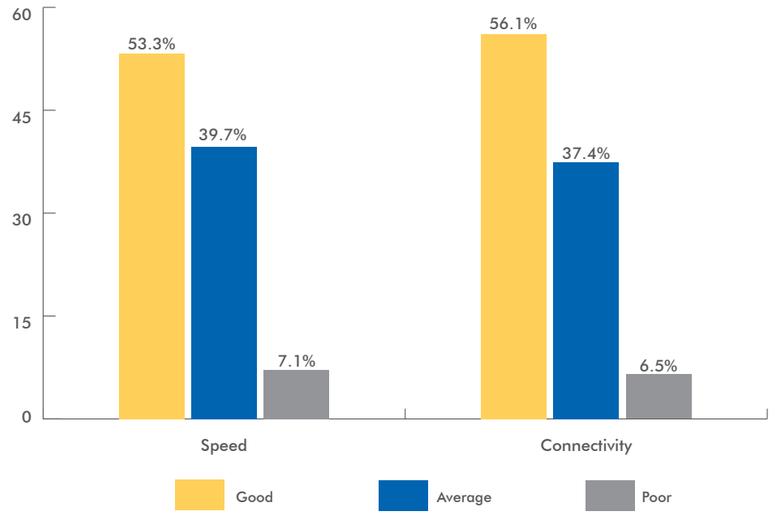


FIGURE 5.26
USERS' PERCEPTIONS OF QUALITY OF SERVICE (% OF INTERNET USER RESPONDENTS, n=564)

good (Figure 5.26) and around 40% rate them average. It is important to remember, however, that these users have no benchmark for high-speed and uninterrupted connectivity. Most have never used wired broadband, except perhaps at cybercafés where bandwidth is distributed amongst several computers and consequently speeds are slower.

The CCDS team conducted actual speed tests (on smartphones and tabs with 3G connections) at different locations in Janata Vasahat, Laxmi Nagar, Ambedkar Nagar, Anand Nagar and Mahatma Phule Nagar. (Only one round of tests was conducted at each settlement.) The highest download speed was 9.41 mbps and lowest was 0.04 mbps. At some locations the internet speed was so slow that the speed test yielded no results. Most locations had speeds lower than the minimum acceptable 512 kbps.

Figure 5.27, similarly, shows a high level of user satisfaction with the rates offered for internet access. But it is important to underline that at present most users are not moving much beyond Facebook, YouTube, WhatsApp and simple search functions. The rates offered for these services are in fact very affordable. But affordability remains a barrier both in terms of the cost of enabling infrastructure (computers, smartphones, tablets) as well as quality internet access in these settlements. As we have seen, cable TV providers who have the capacity to offer broadband in these settlements find there is no demand since the costs of wired broadband are upwards of Rs 600 a month.

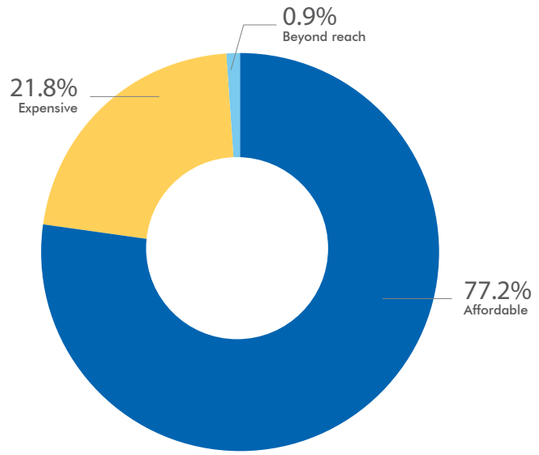


FIGURE 5.27
USERS' PERCEPTIONS OF AFFORDABILITY OF SERVICE (% OF INTERNET USER RESPONDENTS, n=564)

5.9 SUMMARY

Infrastructure and cost are significant barriers to access. Very few households own computers with dongles. There are no public access points within the bastis. There is little demand for wired broadband, because the majority of residents have only mobile devices that can connect to the net and because wired broadband services cost more than most people are able to pay in these settlements.

Because of the lack of demand, there is no supply of wired broadband services. Internet users in these settlements therefore connect mainly via their mobile devices, and some use cybercafés and internet at workplaces.

Only 30% of users have smartphones. The rest access the internet on feature phones with limited internet functions.

Internet-enabling infrastructure is clearly correlated with wealth. Families in the higher wealth quintiles are more likely to own devices that can connect to the internet.

More than 50% of those who connect on their mobiles use slow 2G services, while about a quarter use 3G. Data packs consumed are of limited validity and data transfer. Consequently their costs are low.

Consumers rate the affordability and quality of service as good or average. But this is because they have no benchmark for higher speeds and better connectivity.

Infrastructure and cost barriers also limit frequency of use. Only 66% of users can get online on a daily basis.

Users are accessing the net mainly for social networking and entertainment, though 47% also use it for education and jobs. The low-cost, limited-data-transfer, short-validity internet packs consumed by the majority of users are designed mainly for social networking. As users graduate to more diverse uses of the internet, more sophisticated modes of access and superior quality of service will be called for.

Despite the government's big push towards e-governance, **only 12% of internet users in these settlements use the internet to apply for entitlements or to conduct online transactions**.

Infrastructure and cost barriers are thus also constraining patterns of use of the internet.

6 BARRIERS TO INTERNET ACCESS AND USE

6.1 INTRODUCTION

The digital divide percolates down social structures, aligning along already existing divides such as urban-rural, rich-poor, educated-uneducated, and male-female. ICTs play a critical role in empowering women and bringing about gender equality (Gurumurthy 2006; Huyer, 2006), but the gender gap in access, in particular, is very wide.

The earlier chapters have discussed gaps in internet penetration, modes and frequency of access, patterns of use, spending on internet services and quality of access. The analysis showed critical gaps in internet access and use. This chapter further probes the barriers to internet access and use reported by respondents.

The chapter has been divided into five sections. The first section introduces the chapter. The second discusses the barriers that low-income groups in urban India face in getting connected. This section therefore details barriers faced by non-users (those who have heard of the internet but are still not using it). The third section discusses barriers that users in the research locations face in making fuller use of the internet. The fourth presents a regression analysis that recaps and highlights the major barriers. The fifth section concludes the chapter.

6.2 BARRIERS TO GETTING CONNECTED (NON-USERS)

6.2.1 Internet awareness among non-users

As observed in earlier chapters, awareness of the internet is a primary barrier to access for socially- and economically-disadvantaged urban populations. Eighty-two percent of the 5,999 household members surveyed in six settlements are non-users. **Of these non-users, a whole 41% have not yet heard of the internet.**

Of the 59% who have heard of the internet, there was little awareness of what it is used for, indicating that to them, 'internet' is just a term linked to computers and mobile phones.

Only 18% of individuals in the 16-70 age-groups in the study settlements use the internet, which means a huge proportion are non-users. Nearly 56% of households have no internet users and in 28% of households there is only one internet user (Figure. 4.6). **Forty-three percent of the population in the 16-25 age-group is also not online, indicating that market mechanics and existing efforts towards digital inclusion and empowerment are not by themselves sufficient to address the digital divide.**

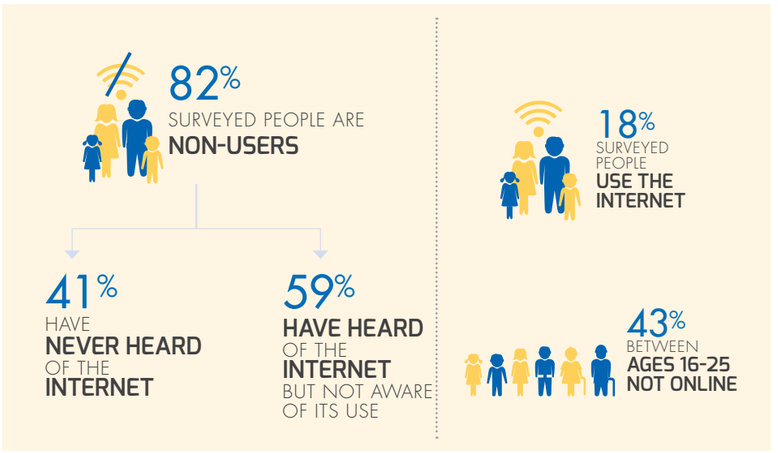
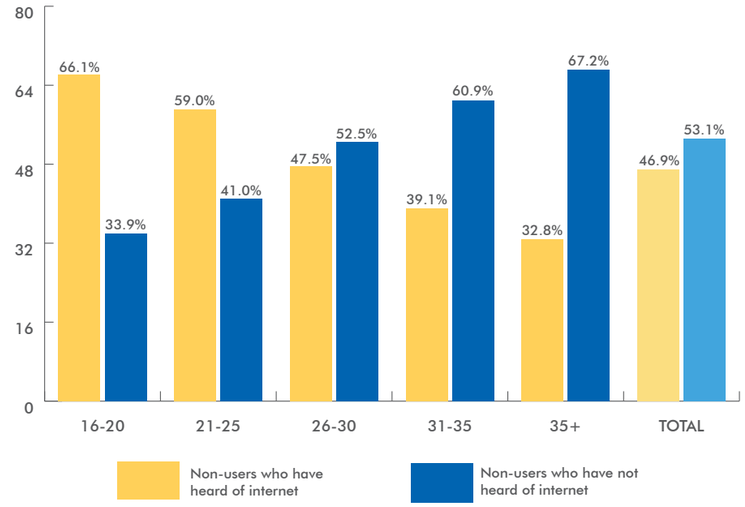


FIGURE 6.1
AWARENESS OF INTERNET AMONG NON-USERS BY AGE (n=1,070)



However, the younger age-groups are relatively more aware of the internet and its uses. A larger proportion of non-users in the 16-20 and 21-25 age-groups have heard of the internet as compared to the older age-groups (Figure 6.1). This is partly because, as we have seen, people are introduced to the internet mostly through friends and peer groups. With increasing age the awareness levels for internet decline. People are also more likely to be exposed to the internet at the workplace or school/college. So more students and those employed in the formal or non-formal service sector – even though they are at present non-users – have heard of the internet compared to daily-wage-earners or non-working people (Figure 6.2).

6.2.2 Barriers reported by non-users

Of the non-users (those who have heard of the internet though they do not use it), 27.5% reported that **lack of understanding of the internet and how to use it is a major reason for not going online** (Table 6.1). This in turn is linked to levels of ICT skills and education.

The other reason non-users gave is that they **don't need the internet** or are not interested in it: 23% of non-users cite this reason.

Around 14% of non-users state that poor infrastructure – no internet-accessible device or public access facility – is the reason for non-use. Affordability of internet services (4% gave this as a reason) and language (1.9% said no knowledge of English was a barrier) seem to be less important reasons for non-use of the internet (though the infrastructure barrier is linked to cost/affordability of internet-accessible devices). More women than men reported that internet access was not affordable. A substantial proportion of both women and men pointed out that ICT skills and lack of education are important barriers to internet access. Each of these barriers has been analysed in the following sections.

FIGURE 6.2
AWARENESS OF INTERNET AMONG NON-USERS BY OCCUPATION (n=1,070)

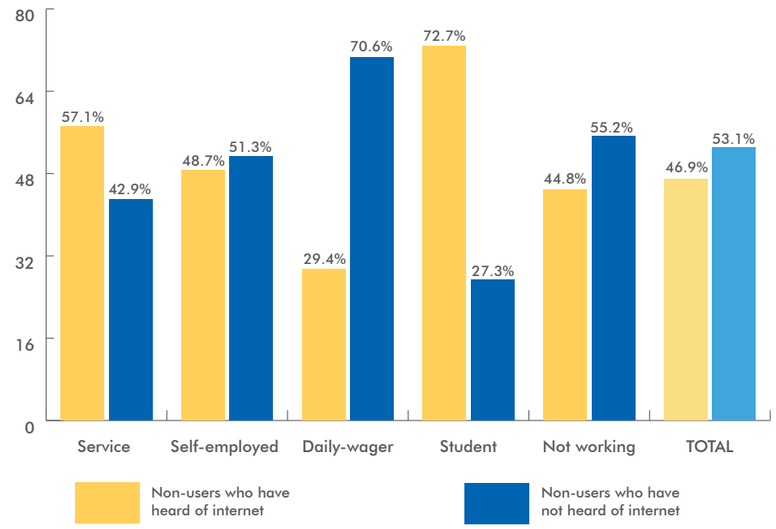


TABLE 6.1
BARRIERS REPORTED BY INTERNET NON-USERS

Note: System missing=76, Total=502

REASONS FOR INTERNET NON-USE	FEMALE	MALE	TOTAL
Lacking skills/Education	42.7	51.9	45.5
Do not know English	2.0	1.5	1.9
Do not understand/know how to use the internet	26.8	29.0	27.5
No/Insufficient education	13.9	21.4	16.2
Attitudinal issues	27.8	17.5	24.6
Do not like the internet/It has a negative influence	1.4	1.5	1.4
Not needed/Interested	26.4	16.0	23.2
Access to infrastructure	15.3	9.9	13.6
No or poor quality device, cybercafé too far away, or there is no connectivity	15.3	9.9	13.6
Lack of time	7.1	18.3	10.6
Economic situation	5.1	1.5	4.0
Affordability	5.1	1.5	4.0
Socio-cultural issues	1.0	0.0	0.7
Family restriction	1.0	0.0	0.7
Others	1.0	0.8	0.9
No reason/Don't know	1.0	0.8	0.9

LACK OF ICT SKILLS AND EDUCATION

Lack of ICT skills has been stated as the most important reason for not using the internet (27.5%). Another 16.2% of non-users cite lack of education.

In the earlier chapters we have described the clear correlation between computer literacy of one or more household members and connected households. We have also seen that households with at least one member who has completed or is pursuing Standard 10 are far more likely to be connected.

BOX 6.1

'In our home, no woman has used a mobile phone'

I do not have a mobile phone. When I came to know about the internet, I felt I had to have it but I did not get permission to use the internet. My father does not like these things. He said, 'People share anything and everything on Facebook'. My father doesn't even allow my brothers to use it… He will give them permission once they finish their education… My parents think that girls do not need mobile phones. In our home, none of us women has ever used a mobile phone. Our parents say, who are you going to call?
(Female non-user, 21, unmarried, educated up to Standard 9, domestic worker)

FIGURE 6.3
AWARENESS OF INTERNET AMONG NON-USERS BY EDUCATION (n=1,070)

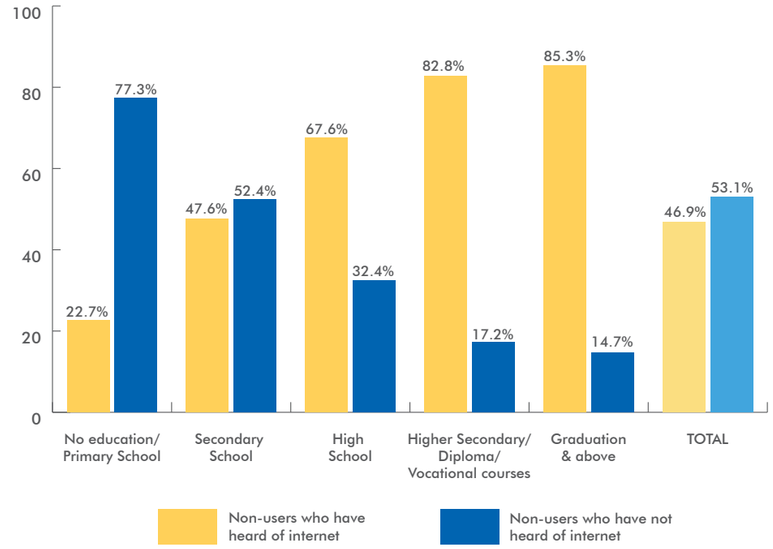


Figure 6.3 shows the awareness of the internet amongst the non-user population by education. It can be seen that awareness of the internet increases with increasing education. Seventy-seven percent of the population without any education has not even heard of the internet. The number of non-users declines sharply with higher levels of education (Figure 6.4). The other aspect that hinders access to the internet is language. Eighty-two percent of users reported that they access the internet in English, while only 16.9% access it in a regional language (Table 6.2). We observed in the course of the survey as well as in the qualitative research that almost all users of the ubiquitous WhatsApp and Facebook Messenger services in these settlements have adopted the Roman script to text and communicate in Marathi, Hindi or other regional languages. The Marathi/Hindi keyboard is reportedly cumbersome to use, particularly on small handheld devices such as the mobile phones on which most of the study respondents access the net. Several respondents also stated that internet-prompts help them complete search terms, phrases and sentences when they are unsure of English words or their spelling, and that this facilitates their access in English. Many reported that their English vocabulary and usage had improved as a result. This could be one reason why the absence of local-language access is not presented as a major barrier by respondents in our study.

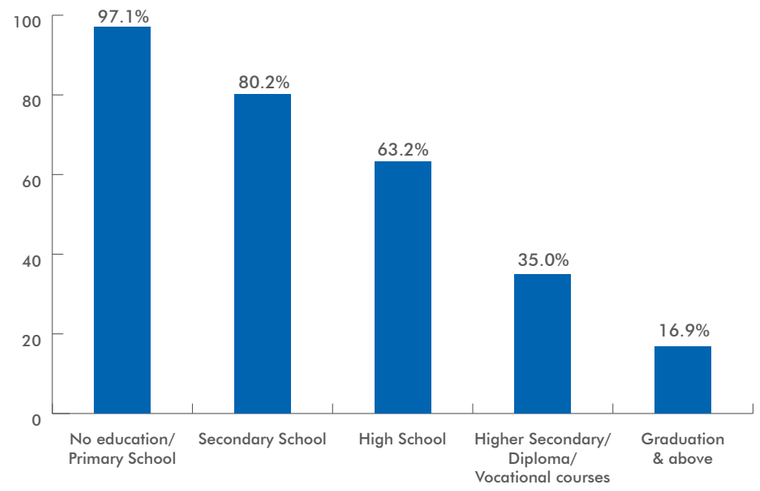


FIGURE 6.4
PERCENTAGE OF INTERNET NON-USERS WITHIN EACH EDUCATIONAL GROUP (N=1,634)

Access in an Indian language	Percent
Yes	16.9
No	82.0
Unaware of this option	1.0

TABLE 6.2
PERCENTAGE OF USERS ACCESSING THE INTERNET IN AN INDIAN LANGUAGE

While language may not be a big barrier in using Facebook or WhatsApp, which was largely the purpose of use at the time of the survey, it is a barrier in using the internet for purposes other than entertainment/social networking.

ATTITUDINAL BARRIERS

Attitudinal barriers to internet access are also significant for non-users. A large proportion (23%) of the non-users felt that the internet was not needed/relevant for them (Table 6.1). This attitude is linked to lack of awareness about the internet and its varied uses. Young users also feel that the internet is addictive (Box 6.2).

The word 'internet' in these settlements is often synonymous with 'Facebook'. Frequently, non-users do not know the word 'internet' at all, but do know 'Facebook'. The social networking functions of the internet are the most frequently used. They are the entry point for most internet users in the study settlements. The use of social networks by women, however, is often frowned upon, since it is seen as likely to lead young women astray, giving women an opportunity to socialise and a kind of freedom which is discouraged in these settlements.

Our interviews in the settlements reveal that attitudes towards the internet have been strongly influenced by television soaps and reality shows that often depict online abuse, violence, harassment, blackmail and misuse of private data/photographs. This has created fear and misgivings about the safety and security of women who are online, in particular. Not just non-users, many female users also reported the same security concerns, especially on social networking sites.

'If we use Facebook we are considered forward'

Take as much as you need from the internet. Don't use it too much. The internet can change your life for the better – or the worse. You can get a lot of what you don't or shouldn't need on the internet. Some people say Facebook is good and some say it's bad. If we use Facebook we are considered forward.
(Female internet user, 28, married, educated up to Standard 10, homemaker)

Boys do wrong things on the internet; that's why I do not like to use it. If girls post their photos on Facebook they (boys) download and make changes in them. These kinds of actions embarrass and damage the girls' reputations. I don't like to befriend unknown persons.
(Female non-user, 21, unmarried, educated up to Standard 10, domestic worker)

BOX 6.2

'Children of the poor don't need internet' Excerpts from an interaction with two female non-users

Respondent R1: married woman, 45, domestic help
Respondent R2: married woman, 55, homemaker

Facilitator: Do the women in your family use mobile phones?

R1: Girls are constantly on the mobile phones. We shout at them.

Facilitator: Why?

R1: We don't like (children) using the phone constantly. When we ask the boys what they are doing they put away the phone hurriedly. Children get spoiled because of this technology.

R2: If my son gives his mobile to someone to use and he does something inappropriate on it we fear our son will be blamed for it... It's all very worrisome. We've heard about women who've ruined their lives this way. And we see this on TV.

Facilitator: Do you know of any specific incidents where women have suffered as a consequence of the internet?
(Respondents refuse to say anything)

R1: Men watch all sorts of things on the mobile... They take advantage of girls. The elders in the family often don't know about this. Mobiles should be used only for calling and not for the internet. Even small children are getting affected; they don't study; they are constantly looking at the internet. How much can we control?

R2: They are hooked onto the mobile till 12 at night… God only knows what they watch on it… They do not watch TV, they are constantly on the mobile… When we ask, what are you watching, they turn it off… People here talk about those who are constantly on the mobile phone. Children of poor people like us don't need this. It's okay for people living in bungalows and societies – they don't suffer the same consequences. If boys get into relationships, it can be accepted, but if girls do then people point fingers at them and us.

R1: I have seen Facebook… it has ruined two-three households. I have seen this on television, on Savdhaan India and Crime Patrol (TV shows).

BOX 6.3

BARRIERS DUE TO AFFORDABILITY

Affordability is a factor that hinders access for non-users. As seen in Table 6.1, only 4% of non-users explicitly cite cost as a barrier. But 13.6% say that it is difficult to obtain the infrastructure required to connect. Here they are referring to the prohibitive cost of the hardware/device, whether computer or smartphone.

Non-users from the lower wealth quintiles, and poorer income groups, are less aware of the internet as compared to those in the higher wealth quintiles (Figure 6.5). In the higher economic groups, internet awareness increases because a larger proportion own internet-accessible devices in the household. Therefore, even non-users in these households are aware of the internet.

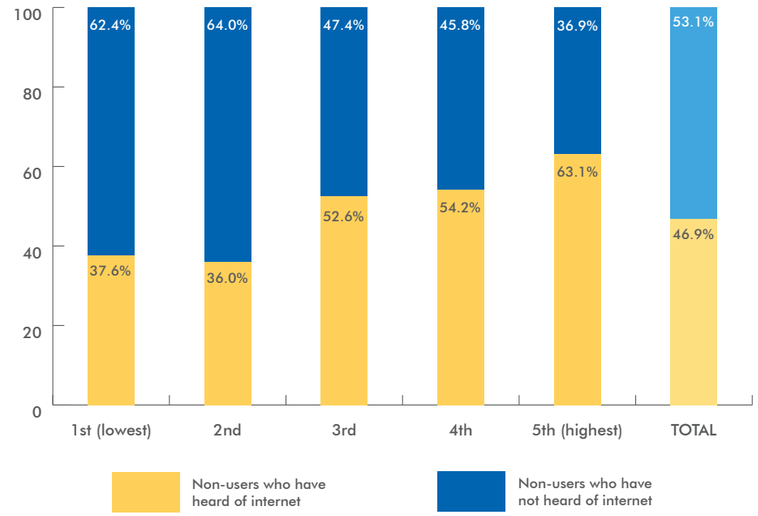


FIGURE 6.5
AWARENESS OF INTERNET AMONG NON-USERS BY WEALTH QUINTILE (% OF NON-USER RESPONDENTS, n=1,070)

6.3 BARRIERS TO INTERNET USE (INTERNET USERS)

At the outset we stated that the digital divide is not just a question of those with access to the internet and those without. It is a far more complex issue of the nature of internet access, the modes and quality of access, and the social capital that determines the extent to which users are able to make full use of the internet. Figure 6.6 shows the major barriers reported by users.

Affordability is cited as a barrier by equal numbers of men and women but there are clear gender differences in the other barriers reported. The unavailability of a device capable of internet access hampers more women. While more men have reported 'poor network coverage' and lack of wired facility as a barrier, for women the absence of a nearby public access facility (cybercafé) is a significant barrier. These aspects are examined in detail in the subsequent sections.

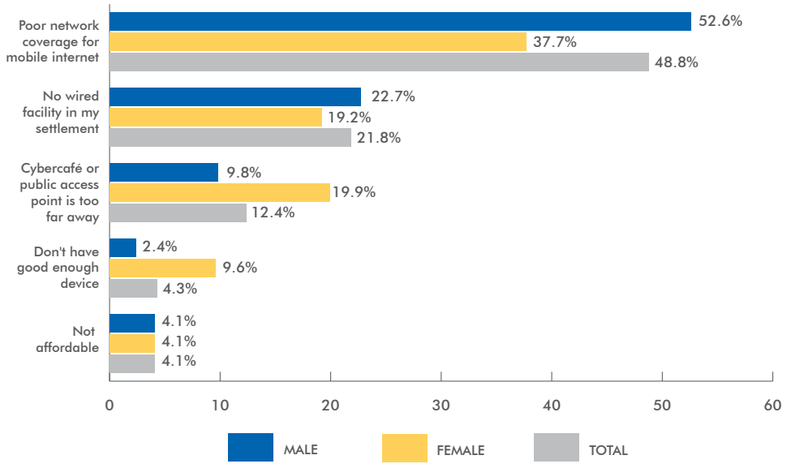


FIGURE 6.6
BARRIERS TO ACCESS REPORTED BY INTERNET USERS (% OF INTERNET USER RESPONDENTS, n=564)

Note: Other barriers reported were, 'It is difficult as I do not know English', 'Government kiosks do not work', 'I do not find content suitable to my needs', and 'I do not think that it is appropriate for me'

Photograph: Vivek Singh

6.3.1 Infrastructural barriers

An assessment of internet access points is crucial to understanding the infrastructural barriers faced by users. Table 6.3 shows the access points for users in the study sample:

1. The mobile phone is the only means of access for users with no formal education (100%). This suggests that simpler mobile internet devices can help overcome the education and ICT skills barrier. Operating a laptop/computer requires a higher level of ICT skills than mobile devices do. Moreover, the mobile is the primary medium for internet access for daily-wagers (86%) who are amongst the weakest sections of the population economically. However, it needs to be remembered that internet access through the mobile phone is at present used primarily for social networking, messaging and entertainment. Access for educational purposes, submission of online forms, commercial online services etc requires better networks, speeds and data storage. 3G connections cannot be afforded by all groups.
2. Users from the lower wealth quintiles also depend more on cybercafés as compared to those from the wealthier sections. This highlights the importance of public internet access points for economically- and socially-disadvantaged communities. A large number of women would also like to use public access points but are constrained by the distance to a cybercafé, and the absence of autonomy to leave the neighbourhood. None of the bastis has cybercafés within them; cybercafés are located 500 m to 1 km away. Here too, they can be crowded and internet speeds may be slow.
3. Computer and laptop usage is higher in the older age-groups (above 36 years) and the higher wealth quintiles because they are more likely to have the earning capacity to buy laptops. It is worth reiterating that internet use on computer or laptop in these settlements is possible only with dongles, given the absence of wired connections. Internet services were offered by cable TV operators in some research locations but were discontinued because of low demand.
4. Wealthier groups and people in service also show a higher tendency to use multiple access points. This is clearly determined by affordability. If multiple access points were available to all sections of the population, barriers to internet access would decline.

SOCIOECONOMIC CHARACTERISTICS	ACCESSING MULTIPLE ACCESS POINTS	USING COMPUTER/ LAPTOP ONLY	USING MOBILE ONLY	USING CYBERCAFÉ ONLY
Gender				
Female	18.5	6.8	47.3	18.5
Male	24.6	4.1	63.4	5.7
Age-group				
16-20	22.2	4.6	59.3	10.9
21-25	26.8	2.2	58.0	10.9
26-30	22.5	5.6	62.0	4.2
31-35	18.5	3.7	70.4	0.0
35+	19.2	19.2	46.2	0.0
Education level				
No education/primary school (up to Standard 5)	0.0	0.0	100.0	0.0
Secondary school (Standard 6-9)	13.5	3.1	79.2	4.2
High school (Standard 10)	12.3	6.6	67.0	8.5
Higher secondary (Standard 11-12)/ Diploma/Vocational courses	23.4	3.3	58.7	12.5
Graduation and above	36.5	6.6	40.7	9.0
Occupation				
Service	29.1	5.4	52.0	3.4
Self-employed	15.3	1.7	74.6	6.8
Daily-wager	0.0	7.1	85.7	7.1
Student	27.9	5.0	52.7	12.2
Not working	6.2	4.9	77.8	11.1
Wealth quintile				
1st quintile (lowest)	14.5	3.9	63.2	11.8
2nd quintile	19.5	1.3	57.1	13.0
3rd quintile	20.2	1.9	65.4	9.6
4th quintile	21.5	5.6	63.2	8.3
5th quintile (highest)	31.9	8.0	50.9	6.1

TABLE 6.3
INTERNET ACCESS POINTS (% OF INTERNET USER RESPONDENTS, n=564)

Wired lines (possibly at the school, college or workplace) and cybercafés see higher use by the lower as compared to the higher wealth quintiles (Table 6.4). This is probably because they are less able to afford personal devices such as feature/smartphones and computers/dongles. The wealthier groups access the internet through dongles (55%) and 2G and 3G services on internet-accessible mobiles. The preference for dongles is also because they can be carried anywhere. We observed that several users from the lower wealth quintiles also possess dongles that they use on their friends' computers/laptops. Gaps in provisioning of public access points such as subsidised internet kiosks or public Wi-Fi thus hit the

Internet connection types	1st quintile (lowest)	2nd quintile	3rd quintile	4th quintile	5th quintile (highest)	
Wired line	24.4	19.5	17.1	17.1	22.0	100.0
Cybercafé	17.6	15.7	21.6	29.4	15.7	100.0
Dongle	3.2	6.5	9.7	25.8	54.8	100.0
2G service on mobile	12.5	15.3	19.3	24.7	28.1	100.0
3G service on mobile	11.6	10.1	18.1	29.0	31.2	100.0

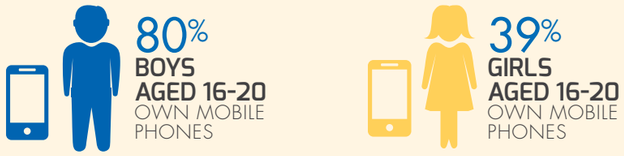
TABLE 6.4
TYPES OF INTERNET CONNECTION ACROSS WEALTH QUINTILES (% OF INTERNET USERS, n=564)

BOX 6.4

Infrastructural barriers

At home there are problems. The network isn't there or it is weak. I go out of the house and use the internet or move towards the road. As you move inside the basti there are more network problems, whereas outside in the open air one gets good network.
(Male internet user, 17, unmarried, final-year BCom student)

We don't have the internet on our mobile. The cybercafes are too far away and the family does not allow us to go out.
(Female internet user, 21, unmarried, final-year BA student)



lower income groups hardest, suggesting that internet access cannot be left entirely to market mechanics. State and civil society initiatives are required to make affordable services of **better quality** available to residents of low-income settlements.

Ownership of a personal device is an enabling factor for internet access. More than three-fourths of the user respondents 16-20 years old reported owning a mobile phone. Our data also show that there is a clear gender difference in ownership of mobile phones; 80% of all boys in this age-group own a mobile phone whereas the corresponding figure for girls is only 39%.

6.3.2 Affordability and internet utilisation

While the absence of infrastructure and devices to connect to the internet is a significant barrier, users who already had an internet-accessible device did not report affordability as a major barrier. Internet services purchased are low-value, short-duration data packs which can be purchased whenever financial resources permit. Most users buy data packs of less than 300 MB that are sufficient for social networking and messaging. These packs support minimal video streaming. The validity of such packs is also for a lower period; several users opt for packages that are valid for less than seven days. Users who buy packs of more than 300 MB include users in the 21-35 age-group and users in the service and self-employed categories (Table 6.5).

Users in service and the self-employed are able to afford more data transfers and also longer data validity. There is a clear gender divide in the utilisation of internet packages as well. Half of the female internet users reported that they did not know about the type of data packs they use, probably because they access the internet on a family member's device. Women who used their own device also reported that they did not understand or know about data transfer limits. They use the internet until the 'internet stops working'. They understand the usage limit in terms of the cost of the data packs (Rs 20-pack, Rs 15-pack, etc).

SOCIOECONOMIC GROUP	% USING MORE THAN 300 MB DATA PACKS (n=198)	% USING MORE THAN 20-DAY DATA PACKS (n=197)
Age-group		
16-20	30.4	31.0
21-25	43.2	53.6
26-30	43.7	63.6
31-35	48	71.4
35+	26.9	61.1
Occupation		
Service	42.4	60
Self-employed	52.6	60
Daily-wager	30.8	27.3
Student	28.1	31.1
Not working	38.0	46.0
Gender		
Female	23.1	31.1
Male	40.2	46.8

TABLE 6.5
USE OF INTERNET SERVICE PACKAGES

Table 6.6 shows that of users, fewer women than men spend more than Rs 100 per month on the internet. It is also clear that a smaller proportion of daily-wagers and students than those in service, self-employed or not-working spends more than Rs 100 per month on the internet. The gender barrier in affordability is most significant, and women clearly spend less than men on the internet. As discussed in Chapter 5, internet packages are available at very low rates. However, such packages have very limited data access and most of them are restricted to social media services. Affordability is therefore a barrier for more frequent access and for more intensive uses such as education, entertainment and e-governance. Although students spend less on the internet, it is possible that their needs are not continuous (they use the internet for school/college projects or access it for entertainment at intervals). It may also be that they have limited or occasional allowances from their families for such expenditure.

Our analysis of several indicators on expenditure and data usage reveals that affordability of internet services is a significant barrier to internet access, even though a very small percentage reported it as such.

SOCIOECONOMIC GROUPS	USERS (%) SPENDING MORE THAN Rs 100
Gender	
Male	45.2
Female	19.2
Occupation	
Service	48.6
Self-employed	54.3
Daily-wager	21.4
Student	27.8
Not working	45.7
Wealth quintile	
1st quintile (lowest)	55.0
2nd quintile	41.9
3rd quintile	50.9
4th quintile	52.8
5th quintile (highest)	67.3

TABLE 6.6
EXPENDITURE ON THE INTERNET (n=260)

BOX 6.5

Affordability barriers for users

People cannot afford to purchase monthly packages for dongles. That is why very few people from the community have it. I have not used a dongle but some basti people have it.
(Male, 18, unmarried, Standard 11 student)

If you spend on internet packs and get no speed and no range, what's the point? If you spend money and you don't get quality, then it's not affordable. I have to sit in the window to get some connectivity.
(Female, 23, unmarried, college graduate, service)

This contradiction between the study's findings and people's perceptions may be explained by the fact that at the time the survey was conducted, a large number of respondents were using the internet mainly for social networking and entertainment. A Rs 15-20 pack was perceived as affordable and sufficient for these needs. Limited awareness of the multiple uses of the internet, as well as the absence of benchmarks for superior quality of access, contributes to this perceived affordability. The respondents were largely happy with the services on offer and the cost of that service.

6.3.3 Education and ICT skills as barriers

While accessing the internet does not require high levels of computer literacy or skill, utilising it for more than entertainment and social networking – for education or finding and applying for jobs or government entitlements, for instance – requires some learned skill sets. It can be seen from Table 6.7 that users with an education above higher secondary school use the internet more for education and livelihoods than do those with less education.

There is a much greater reliance on the internet as a source of information among those with higher education. Online services are also utilised more by people with higher education, as well as those in service and those in the higher wealth quintiles.

ICT skills as barriers

There aren't any specific skills required to learn the internet. If you observe a person using the internet once you can easily pick it up. There's no educational criterion for learning the internet. I learnt the internet through practice.
(Male internet user, 18, unmarried, Standard 11)

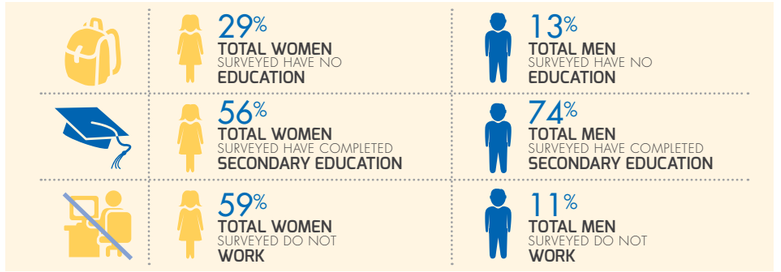
I don't like to use the internet because I don't know how to operate it. I did not get a computer education when I was in school. There was a computer lab there but they never taught computers. My friend had theory classes in computers but never got practical training in school.
(Female internet non-user, 21, educated up to Standard 9, domestic help)

People should be given classes on computers and the internet. Then they will come to know about the internet and be able to use it.
(Female internet user, 24, married, educated up to Standard 9, homemaker)

BOX 6.6

BACKGROUND CHARACTERISTICS	ONLINE SERVICES	JOB AND EDUCATION	INFORMATION-SEEKING
Age-group			
16-20	8.9	50.7	51.0
21-25	13.0	46.4	45.7
26-30	18.3	38.0	53.5
31-35	18.5	33.3	59.3
35+	11.5	50.0	38.5
Education			
No education/Primary school	9.1	36.4	27.3
Secondary school	6.3	32.3	37.5
High school	11.3	29.2	50.0
Higher secondary/Diploma/Vocational courses	12.0	52.7	51.6
Graduation and above	15.0	61.7	56.3
Occupation			
Service	20.3	45.3	43.2
Self-employed	6.8	28.8	44.1
Daily-wager	14.3	35.7	64.3
Student	9.9	58.0	56.1
Not working	4.9	30.9	43.2
Wealth quintile			
1st quintile (lowest)	5.3	44.7	55.3
2nd quintile	6.5	55.8	40.3
3rd quintile	14.4	50.0	48.1
4th quintile	12.5	43.8	54.9
5th quintile (highest)	14.7	45.4	48.5

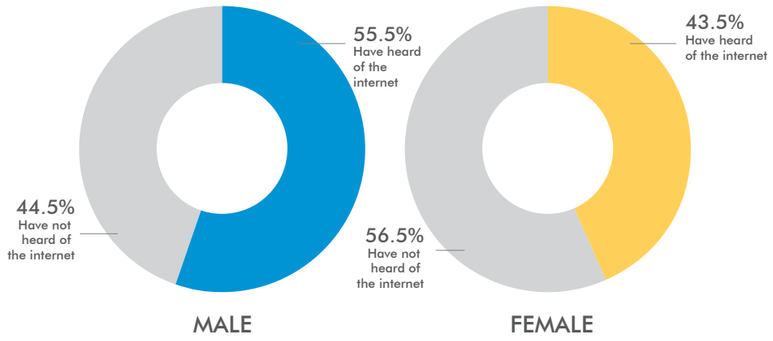
TABLE 6.7
PURPOSE OF INTERNET USE (n=564)



6.4 GENDER BARRIERS IN INTERNET USE

An interplay of social, cultural and economic constraints leave women in the low-income and socially-marginalised settlements under study further disadvantaged. In these patriarchal settings women lag far behind men in critical socioeconomic indicators: 29.9% of the women in the study settlements have no education compared to 12.7% of men; 73.9% of the men had completed secondary education, against only 55.8% of the women (Table 3.14). While 11.3% of men across households were not working, as many as 58.8% of women were not working, the majority of them being homemakers. (Students form a separate category from 'not working'.) Even women who are earning have little autonomy in decisions related to family or personal expenditure. Additionally, women's mobility is restricted and controlled in these settlements, as the interviews in the boxes accompanying this section reveal. This gender discrimination, coupled with the stereotype that women can't handle technology, manifests in acute digital inequalities between the sexes.

FIGURE 6.7
NON-USERS' AWARENESS OF INTERNET BY GENDER (n=1,070)



6.4.1 Women's access to and ownership of ICT devices

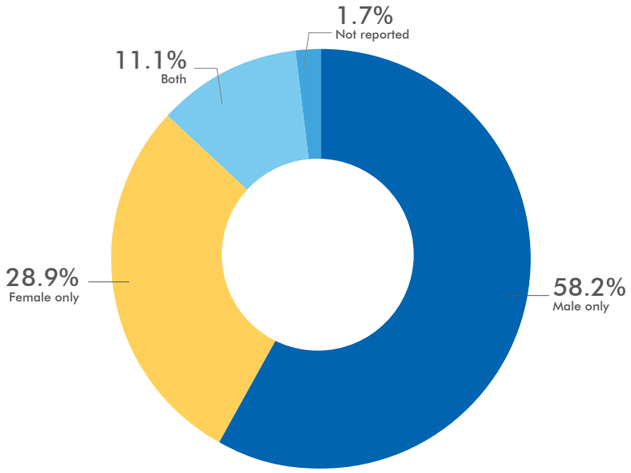
The gap begins with awareness: 55.4% of male non-users in our survey had heard about the internet, compared to 43.5% of female non-users.

The gap in awareness is compounded by women's poorer access to internet-accessible devices – computers and mobile phones. Thirty-two percent of households reported having at least one member in the family using computers (far fewer households own computers at home). Only 29% of households report the use of computers by women, in contrast to 58% of households which reported use by men. Only 11% of households report both male and female users of computers (Figure 6.8).

Ownership of mobile phones, the primary mode of internet access for these populations, is also skewed across gender: 78.5% of men at the household level report owning mobile phones against only 40.4% of women. Among individual respondents, 86.5% of the men reported ownership of a mobile phone against 47.6% of women (not shown in figure/table). All-India statistics on mobile ownership show that 31% of mobile phone owners are women, compared to 68% of men (Murthy 2014).

The gender difference in ownership of mobile phones is also sharp among internet users in our survey. At least one-fourth of female internet users do not own a mobile phone. However, the corresponding figure for males is less than 10% (Figure 6.9).

FIGURE 6.8
COMPUTER USE IN THE HOUSEHOLD BY GENDER (N=1,634)



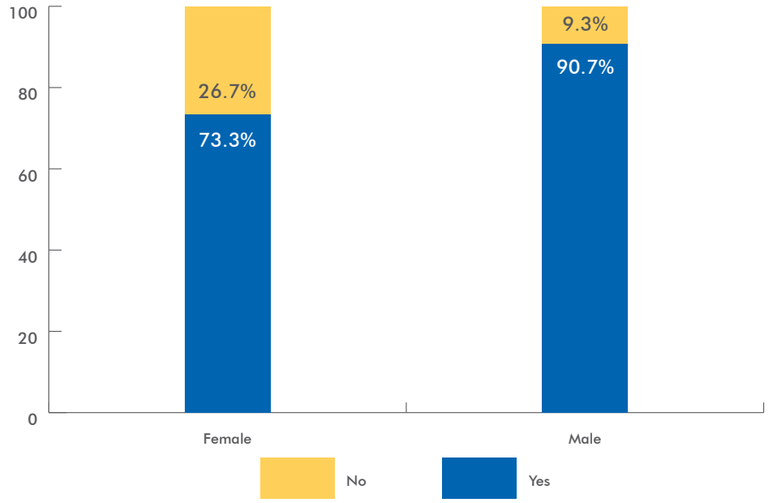


FIGURE 6.9
OWNERSHIP OF MOBILE PHONES FOR INTERNET USERS BY GENDER (n=564)

Qualitative interviews and field observations reveal that it is the men in the household who acquire smartphones, while women are handed down the older basic phones which do not allow data access, or feature phones which allow only limited internet applications. In these diversely-literate settlements, the internet is frequently accessed through apps rather than urls keyed into browser windows. Apps cannot be downloaded on feature phones. The restrictions on ownership of mobiles for girls are not only economic (Box 6.7). Parents feel that girls don't need mobiles as much, as they move out of the home less than boys. There is also a widespread feeling that mobiles made available to women will lead to unwanted romantic liaisons and exploitation of women. These biases keep women at the periphery of the information society.

BOX 6.7

Barriers to ownership of mobiles for women

Boys are free to go out. No one keeps watch on what they're doing. Boys share everything with their friends. Women are limited to their family circles. They have to share mobiles with the women in the family. Few families give their daughters a mobile phone of their own.
(Female internet user, 24, married, educated up to Standard 9, homemaker)

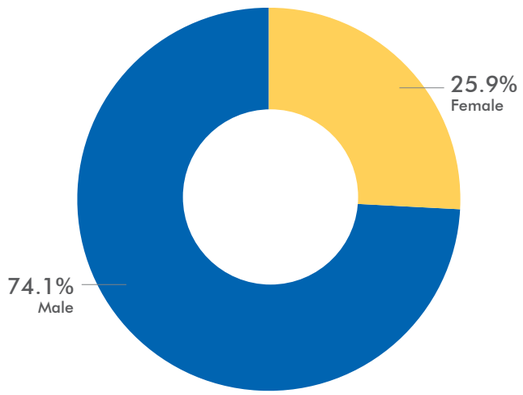
Many of the women do not have mobiles and if they do, they have devices that cannot access the net... Men get better phones (smartphones).
(Female internet user, 23, unmarried, college graduate, service)

Girls here don't use the internet much because they don't know how to use it and they don't learn to use it because they don't have smartphones on which the net can be used. They have simpler phones, and many girls don't have phones at all.
(Male internet user, 17, unmarried, Standard 12 student)

We don't have internet on our mobile. We have to go too far for the cybercafés. So we don't bother. Often the family does not allow us to go out.
(Female internet user, 21, unmarried, TYBA student)

Boys and men are not restricted from going out. So they work anywhere and earn money. They use those savings to buy mobiles.
(Female internet user, 24, married, educated up to Standard 9, homemaker)

FIGURE 6.10
GENDER DISTRIBUTION OF INTERNET USERS (n=564)



6.4.2 Internet access by gender

As we have seen earlier in this report, at the household level only 8% of all women in the surveyed settlements use the internet, compared to 27% of all men in the settlements.

At the level of individual respondents, only 25.9% of internet users in our study were women, against 74.1% men.

Irrespective of gender, most internet users were in the younger age-groups (<30 years) and unmarried (three-fourths of total users). The gender barrier is further compounded by age barriers in the case of women above 30. Only 7.6% of our female user respondents were >30, compared to 14.2% of males.

EDUCATIONAL STATUS	ALL RESPONDENTS			
	Male		Female	
	User	Non-user	User	Non-user
No education/Primary school (up to Standard 5)	12.2	87.8	0.0	100.0
Secondary school (Standard 6-9)	38.7	61.3	6.0	94.0
High school (Standard 10)	61.3	38.7	14.6	85.4
Higher secondary (Standard 11-12)/ Diploma/Vocational courses	77.8	22.2	47.9	52.1
Graduation and above	92.2	7.8	67.1	32.9

TABLE 6.8
EDUCATIONAL STATUS OF INTERNET USERS BY GENDER (N=1,634)

The positive factor is that the gender gap between internet users reduces with an increase in educational levels. Higher education increases the likelihood of women going online. The majority of female internet users are educated up to higher secondary (Standard 11-12) or above. More men than women with education only up to secondary (Standard 6-9) or high school (Standard 10) are seen using the internet (Table 6.8). This could be because women with higher education are more likely to be given access to mobile phones. Girls tend to be allowed internet access only when absolutely necessary, particularly for school/ college projects, whereas everyday use for communication, social networking and entertainment is frowned upon for women.

The role of education in bringing women online is also seen in Table 6.9, where female students are slowly catching up with male students in internet access.

6.4.3 Gendered patterns of use

In Chapter 5 we saw that women use the internet much less frequently than men. This is directly related to their lack of access to a personal device, their dependence on a family member's device and their lack of autonomy in using the internet.

The purpose of internet use for women, as we have seen, also tends to be more for education, job search or application to state entitlements.

The quality of access is markedly poorer for women who are more likely to be accessing on feature phones with slow 2G connections. Their expenditure on the internet is also lower than it is for male users.

In the absence of personal devices, it is now women from lower income groups who are more dependent on public access points or cybercafés. (Earlier, cybercafés were dominated by men.) But because their mobility is restricted and their financial resources limited, they find it difficult to even visit cybercafés frequently. Women more than men therefore report distance as a barrier for use of cybercafés (Figure 6.6 and Box 6.5).

OCCUPATION	ALL RESPONDENTS			
	Male		Female	
	User	Non-user	User	Non-user
Service	58.7	41.3	18.6	81.4
Self-employed	33.5	66.5	7.8	92.2
Daily-wager	14.5	85.5	4.9	95.1
Student	86.9	13.1	60.8	39.2
Not working	58.7	41.3	8.3	91.7

TABLE 6.9
OCCUPATION OF INTERNET USERS BY GENDER (N=1,634)

The socio-cultural attitudes and restrictions that women face are therefore seen as intensifying infrastructural and economic barriers, underlining that:

- Restrictions on women's mobility cause them to face greater physical barriers to access (location, distance). Therefore, provisioning of internet infrastructure for women is especially called for.
- Women also face greater economic barriers, because they do not have the resources to buy/use devices that can access the internet. Even when they are earners they are unlikely to have control of financial resources or autonomy in making financial decisions. Therefore, the purchase of suitable devices, spending for access at cybercafés, spending on larger data packs etc become significant hurdles for women.
- Patterns of internet use in the case of women are closely monitored by family members, mostly male siblings/spouses. Many men said the internet is not needed for women especially those who are homemakers or at home (Box 6.3). In most households, not just men but older women too are seen to impose restrictions on younger women who use the net, citing security concerns. This has also resulted in the perception that women who use the social networks are 'forward'.
- Women themselves are diffident about their ability to use new technologies. Many of them reported apprehensions about using the internet. In contrast, educated and employed women who are more exposed to ICTs are more comfortable and confident about using the internet.
- More women feel that the internet is addictive as they say they have observed men getting hooked on to social networking sites and paying less attention to work/education.

Attitudinal barriers therefore appear to be significant in keeping women offline. In Intel's study 'Women and the Web' (Intel, 2012), 38% of female non-users in India reported that discomfort with or unfamiliarity with technology was a barrier to access. In addition, 40% of female non-users from India stated that they did not need access to the internet. Another 10% of non-users in India believed that their family would be opposed to them using the internet.

Patriarchal barriers faced by women

Men have this attitude towards women... They say, 'Why do you need internet, you are at home'. Women are given phones to receive incoming calls only... Most men have android/smartphones, women get simpler ones.
(Female internet user,, 23 years, unmarried, college graduate, service)

People in our settlement don't like to see girls on the mobile all the time because it does not look good. People in our settlement have certain views about girls and the community thinks that if girls are on the mobile they are not conforming to community culture.
(Female internet non-user, 45 years, married, not educated, domestic worker)

I don't have restrictions as such, but my friends do. Their family says, 'Why do you need the internet, you are anyway at home'... There are restrictions on girls. Brothers restrict their sisters' use of FB thinking that if they get on FB, everybody will get to know them. They do not think about the positives of her being able to communicate. Even if sometimes their intentions are good – to protect their sisters from risk – women should not be restricted.
(Female internet user, 21, unmarried, college graduate, service)

I feel proud that though I am married, I still get a chance to use the internet... Most girls do not get permission to use the internet. Both my mother's family and my in-laws' family use the internet, so it is a plus point for me.
(Female internet user, 24, married, educated up to Standard 9, homemaker)

Boys get more internet access than girls… Why? Because girls do not get time, they have to do the housework, attend college, then study. Boys take studies casually and go to college but often bunk lectures. They usually go to the cybercafé and use the net, or somewhere else. Men sit in groups, listening to songs, sending MMS, messages... It's all timepass… We do not go outside the house. We go to college and come straight back home.
(Female internet user, 19, unmarried, TYBA student)

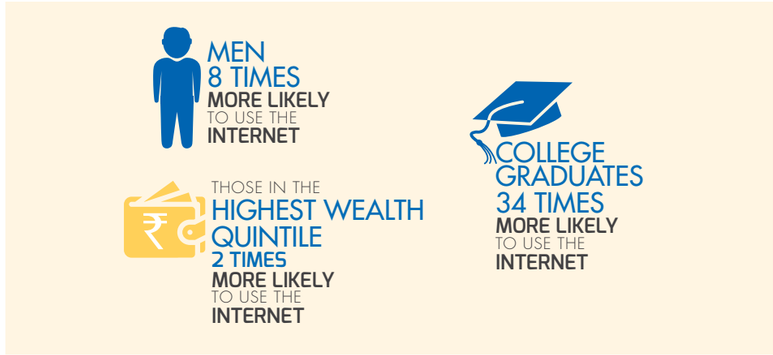
I don't get time… I go to the cybercafé whenever I get time. Sometimes it's boring to use the internet every day. Nowadays internet is in every household. Boys have mobiles and they are using the internet, but girls don't get permission to use it. Girls don't even get a good mobile so permission to use the internet is out of the question.
(Female internet user, 24, married, educated up to Standard 9, homemaker)

BOX 6.8

6.5 HIGHLIGHTING THE MAJOR BARRIERS

6.5.1 Socio-demographic characteristics and internet access

Regression analysis for internet access and its correlations with various socio-demographic characteristics is revealing. Various controls were adopted including gender, education, occupation, caste and wealth (Table 6.10). The factors that have a significant bearing on internet access have been shown.



Being male is advantageous in terms of access to the internet. **Men are around eight times more likely to use the internet than women**. The likelihood of use of the internet increases with increases in educational levels. **The model shows that a college graduate is 34 times more likely to use the internet than a person with primary education**. Similarly, a rise in wealth quintile also increases the odds ratio of internet use. **Those in the fifth (highest) wealth quintile have almost twice the likelihood of internet use as those in the first (lowest) wealth quintile**. However, age plays a dampening role on internet use: the elderly are less likely to use the internet than younger people.

Household ownership of a smartphone is a significant determinant of internet use. Households with a smartphone are five times more likely to be connected to the internet than those without. Therefore, the following population groups are associated with higher internet use:

1. Males;
2. Younger age-groups;
3. Those with more than high school education;
4. Those in service;
5. Students; and
6. Those possessing smartphones that enable internet access.

6.5.2 Internet access for men and women

Here internet use has been analysed for men and women separately. Various controls were adopted, including education, occupation, caste and wealth quintile (Table 6.11). The factors that have a significant bearing on internet access have been shown. It is evident that age, education and household possession of a smartphone are significant predictors of internet use for both males and females. However, while graduate males are 19 times more likely to use the internet in comparison to persons with only primary education, graduate females are only about 14 times more likely to use the internet than females with primary education. This shows that despite being educated up to graduation level, gender plays a role in restricting a woman's internet use, compared to men. However, it is also interesting to note that women with higher secondary education are more likely to use the internet than men with similar education levels. Further, a respondent's occupation emerges as a significant predictor only for women. It is seen that women engaged in service and those who are studying are more likely to be using the internet than those who are not working.

6.5.3 Household characteristics for connected and non-connected households

Education plays a vital role in determining internet penetration. Various controls were adopted including gender, education, occupation, caste and wealth quintile (Table 6.12). The factors that have a significant bearing

	INTERNET ACCESS	
	B	Exp (B)
Gender (Ref: Female)	2.033	7.635***
Age	-.098	.907***
Education (Ref: =<Primary school)		
Secondary School education	1.051	2.860***
High school education	1.639	5.149***
Higher secondary	2.409	11.127***
>=Graduation	3.512	33.510***
Occupation (Ref: Not working)		
Service	.710	2.035**
Self-employed	.560	1.750
Daily-wager	.661	1.937
Student	1.269	3.559***
HH possession of smartphone (Ref: No smartphone)	1.524	4.591***
Constant	-2.308	
Nagelkerke R Square	.67	

TABLE 6.10
REGRESSION OF SOCIO-DEMOGRAPHICS ON INTERNET ACCESS FOR ALL RESPONDENTS

Note: N=1,634; b=unstandardised regression coefficients; Exp (B)=standardised regression coefficients
*p<.05
**p<.01
***p<.001

	INTERNET ACCESS			
	MALE USERS		FEMALE USERS[1]	
	B	Exp (B)	B	Exp (B)
Age	-.113	.894***	-.048	.953*
Education (Ref: =<Primary school)				
Secondary school education	.513	1.671	–	–
High school education	1.162	3.195**	.679	1.972
Higher secondary	1.498	4.475**	2.029	7.607***
>=Graduation	2.920	18.543***	2.657	14.250***
Occupation (Ref: Not working)				
Service	-.095	.910	.861	2.365*
Self-employed	-.284	.753	.602	1.827
Daily-wage	-.469	.626	1.623	5.066**
Student	.370	1.448	1.727	5.625***
HH possession of smartphone (Ref: No smartphone)	1.835	6.267***	1.338	3.813***
Constant	1.208		-2.426	
Nagelkerke R Square	.61		.48	

TABLE 6.11
REGRESSION OF SOCIO-DEMOGRAPHICS ON INTERNET ACCESS FOR MALES AND FEMALES

Note: Males (N=721), Females (N=626); b=unstandardised regression coefficients; Exp (B) = standardised regression coefficients
*p<.05
**p<.01
***p<.001

1. None of the women respondents with less than secondary school education use the internet. Therefore, women with no education/education up to primary school have been excluded from the analysis. The reference category for women's education is 'secondary school'

	CONNECTED HOUSEHOLDS AND NON-CONNECTED HOUSEHOLDS	
	B	Exp(B)
School pass-out (Ref: No school-pass out in the HH)		
At least 1 HH member is a school pass-out	1.157	3.182***
HH possession of types of cell phones (Ref: No phone)		
Basic phone	.763	2.144
Any internet-accessible phone	2.178	8.825**
Smartphone/Tablet	1.082	2.951***
Any HH member uses computer/laptop (Ref: No HH member uses computer/laptop)	1.337	3.806***
Any HH member has received computer training (Ref: No HH member has received computer training)	.738	2.091***
Constant	-4.636	
Nagelkerke R Square	.52	

TABLE 6.12
REGRESSION OF HOUSEHOLD CHARACTERISTICS ON INTERNET ACCESS FOR CONNECTED AND NON-CONNECTED HOUSEHOLDS

Note: N=1,634; b=unstandardised regression coefficients; Exp (B)=standardised regression coefficients
*p<.05
**p<.01
***p<.001

on internet access have been shown. The study highlights that **the likelihood of a household being connected to the internet is three times higher if any member has completed school or is in Standard 10. Households with at least one member who has received computer training are twice as likely to be connected households**. Household ownership of a smartphone also affects internet access. **Households that have smartphones are three times more likely to be internet user families as against households with no smartphones**. Overall, ownership of internet-accessible devices, whether computer, laptop, internet-accessible phone, or smartphone/tablet, and the presence of a computer-literate member of the household are significant predictors of connected households.

6.6 SUMMARY

In the case of non-users, barriers to internet access include:

1. Complete lack of awareness of the internet or limited awareness of the internet's uses, prompting people to think the internet has no relevance in their lives.
2. Absence of ICT skills and education.
3. Absence of enabling infrastructure at the public/community level, which makes respondents completely dependent on private ownership of internet-accessible devices.
4. Inability to afford computers or any internet-accessible mobile devices of their own.
5. The perception that the internet is not suitable for women because it gives them too much freedom.
6. The feeling that the internet can have negative influences, be addictive, and compromise the safety of women in particular.

In the case of internet users, major barriers to regular and fuller use of the internet are:

1. Lack of awareness of the many different functions/uses of the internet, other than social networking and entertainment.
2. Absence of ICT skills and education that facilitate further use.
3. Language and the cumbersome keyboards offered for regional languages.
4. Absence of enabling infrastructure such as high-speed public Wi-Fi or wired broadband in the settlement, although it is the poorest who cannot afford private infrastructure and are most dependent on public access points.
5. Limited financial resources for purchase of computers, dongles, smartphones and tabs on which to connect, as well as limited finances for internet services which prompt use of low-cost data packs of limited data transfer and validity.
6. Poor quality of access (limited connectivity/slow speeds).
7. Gender-biased attitudes and practices which restrict the agency and movement of women, making it difficult for women to access the internet autonomously or regularly, on shared family devices or at public access points outside the settlements.
8. The feeling that the internet can have negative influences, be addictive, and compromise the safety of women in particular.

Box 6.9
The liberation of the virtual space

The social exclusion transgenders face in real life seems to melt away online. Disha Kene's first-person account of how her community overcomes barriers of cost, literacy and language to connect over the internet

Photograph: Vidya Kulkarni

I was born and raised in a village in Nashik district. At present I am based in Shrirampur in Ahmednagar district, Maharashtra, but work brings me to Pune frequently. Almost all of us have an itinerant lifestyle, but that's not a problem as we have strong community networks in most places. It doesn't matter so much where we are anymore. With my tab I can be in touch with my friends as well as chelas and gurus, who form my extended family. Most of us do not live with our natural parents, so these family-like relationships matter a lot to us.

I come from a poor family. My mother worked as a waste picker and I accompanied her along with my other siblings in her daily treks. Three years ago I left home and started living with my community. I was new to the group and each of them had their own life, friends and partners. To overcome my loneliness, I began chatting with friends through text messages.

Then a friend told me about Facebook. I had a standard handset, but could access FB on it. Sometimes we used cybercafés, but that was only a passing phase. Facebook opened up a whole new world to me. Now I could share pictures along with text. But the device was slow and took ages to upload and download pictures. I could not download video links and Indian language fonts were unreadable. Despite these limitations I used my phone extensively for FB chatting.

As an outreach worker with a community-based organisation in Nashik, I was building awareness on HIV, minimising high-risk behaviour and promoting safe sex practices. Reaching out to MSM and TG people who are not staying with or connected with the community is difficult since most of them constitute what is termed the 'hidden' population. They happen to be the most-at-risk population as well. Facebook became my medium to talk with such community members who were unwilling to be open about their sexual and gender identities.

We use this virtual space to do what we are not able to do in the real world. The community FB group is also a strong peer support. WhatsApp has made it even easier for us. Even the semi-literate among us find ways to overcome literacy and language barriers. Even those who are not on social networks themselves know what they might be used for. The other day, an elderly TG asked me whether I can help her 'see' her relatives on FB. Most of us use FB to trace our schoolmates and close relatives, whom we are unable to meet in real life.

Now I have a fancy tab. I do not let my monthly internet expenses go beyond Rs 500. I usually use a Rs 198 net-recharge and try to fit my net usage within that. Sometimes I don't mind spending a little more. I use a photo editor to give special effects to photos before sharing them. When I have the time and the mood I make short AV clips clubbing my photos and poems. Creatively it is much more satisfying than merely sharing selfies or forwards.

I also do a lot of surfing on topics of interest, like for instance media portrayal of TGs, who are often presented as stereotypes. There is hardly any awareness or sensitivity among media people who cover these topics. We have formed a WhatsApp group and Facebook page to share and discuss positive and negative media stories related with our community. Sometimes we forward such stories. But I also try and share issues of concern that are not covered by the mainstream media. Recently, when I was doing *mangati* (seeking alms) in a passenger train, I saw a police constable extorting money from some ticketless travellers. I could not shoot him taking the bribes, but later I video interviewed a victim and posted his byte with my narration on our group. I feel there is a need for this kind of immediate response on issues of concern and the social media provides that valuable space. I am still learning to tap its potential.

And I'm really not an exception as far as internet usage by TGs goes. Most TGs I know are keen to have smartphones and adapt quickly to apps. The technology has reached people all over. TGs can't spend hours in shops or malls handling the products they would like to use. These are spaces they are excluded from. So they do their window-shopping online, getting details of cosmetics and other products and then going out and buying them at accessible locations. Some of us have started placing orders online, paying cash on delivery.

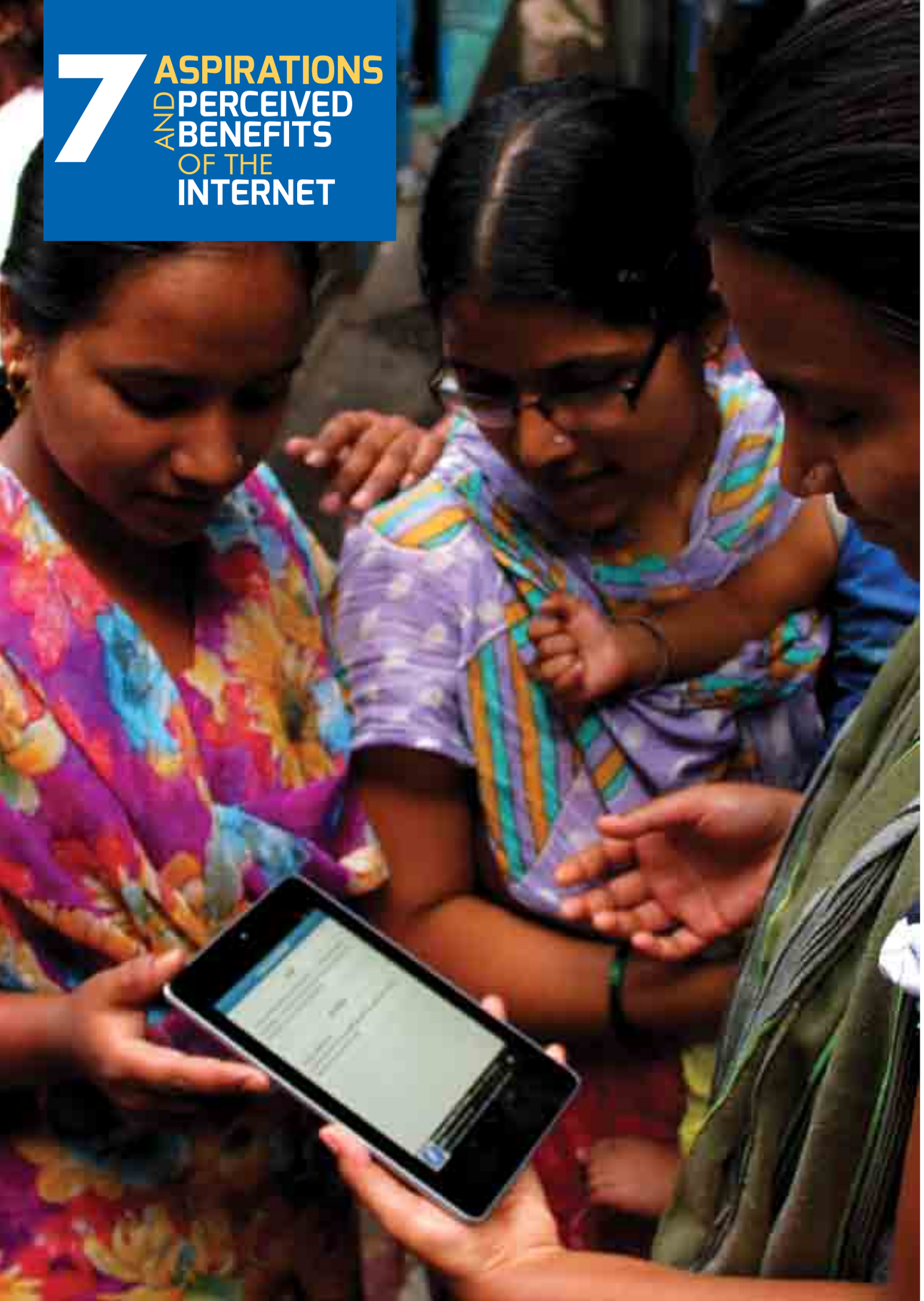
One of my friends has a dance troupe and performs *bida* (dancing at family functions). She downloads song and dance clips. Since she is practically illiterate I asked her how she finds what she is looking for. She said she knows the steps to follow and the keys and visual prompts to press. Some of us who have sophisticated phones use voice commands.

Even our gurus use WhatsApp to stay in touch with their chelas. Some of us take trains to seek alms and our guru decides the route for us. Whenever there is an emergency, like an accident or delay or police round-up, our guru, or anyone who comes across the information first passes it on to us. Some of my friends use an app that tells the exact location of a train in real time, so they can board the train at suitable stops.

I feel I have taken enormous strides since I started using the internet. I feel it is an incredible journey considering my humble background and exposure.

~ As told to Vidya Kulkarni, www.netpehchaan.in, July 2014

7 ASPIRATIONS AND PERCEIVED BENEFITS OF THE INTERNET



7.1 INTRODUCTION

This chapter discusses whether there is an aspiration to go online in the six study settlements, particularly for those who are not yet connected. What is the importance attributed to the internet by residents of informal settlements? Is getting online a priority for them? Do they want public access points within their neighbourhoods? The chapter also reports the perceptions of users on the changes the internet has brought to their lives.

The chapter has been organised in seven sections. Section 1 introduces the chapter. Section 2 records the aspirations of non-users to go online and the perceptions of users on the difference that the internet has made in their lives. Section 3 discusses social support as an enabling factor, and Section 4 presents the views of respondents on the factors that most helped them get online. Section 5 records the respondents' views on the need for public access points in their settlements. Section 6 points to future trends in internet penetration in the study settlements by comparing internet penetration for the under-25 and over-25 age-groups. Section 7 concludes the chapter.

7.2 ASPIRATION TO GO ONLINE

7.2.1 Non-user respondents

A whole 73% of internet non-users aspire to go online in the future (Table 7.2). Further, 78% of non-users agreed that internet is as important as any other basic amenity such as electricity, including for those who live in low-income settlements and slums (Table 7.1). In-depth interviews and focus group discussions also did not indicate that the residents of these colonies feel that *roti, kapda aur makaan* (or improved food security,

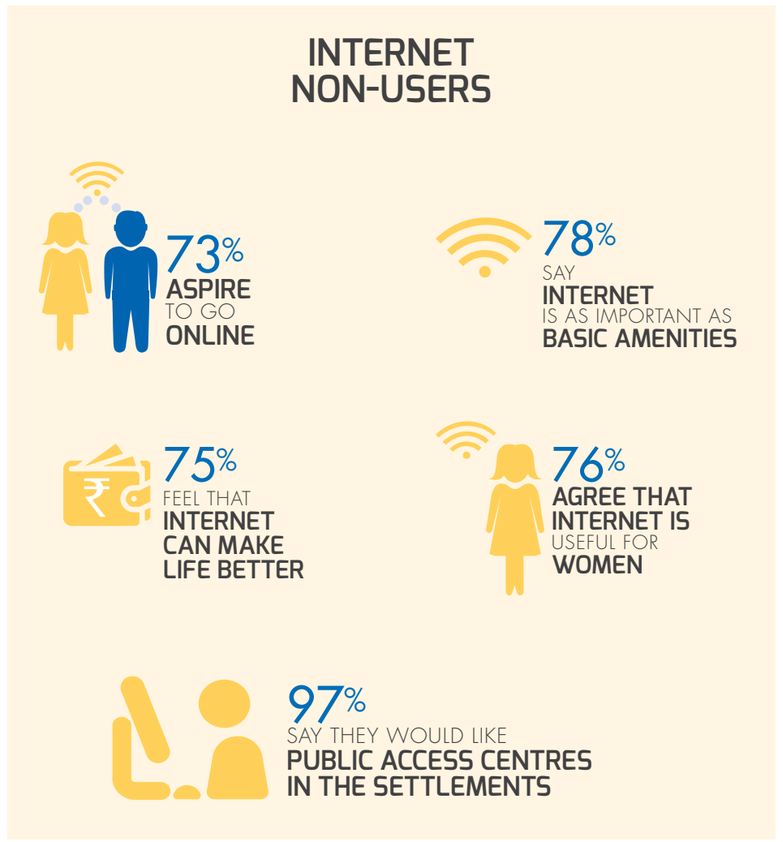


TABLE 7.1
NON-USERS' PERCEPTIONS OF THE INTERNET

ATTITUDE TOWARDS INTERNET (n=502)	AGREE	NEUTRAL	DISAGREE	DO NOT KNOW
Need internet as much as basic amenities	78.0	2.4	8.5	11.5
Internet is useful for employment	95.7	0.6	1.2	2.4
Internet is just for entertainment	4.7	2.9	85.6	6.9
Internet is useful for education	96.4	0.4	2.2	1.0
Internet is not important for people in settlements	9.3	1.8	86.7	2.0
Useful for men	63.5	1.0	23.4	2.0
Useful for women	76.0	1.0	21.2	1.8
Getting internet is not affordable	21.8	7.6	43.7	27.0
Even if internet is available I do not need it	22.5	5.3	69.8	2.4
Internet can have negative influence	46.4	8.1	24.0	21.4
Internet is addictive	44.0	5.1	27.9	23.0
Internet helps connect with people	93.1	0.2	0.8	5.9
Internet makes life better	75.3	6.3	5.7	12.6

TABLE 7.2
ASPIRATION TO GO ONLINE (NON-USERS)

DO YOU INTEND TO USE INTERNET IN FUTURE?	FREQUENCY	PERCENT
Yes	366	72.9
No	77	15.3
Do not know/Not reported	59	11.8
TOTAL	502	100.0

shelter and other basic needs) are more pressing needs that must be addressed before they can think about internet connectivity. This is a very positive finding in terms of the potential to bridge the digital divide and the receptivity of low-income, resource-poor and diversely-literate urban populations to digital inclusion initiatives.

A large percentage of non-users think that the internet is useful for employment, education and connecting with people (Table 7.1). They disagree that the internet is just for entertainment (85.6%). **Seventy-five percent feel that the internet can make life better. Seventy-six percent stated that the internet is useful for women,** but that still leaves a substantial 21% disagreeing, indicating that special efforts will be called for to address the gender bias and apprehensions about women's safety online.

7.2.2 User respondents

An even greater number of **internet users (80% compared to 78% of non-users) responded that the internet is needed as much as any basic amenity in their settlement** (Table 7.3). Over 95% say the internet is useful for employment and education; 90% disagree that the internet is just for entertainment (Table 7.3).

But as many as 32% disagreed that the internet was useful for women, which is surprisingly higher even than the non-users. Not surprisingly, though, almost 75% of female respondents agreed that the internet was useful for women, but only 62.4% of males held the same view.

BENEFITS OF THE INTERNET AS PERCEIVED BY USERS

Both male and female respondents reported that the internet provided them a source of entertainment and that it was an important way to network socially and keep in touch with friends and relatives (Table 7.5). More than one-third of male users **(35%) and about one-fourth (24%) of female users felt that the internet had increased their confidence and enhanced their personality,** a factor that is especially significant for socially and economically excluded communities who live at the margins of the city. Digital inclusion will thus contribute in many different ways to social inclusion.

However, only 8.7% stated that the internet had provided them more knowledge about local issues and facilities, pointing perhaps to the absence of local and hyper-local content that these users would find relevant to their lives.

Just 8% of users said they found the internet useful in finding out about government benefits and services such as Aadhar cards, voter cards, policies and schemes for the economically and socially-excluded. **This indicates that government at all levels – local, state and central – cannot expect its Digital India and e-governance initiatives to simply trickle down to excluded communities.**

Qualitative interactions with user respondents revealed additionally that users believed that the internet enhanced their knowledge of the English language and improved their communication skills (Box 7.1). Some users specifically mentioned that the net gave them a sense of freedom and independence because they had a ready source of information on any subject they needed to know about and were no longer dependent on their families for every bit of information. Women reported using the net for information on healthcare, beauty treatments,

TABLE 7.3
USER RESPONDENTS' PERCEPTIONS ABOUT THE INTERNET

ATTITUDE TOWARDS INTERNET (n=564)	AGREE	NEUTRAL	DISAGREE	DO NOT KNOW
Need internet as much as basic amenities	80.1	2.1	16.7	1.1
Internet is useful for employment	96.3	0.0	2.7	1.1
Internet is just for entertainment	7.8	1.2	90.1	.9
Internet is useful for education	95.9	0.2	2.7	1.2
Internet is not important for people in settlements	6.6	2.0	89.0	2.5
Useful for men	65.2	0.5	33.2	1.1
Useful for women	65.6	0.7	32.3	1.4
Getting internet is not affordable	23.0	7.1	67.6	2.3
Even if internet is available I do not need it	4.1	3.5	91.5	.9
Internet can have negative influence	61.9	8.7	26.2	3.2
Internet is addictive	57.3	9.0	31.7	2.0
Internet helps connect with people	97.2	0.0	1.8	1.1
Internet makes life better	86.2	5.3	7.1	1.4

TABLE 7.4
PERCENT OF MALE AND FEMALE USER RESPONDENTS 'AGREEING' TO STATEMENTS ON THE INTERNET (n=564)

PERCEPTION ON INTERNET UTILITY	MALE	FEMALE
Need internet as much as basic amenities	79.4	82.2
Useful for employment	96.2	96.6
Just for entertainment	11.2	6.2
Useful for education	95.9	95.9
Useful for women	62.4	74.7

TABLE 7.5
PERCEIVED CHANGES IN THE FAMILY/INDIVIDUAL AS A RESULT OF INTERNET USE – USER RESPONDENTS

PERCEIVED CHANGES	MALE	FEMALE	TOTAL
Helps build network/social contacts	56.7	35.6	51.2
Personal source of entertainment	49.3	41.8	47.3
Improves confidence/helps in personality development	34.9	24.1	32.1
Helps learn about local issues, establishments, facilities	9.8	5.5	8.7
Helps learn about government facilities (voter card/Aadhar) and entitlements	9.1	4.8	8.0
Helps learn about employment/business opportunities	8.9	6.8	8.3
Leads to negative changes	1.7	2.1	1.8

BOX: 7.1

Perceived benefits of the internet

The internet tells you about fashion, hairstyles and improves your communication. The way you speak changes. The internet certainly changes the way you think. It also gives you more confidence.
(Female internet user, 28, educated up to Standard 10, homemaker)

I have got a lot of knowledge from the internet, and the confidence that I can do things. Not everything, but I do feel I can do more things... I got to learn English because everything is in English if one does a search. My reading and writing improved. Earlier I couldn't speak much English but when I started using the internet I learnt some English... I think in the future everything will be online – including education... Exams too will be online.
(Male internet user, 20, unmarried, third-year Bachelor of Computer Applications student

fashion, cooking and tailoring as well as for information necessary for their children's school projects. Men were also found to be using the internet for small businesses. Carpenters and upholsterers reported downloading furniture designs, drivers have turned entrepreneurs thanks to the internet-enabled radio cabs that have been introduced in the city, and DJs and dancers are learning their craft online and uploading their creative outputs on the internet. Many of these case studies have been recorded by CCDS and are available on netpehchaan.in as stories or short films.

7.3 SOCIAL SUPPORT AS ENABLER

Among non-users who had heard of the internet, 73% said that they intended to use the internet in the future. However, when asked if the family would be supportive of their internet use, only 76% (of non-users who intended to use the internet in future) reported that they expected family support. Among the users, 80% had support from their families to use the internet, but a significant 19% said that either the family did not know about their internet use or that they did not have the support of their families (Figure 7.1). Nearly 57% of users sought help from friends when facing problems with internet use. Only 11% of users sought help from family members. They also reported seeking help from cybercafé managers (Table 7.6).

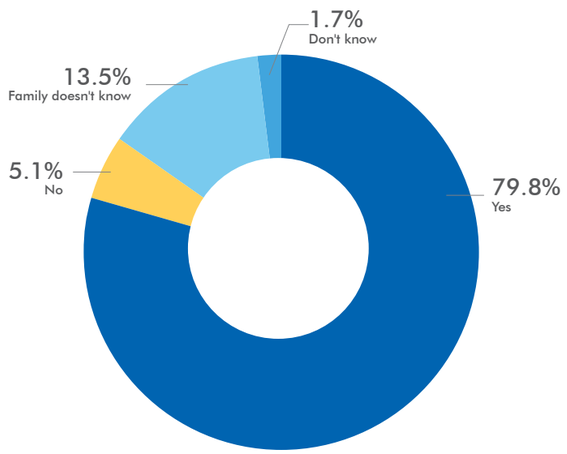


FIGURE 7.1
FAMILY SUPPORT FOR USING INTERNET
(% OF USER RESPONDENTS, n=564)

HELP SOUGHT FROM:	PERCENT
Family member/each other	10.5
Friends	56.9
Person managing cybercafé/mobile phone recharge voucher outlets/mobile repair shops	9.0
Customer care	7.3
Other	8.5
Do not face any difficulty	7.4
No support available	0.4

TABLE 7.6
SUPPORT FOR INTERNET USE
(% OF USER RESPONDENTS, n=564)

7.4. ENABLING FACTORS REPORTED BY INTERNET USERS

The CCDS survey asked users for their views on the special factors they felt had enabled them to go online.

Both men and women reported that having ICT skills, knowledge of English and being educated were enablers. Seventy-one percent of female internet users reported that having ICT skills was an enabler and 55.5% stated that having an education was an enabler. Fifty-one percent of men said that

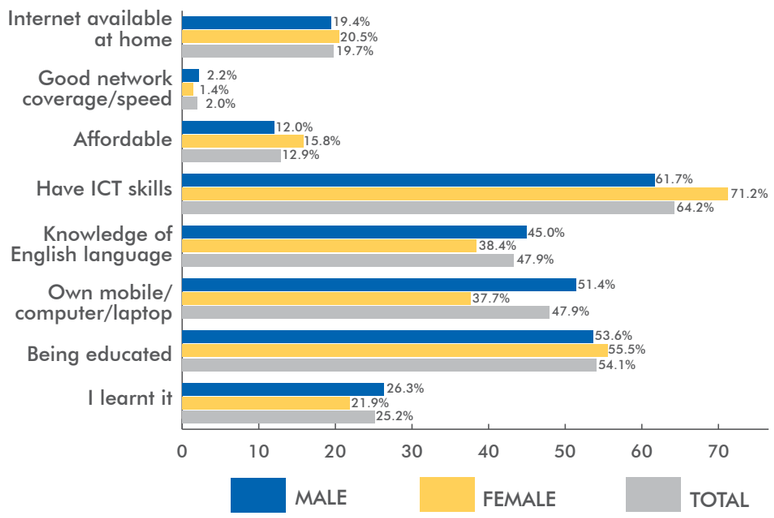


FIGURE 7.2
ENABLERS FOR INTERNET USE
(% OF USER RESPONDENTS, n=564)

TABLE 7.7
NEED FOR INTERNET FACILITY (USERS AND NON-USERS)

NEED FOR PUBLIC INTERNET FACILITY	PERCENT
Yes	97.0
No/don't know	3.0

TABLE 7.8
PREFERRED PUBLIC INTERNET ACCESS POINT (NON-USERS WHO HAVE HEARD OF INTERNET, n=502)

ACCESS POINT	PERCENT
Corporator's office/Anganwadi/Community hall	51.2
School	12.0
In the chowk area/Inside the settlement in a separate space	29.2
No such facility required in settlement	2.8

having a personal mobile phone or other internet-accessible device was an enabler. Fewer women than men reported a personal device as an enabler, but 37.7% of the female users said this was a factor that helped them get online.

Around 20% of users pointed out that the availability of internet at home was an enabler. Only 16% reported economic status as an enabler.

7.5 ENABLING INFRASTRUCTURE

A whopping 97% of respondents – users and non-users combined – stated they would like to have a public internet access point within their settlement. Nearly all of them agreed that the facility should be located in a public space within the settlement (Table 7.7). The respondents felt that public internet facilities were especially important given the problems associated with getting a wired internet connection. Table 7.8 shows the preferred public access points: 51% said they would like it to be located in the anganwadi or corporator's office or community hall. Others suggested a separate space inside the settlement.

7.6 FUTURE TRENDS

Awareness is a significant barrier in internet access. It is evident (see Figure 7.3 below) that those under 25 years are most likely to have heard of the internet even though they might not be using it. The percentage of non-users who have heard of the internet and those who are completely unaware (who have not even heard of the internet) gets reversed in the under-25 and the over-25 age-groups. This indicates that the task of raising awareness about the internet might need to be focused more on the older age-groups.

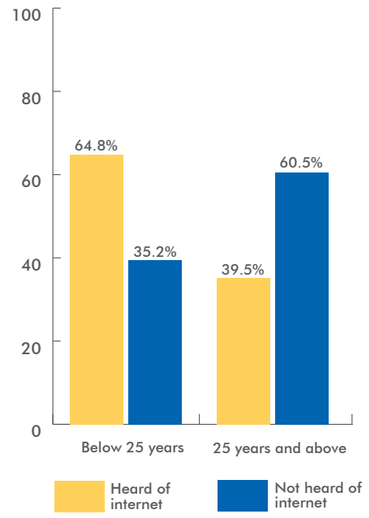


FIGURE 7.3
AWARENESS OF THE INTERNET AMONG NON-USERS BY AGE-GROUPS (n=1,070)

In the study settlements, it is the youth (below 25 years of age) who constitute the greatest number of internet users. This can be seen across all socioeconomic groups (Figure 7.4 to Figure 7.7). A significantly higher number of women under 25 years are online, compared to women over 25. Even among other groups that have shown a lower proportion of users, such as persons with no/primary education, those not working and those from the lower wealth quintiles, the proportion of users under 25 is much higher than in the above-25 age-groups.

Attitudes of the younger generation towards the internet are also very positive. Figure 7.8 shows the attitudes and perceptions of youth towards the internet. A large proportion say it has helped them network and make social contacts. It has also improved the quality of their entertainment. More than 30% feel that the internet can help in confidence and personality development, a factor that is very important for these young people who are socially excluded not only by virtue of living in slums but also because they have little education, economic means and, in many cases, because they belong to a marginalised community.

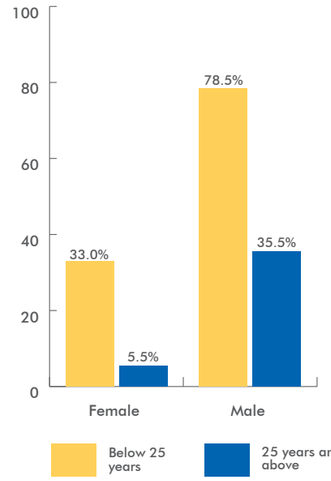


FIGURE 7.4
INTERNET USERS BY GENDER
(% OF USER RESPONDENTS, n=564)

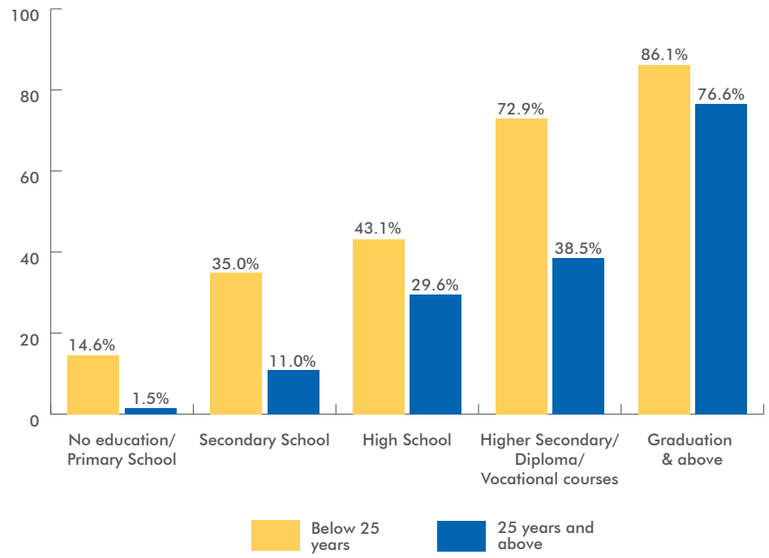


FIGURE 7.5
INTERNET USERS BY EDUCATION
(% OF USER RESPONDENTS, n=564)

FIGURE 7.6
INTERNET USERS BY OCCUPATION
(% OF USER RESPONDENTS, n=564)

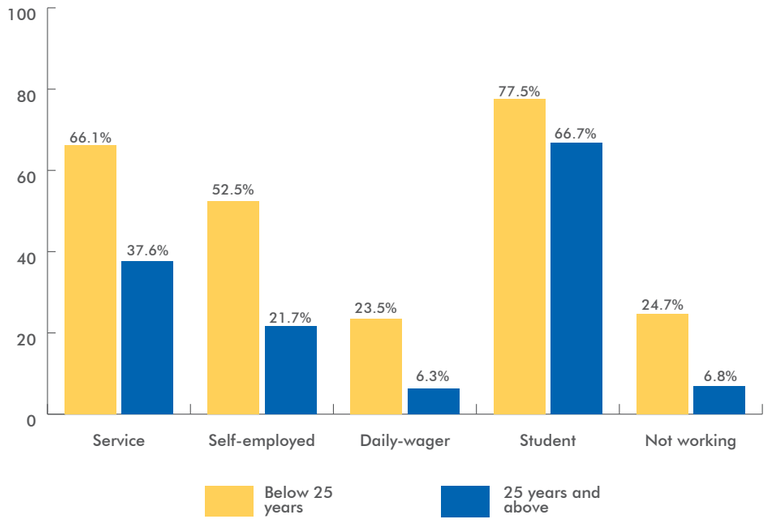


FIGURE 7.7
INTERNET USERS BY WEALTH QUINTILE (% OF USER RESPONDENTS, n=564)

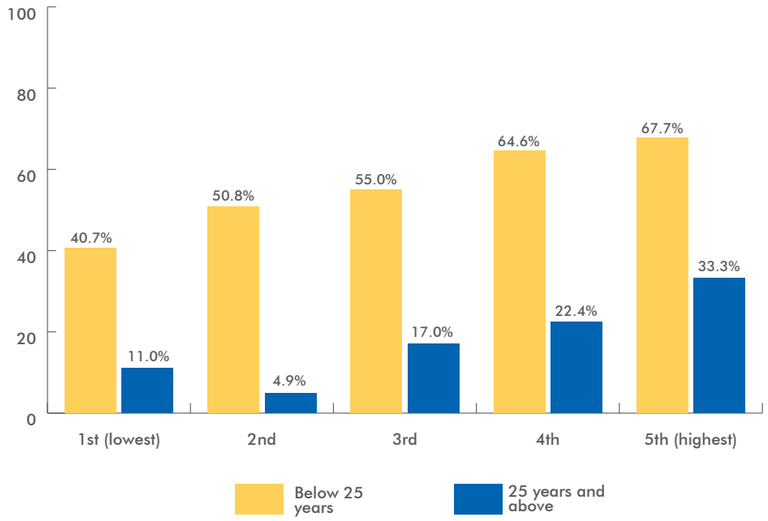
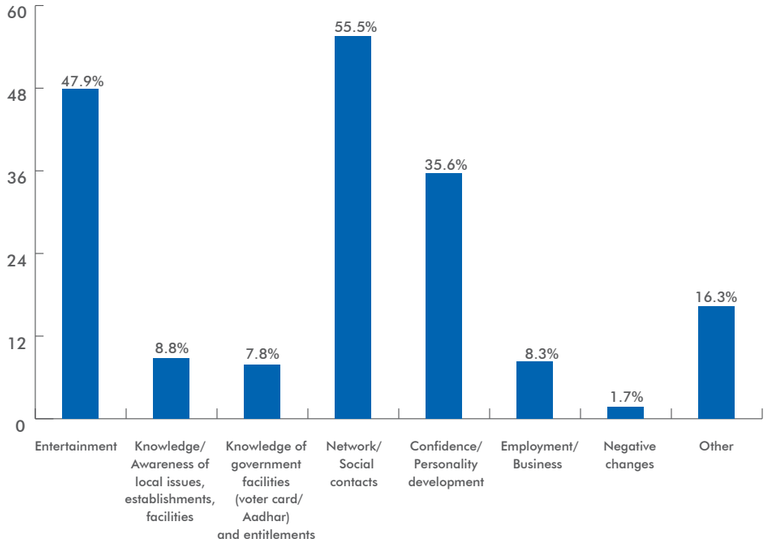


FIGURE 7.8
PERCEIVED CHANGES AS A RESULT OF INTERNET USE (YOUTH BELOW 25 YEARS)



7.7 SUMMARY

There is a strong aspiration to go online amongst non-users in the study settlements. The majority of respondents – users and non-users alike – stated that the internet was as important for them as any other basic amenity such as electricity or water supply.

To address infrastructure gaps in internet access, respondents voted overwhelmingly in favour of public access points in their settlements.

Asked what factors enabled them to become internet users, respondents pointed to the importance of being educated, having ICT skills, and having access to a personal mobile or internet within the household.

Users also said that the internet had made changes to their lives. It helped them network and build social contacts, gave them new avenues for entertainment, and boosted their confidence and personality. However, less than 10% reported any use of e-governance services, any impact on growing their business or livelihood or any enhanced knowledge of local issues and problems through the internet.

There are clear indications that greater numbers of younger internet users (under-25) are overcoming barriers of gender, education and economic deprivation to get online.

In the next chapter, we examine the efforts of the state and civil society to make Pune a digitally inclusive city.

Box 7.2
Subjects in the Network Society

A detailed study of internet access among young men in low-income Pune settlements illustrates how the net is used to break through several levels of social exclusion

Eyes firmly fixed on the skyline of the expanding metropolis, replete with mobile cranes hovering over under-construction towers, Sanjay[1] lets his thoughts wander. 'I would often check the list of India's richest people online,' he says, as he turns his attention to the ill-kept stadium where kids hang out doing nothing in particular. 'One day I came across a write-up on Bruce Lee, who was once among the world's richest people. It described how Lee had decided to distribute all his wealth to the needy instead of giving it to his son. That set me thinking... What is the use of amassing a lot of wealth?' he says, slipping his Micromax A27 phone into the pocket of his trousers and gesturing to me that it is time to leave.

Sanjay works as an AutoCAD designer at a gear-manufacturing unit in the MIDC industrial area in Bhosari, part of the Pimpri-Chinchwad municipality. At 27, he has none of the trappings of most other men his age in the settlement. He does not seem overly concerned with his appearance; in fact, in his ill-fitting shirt and trousers he is a far cry from the jeans-and-T-shirt culture that seems to have overtaken his counterparts. His hair is oiled and combed in place, and he sports a moustache that belongs to the '80s.

Sanjay's foray into cyberspace began at a time when mobile phones were becoming a common sight in various parts of the country. Over the last decade, the mobile phone has played a pivotal role in enabling the 'common man' to access the net. All 18 men interviewed at length for this report accessed the internet primarily on their mobile phones. Only two of them had another device connected to the internet at home. A few were able to access the net on their office computers, but were reluctant to do so owing to privacy issues.

While most entrants to the online world in the last three or four years started by using a smartphone, those who adopted the technology earlier went to cybercafés. Sanjay, who moved to Pune after finishing his secondary education in a village near Solapur, recalls his first visit to a cybercafé clearly: 'My uncle's son was visiting Pune and suggested we go to a cybercafé. I went with him and got hooked... Those days Yahoo was popular. I created an account. My cousin showed me how to chat and I befriended a woman abroad on Yahoo Messenger. I would figure out whether she was online by looking for the green dot. We would chat often, but in Hindi[2]... If I had the money, I would spend the entire day at the cybercafé.'

Yogesh, who works as an administrator in the corporator's office in Sanjay's settlement, also began his online journey via Yahoo Messenger:

'Back in 2002, I would visit the cybercafé to play computer games, and learnt how to use the internet by looking at others around me. Almost immediately, I started chatting on Yahoo Messenger. It felt very good.'

The pull of the internet for these men was curiosity and novelty. More than a decade on, although both factors remain important, the vehicles youngsters in low-income settlements choose to journey into the online space have changed. Kishore, a 17-year-old school dropout who helps his uncle run a mobile-repair-cum-download shop in the same settlement, says his first brush with the net was via Facebook. 'I would keep hearing friends talk about Facebook, and tried opening the site on my Nokia C1, sometime in 2012. I got so hooked that I would initially spend four to five hours every day on it.' He has as many as four Facebook accounts.

Bollywood was another avenue through which young people were introduced to the net. Suraj from Pune's Aundh area says he would spend all his pocket money at the cybercafé when he was in Class 7 (in 2007), downloading Bollywood songs and videos: 'I would get bored at home as I was not interested in studies. The internet was a good way of passing time, and I would regularly download songs and videos and copy them onto a pen drive... Once I got a mobile phone, in Class 8, I created a Facebook account and would chat with girls all night long.'

Although entertainment – be it Yahoo Messenger, Facebook, songs or pornography – was the entry point into the virtual world for most of these men, they soon tired of it. Says Kishore, who helps customers create Facebook accounts for a fee at his uncle's shop in the settlement: 'Within four to five months, I lost interest in chatting on Facebook as there was nothing much to chat about.' Others too described a similar ebbing of interest in the entertainment aspect, but to varying degrees and at various points in time.

What is clear, however, is that these initial encounters marked the beginning of a journey – a journey into the world of 'net packs', 'selfies', 'profile pictures', 'likes', 'comments' and 'shares'. Today, their lives encompass the real and the virtual: 'life' is captured on screen, and from the screen flows 'life'. Sociologist Manuel Castells refers to this as the 'network society': a society 'built around microelectronics-based information technologies'[3] (Castells 2005); a society where conversations among friends in the neighbourhood happen via WhatsApp, and face-to-face conversations revolve around jokes shared on this messenger service.

Real virtuality in the network society

What characterises the network society, says Manuel Castells, is 'real virtuality'. 'We live in a culture of not virtual reality but real virtuality because our virtuality – meaning internet networks – is a fundamental part of our reality,' he says in an interview[4] (Mason, 2012).

My interactions with young people in the basti bear out this notion that internet networks are a fundamental part of their reality. For Suraj, Facebook is the repository of truth: the images he shares via the social networking platform stand testimony to his relationship with a girl. The girl's brothers can't deny that their sister is in a relationship they're opposed to on religious grounds because the 'proof is on the net'.

In the same settlements there are middle-aged men who use the internet for just one purpose: to check the results of matka[5]. They gather at the tea stall every evening, and get a youngster with a smartphone to check the results from URLs written on tiny chits of paper.

Reality, here, is immersed in the virtual, in line with Castells' concept. While explaining how the network society operates as a 'cultural system' characterised by real virtuality, the sociologist writes: 'Real virtuality is a system in which reality itself (that is people's material/symbolic existence) is entirely captured, fully immersed in a virtual image setting, in the world of make-believe, in which appearances are not just on the screen through which experience is communicated, but they become the experience'[6] (Castells, 2000: 404). This appearance-experience conundrum was apparent in the conversation I had with a group of young boys in a Kondhwa settlement. The discussion took place in a Buddha Vihar, where the boys hang out. Barring a core group of six boys, others kept streaming in and out of the conversation, in this community space.

Life's on screen

Satish, in his mid-20s, took the lead in narrating the story while the rest chipped in with minor details, amply demonstrating that everyone was aware of the story and its contours, and was enjoying the narration.

'We have a friend, and he had fallen in love with a girl a few years ago. He proposed to her, but the girl responded with a casteist slur; she made it clear that since she was a Maratha she did not want to associate with a dalit. Our friend was very upset and vowed revenge. He got a young man he knows to woo the girl and have sex with her. One day this man shot their sexual encounter on his mobile phone. He had placed it on the table in such a way that it would record everything. You could see everything in the video.' The video was later used by a third man to manipulate the girl. It had obviously gone public.
The story and its narration raises a host of issues, including the extent to which reality is immersed in a virtual setting. It's clear that the internet has become 'so comprehensive, so diversified, so malleable that it absorbs in the same multimedia text the whole of human experience: past, present, future,'[7] (Castells 2000: 404).

This hybridity of appearance-experience, so characteristic of the network society, was apparent in the lives of other respondents too. For Tarun, a resident of another Kondhwa settlement, tweaking appearances (virtual image-setting) is a means of ensuring a better experience (reality). Tarun describes himself as a student on Facebook, though in reality he works at a shop in the neighbourhood. His reason for this is simple: it draws in many more women.

'If I were to state that (I work in a furniture shop) on Facebook, the friend requests I get would cease to come

my way, and the requests I send would not be accepted. Girls like to associate themselves with students – that's why I have called myself a student on Facebook.'
Tarun realises that a better appearance leads to a better experience. Therefore, he ensures his style quotient is in place in every picture he uploads on Facebook: he wears a pair of aviator glasses and, during one of our meetings, talked about how he ensures that every new pair of glasses resembles the earlier one.

After a recent visit to Goa, Tarun changed his WhatsApp profile picture to one that showed him sitting beside a bikini-clad fair-skinned foreigner. For the self-confessed Casanova, this is as much an act of bravado as it is a way of enticing female friends into conversation. Flirting, says Tarun, is almost impossible without the internet, particularly Facebook and WhatsApp.

Once conversation is initiated on one of the platforms, the fact that it is not 'real' gives him some elbow room. Tarun says: 'The internet allows you to be daring. You can say what you want – I like this and that about you – without fearing a reaction because the girls to whom you say it do not know you and may be living far away... The first step, once you find someone you like, is to check whether the account is fake or real. Once this is done, I send them a friend request, and, upon acceptance, start chatting with them. Then I take their number and connect with them on WhatsApp. From here, the road to meeting them and calling them to places of your choice is easy. The trick is to say good things about the girls; saying good things brings the girls closer. Then you can call them to meet you in the garden or the college or some other place, and you can do what you want.'

Very little of this activity – of connecting with girls and flirting – is visible on Tarun's Facebook timeline though. He says he uses Facebook Messenger to go about his flirtations, since it allows for privacy. 'If we don't use Messenger, those who know us would get to know about our activities. People around us may start blabbing about it,' he says by way of explanation, making it amply clear

that activities in the online world are tempered by the effect they may have on real people, in real situations. In other words, the network society works around already existing hierarchies and power equations.

This is evident in the words of Arun, a Maharashtra Navnirman Sena (MNS) party worker who lives in the same Kondhwa settlement, a couple of lanes away: 'The local corporator is an upper-caste person, and I am generally wary about criticising his work on social media. This is because he may take it as an affront: how can a person from a lower caste publicly criticise someone who sits far higher in the caste hierarchy?'

Arun's wariness about commenting on the upper-caste corporator's work shows how conscious he is that caste does in fact play a role even in the virtual image setting. While this consciousness may have limited the benefits the MNS worker can draw from the internet, there is little doubt that access has widened his horizons.

'I had recently organised an eye camp in the locality, and had put up information about it on Facebook. The number of people who attended the camp shot up considerably. I had people telling me that they received word about the camp when their children told them about it after seeing the post on Facebook…The internet helped me take my social work to a much larger group of people.'

For those like Arun, the ability to reach out to greater numbers of people without relying on traditional media networks is one of the major positives of the internet. In the words of Castells (2005 p 38) again: 'As the network society diffuses, and new communication technologies expand their networks, there is an explosion of horizontal networks of communication, quite independent from media business and governments, which allows the emergence of what I call self-directed mass communication. It is mass communication because it is diffused throughout the internet, so it potentially reaches the whole planet. It is self-directed because it is often initiated by individuals or groups by themselves, bypassing the media system.'[8]

This expansion of one's reach, however, does not bypass some of the deep-set hierarchies and divisions in society, as mentioned above, although few are aware of hierarchies being a factor online. Suraj from Aundh confesses that although he considers the internet a repository of truth, his online activities are measured, as he does not want to offend those in 'superior' positions in his everyday life.

In a complicated relationship with a girl from another religious community, Suraj says:

'Her family is opposed to our relationship and has sent her off to a relative's place so that she does not get a chance to meet me. I have uploaded our picture on the site as it is proof of our relationship. The presence of the picture (he's ensured her face is not revealed) in a public forum means that her family, especially her brothers, cannot deny our relationship among friends and relatives present on Facebook.'

The fact that Suraj is a dalit is at the centre of the girl's family's reluctance to agree to the relationship. 'People here have a very bad habit of telling the family things like, "See what your girl is doing. The boy is from Jai Bhim. This is not right",' he explains.

It is this aspect that prevents him from revealing his girlfriend's face in the pictures: if he did this the entire neighbourhood would come to know that a dalit boy was in a relationship with a girl from another community. Hence, a paradox: Suraj must use the internet to claim the 'truth' about his relationship, but at the same time he cannot reveal who exactly he is in a relationship with for fear of overturning strong social hierarchies.

The logic of the network

The network society is characterised by information flows via microelectronics-based networks. This information flow, the logic of the network society, affects even those who are not online.

This was borne out in a discussion I had with a group of youngsters in Bhosari. The conversation revolved around Ajit, a youth in his late-20s who works as a designer with a private firm. Ajit is a self-proclaimed critic of the internet and is famous in his locality for destroying the smartphones of friends and relatives, as he believes they spend way too much time on them at the cost of face-to-face contact. In so believing, he is only confirming himself as a member of the network society.

'Kids these days get exposed to all kinds of things because of the internet. There is a proper age for everything, but the internet has broken all that down. Kids in Class 2 or 3 can now access pornography, and people are only keen on looking for useless things online. They search for ways to make money illegally… they search for information on Dawood Ibrahim… for photos and trivia about Bollywood heroines. They don't bother to look for information about APJ Abdul Kalam, or about how Sachin (Tendulkar) reached where he did.'

Ajit's argument about the damaging effects of the internet – of the lack of control over what children are exposed to at an improper age – flags one of Castells' main arguments about the network society: that it breaks down previous hierarchies, as people move from communicating within vertical organisations (like the church and the office) to horizontal networks of communication.

The conversation with Ajit happened at a roadside tea stall, and the lack of a controlled environment meant that anybody who dropped in to have a cup of tea or exchange pleasantries or try their hand at a game of cards chipped in. Soon, passersby were putting in their two bits about the internet.

Rather than disturbing the conversation, however, it threw up some interesting information. People spoke about how the practice of matka has been transformed by the internet. The placing of bets was now possible online, but for that one needed to visit a vendor located far away.

The inhabitants of Bhosari preferred buying 'actual' tickets locally. But they relied heavily on the internet for the results. A man in his mid-30s, who was sipping tea at the stall, put it like this: 'The results of different games are announced at specific timings. Earlier, we would have to go to the vendor, whose shop is far away. These days, one person checks the results on the website and informs the others. Many of us do not have smartphones; we rely on the select few who do. They help us get the results in no time.'

Others at the shop had similar things to say. Most had never accessed the internet, yet were immersed in the information flows characteristic of the network society. If these older men (most were over 30) had more time and money to spare, gambling would probably be their point of entry into the online world.

Catalyst of upward mobility

For most respondents, knowing English, or not knowing it, proved crucial in their negotiation with the net. In these circles, as in most parts of the country, knowledge of English is aspirational and is seen as key to moving several notches up the socioeconomic order. The areas in and around the three settlements where this study was conducted sport several makeshift hoardings and posters advertising spoken English courses.

Yogesh mentioned how lack of knowledge of English was a detriment in the early days of accessing the internet. He explains how he would access the net with a friend who knew English by his side, as he wasn't able to understand what was written on the web pages. This aspect is highlighted in Sanjay's comment about gauging if a person was online by looking for the 'green dot' (denoting the online status). In the absence of knowledge of English, respondents often figure out commonsensical ways of working around the net. Over time though, this changed and they began understanding the language better.

Sitting on the terrace of one of the boys' homes, a few days before Diwali, with crackers going off all around, one young man, Rajesh, explains how this came about. 'We did not know English well some years ago and would make innumerable spelling mistakes. But then I realised that once you start typing a word on the internet, the rest of the word appears beneath it. For instance, if I type 'wh', the internet completes the rest of the word, like 'what' or 'where'. This has helped us improve our English spelling.'

Rajesh's friend Salil, a 17-year-old boy, elaborates, helped along by Akshay: 'Earlier, we did not know the meaning of words like "comment" and "share". But we kept seeing these words on Facebook. Over time, looking at the context in which they were appearing, we began to understand what they meant; as a result, when someone uses these words in everyday conversation, we know exactly what they mean. We also use these now as part of our conversations.'

Tarun adds that the word 'notification' was unheard of before Facebook came into the picture. 'Initially, we were at a loss when we saw the word. But then we understood that it appeared when someone posted something or commented on something. It told us something new had happened on our or our friends' Facebook page.'

This knowledge of English has enabled them to use the language in posts on Facebook and WhatsApp, although such posts don't really fare too well as far as grammatical correctness goes. Comprehension too is sometimes difficult for the researcher. For instance, a young man who helps his parents run a tea stall in Bhosari, posted this message on WhatsApp: 'What happens ur not cam to what's online… so by friend…'

Most of the time, they use functional words like 'hi', 'hello', 'chill' and 'great' in their online activities. Their Facebook posts, primarily in Marathi typed in the Roman script, are peppered with these words, reflecting how the internet aids partial knowledge of the English language.

Of late, some have started visiting e-commerce sites. Krishna mentions how his bank account is internet-enabled, and how sometimes friends use it to pay for stuff online. 'I recently ordered a pair of goggles on Flipkart,' he says.

The goggles are perhaps Krishna's way of fitting into a society that has traditionally excluded people like him. Being low-caste, from a community of waste-pickers, and a slum-dweller, has meant various levels of exclusion. That pair of goggles may have helped break some of the barriers.

~ Aritra Bhattacharya

ENDNOTES

1. All names changed to protect the interviewees' privacy

2. Sanjay did not know English then, though he now has rudimentary knowledge of the language

3. 'So, what is actually new, both technologically and socially, is a society built around microelectronics-based information technologies. To which I add biological technologies based on genetic engineering, as they also refer to the decoding and recoding of the information of the living matter.' Manuel Castells in 'Informationalism, Networks, and the Network Society: A Theoretical Blueprint' in *The Network Society: A Cross-Cultural Perspective*, edited by Manuel Castells. Page 7

4. See http://www.bbc.com/news/business-20027044. Retrieved on November 11, 2014, 2:50 am

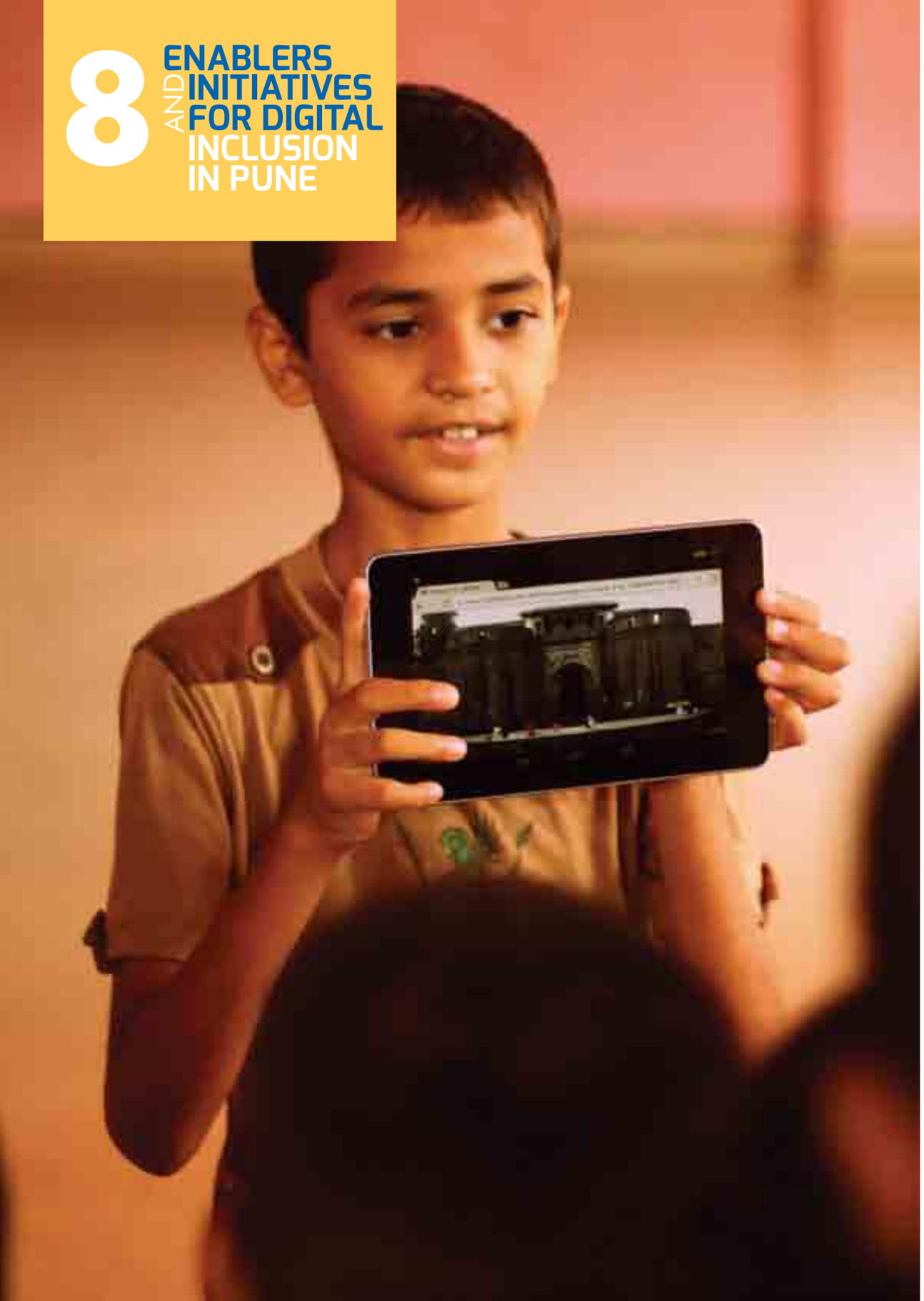
5. Illegal gambling, prevalent in parts of Maharashtra

6. Castells, M (2000), The Rise of the Network Society. Vol 1, 2nd ed. Malden, MA: Blackwell. P 404

7. Castells, M (2000), The Rise of the Network Society. Vol 1, 2nd ed. Malden, MA: Blackwell. P 404

8. Castells, M (2005), 'The Network Society: From Knowledge to Policy'. In Castells, M and Cardoso, G (eds). *The Network Society: From Knowledge to Policy*, Washington, DC: Center for Transatlantic Relations, Paul H Nitze School of Advanced International Studies, Johns Hopkins University. Available at: http://www.umass.edu/digitalcenter/research/pdfs/JF_ NetworkSociety.pdf

8 ENABLERS AND INITIATIVES FOR DIGITAL INCLUSION IN PUNE



8.1 INTRODUCTION

The previous chapter has pointed out some of the factors that enable internet access amongst the study population, including higher education and possession of ICT skills, financial resources to support the cost of infrastructure/device as well as internet services, easy access to enabling infrastructure, particularly for women, and quality/speed of internet service.

This chapter documents state and civil society policies and initiatives aimed at providing these enablers – especially infrastructure provisioning and public access points, e-governance services, and digital literacy training – with particular reference to socially-excluded populations in the city.

Section 1 introduces the chapter. Section 2 provides an overview of Maharashtra state policies and initiatives aimed at digital access, digital inclusion and online delivery of public services. Section 3 discusses the ambitious universal access plan Unwire Pune. Sections 4 and 5 highlight e-governance and digital inclusion policies and practices adopted by the local administrations – the Pune Municipal Corporation (PMC) and Pimpri-Chinchwad Municipal Corporation (PCMC). Section 6 discusses public internet access provisioning in the city, by private enterprise and public-private partnerships. Section 7 details initiatives for digital literacy capacity-building at the adult and school levels. The chapter ends with a mention of some civil society initiatives aimed at digital inclusion and empowerment at the community level.

8.2 MAHARASHTRA'S E-GOVERNANCE INITIATIVES

Maharashtra's e-governance policy was published on September 23, 2011 and the implementation plan issued on April 10, 2012 (Government of Maharashtra [no date]).

The policy provides for synergy across various departments of the state government by developing a core e-governance infrastructure that includes a central data repository, a state-wide area network, and various online services such as a payment gateway for payment of taxes. This infrastructure is to be used to promote delivery of services to citizens at their homes or through a network of common service centres (CSCs) which are attended by staff. It also aims to encourage increased public participation in governance through online interfaces. In this policy, 0.5% of the Plan and Non-Plan budgets of all departments is mandated for e-governance (Directorate of Information Technology, Government of Maharashtra, 2014, p 43).

The MahaOnline portal was set up in 2010 as a joint venture between the government of Maharashtra and Tata Consultancy Services Ltd to standardise the delivery of government-to-citizen (G2C) services across all districts. Twenty-five state departments have been integrated with MahaOnline. Marathi has been made the first language for all e-governance services. The Directorate of Information Technology, along with the Centre for Development of Advanced Computing, Pune, has set up a centre of excellence for Marathi, which works to understand the language requirements for various projects, down to the taluka level, and suggest web and desktop applications supporting Unicode Marathi. The Yashwantrao Chavan Academy of Development Administration in Pune has been given primary responsibility for training government personnel in e-governance applications.

Sixteen revenue services, including for issue of certificates of income, residency, age, nationality, domicile, solvency, birth and death, have been standardised across all districts. Application forms, supporting documents, approval processes, fees and certificate formats have been made uniform. E-tendering has been made mandatory for all state departments and government agencies for tenders of more than Rs 10 lakh (State of E-governance in Maharashtra, 2014).

In 2012, the office of the Inspector General of Registration and Stamps put all registration-related data – for stamp duty, document registration, conveyance, valuation of property, marriage etc – on a central server through the Stamp And Registration Assistance Through Helpline Information (SARATHI) system. In 2014, e-registration was introduced for leave and license agreements.

In August 2014, the Maharashtra government introduced an online system to maintain updated and accurate land records. Initially introduced in one taluka in each of the 35 districts of the state, the system was to cover the entire state by October 2014. Also rolled out state-wide in 2014 was the Maha Digital Locker plan, a citizens' online repository of documents, certificates and degrees commonly required for application to government services, entitlements or jobs. This is expected to save citizens repeated visits to government offices in order to get these documents. Government offices are connected to the Digital Locker, thus speeding up the verification process (Nambiar, 2014).

However, the Maharashtra e-governance policy does not mandate any special efforts or initiatives for universal internet access, or for access for the urban poor and marginalised. The PMC and the PCMC have been more proactive in this regard.

8.3 UNWIRE PUNE: UNIVERSAL ACCESS AT THE CITY LEVEL

As far back as 2006 the Unwire Pune project planned to offer wireless broadband services all across Pune and Pimpri-Chinchwad. This ambitious project was conceptualised by the PMC, with Intel Technologies Ltd as the chief technology and programme management consultant and Microsense as developer of the network. Intel was to deploy the Wi-Fi and WiMax[1] technologies required, with 10 WiMax towers and 800 Wi-Fi hotspots across the city. The PMC had set aside Rs 7 crore for the project. The initial plan was to give free access to low-bandwidth users and charge for high-bandwidth usage.

The then Pune municipal commissioner, Nitin Kareer, whose brainchild the Unwire Pune project was, is quoted as saying, 'As much as providing basic facilities such as sanitation, sewage, roads, streetlights, health, etc, PMC would like to provide basic IT infrastructure such as stable internet connectivity to its citizens to enhance their overall outlook by exploiting the vast information pool and advantages of internet. This will surely be a huge differentiator for Pune city and will enhance the status of moving Pune towards becoming the IT capital of the country,' (Kakroo, 2013).

The plan, however, never got off the ground.

Critics worldwide have asked whether governments should be getting into the telecom business at all. Some feel that public networks distort the market by competing with private firms. Others argue that local governments cannot fix potholes, let alone run telecom networks. Yet others worry that governments may subsidise the cost of private sector entry, benefitting private providers rather than the public.

On the question of public provisioning of high-quality and affordable internet services to the digitally, socially and economically excluded, PG Bhandare, deputy general manager of Bharat Sanchar Nigam Ltd (BSNL), Pune, said in an interview for this report, 'BSNL would be glad to provide cheap internet connections for the economically weaker sections if the municipal corporation were to waive or provide a substantial discount on the reinstatement charges,' (reinstatement charges are levied as the cost of repairing roads after they are dug up by telecom providers for cabling).

According to Bhandare, BSNL Broadband has tied up with Quadgen Wireless, a US-based company, for providing wireless internet services across a number of cities in India. Fifty locations have been identified in Pune for internet hotspots. These will be paid services, with users buying a scratch-card available at local shops. Bhandare advocates the expansion of such hotspots to areas where economically weaker sections reside, with the urban local bodies subsidising the infrastructure costs of private companies.

8.4 E-GOVERNANCE INITIATIVES OF THE PMC

1. Common Service Centres (CSCs) (with staff) across the city, managed on a public-private partnership basis, where citizens can make online applications for various public services and schemes.
2. Online services for property tax payments, building permissions, registration of complaints, amongst others.
3. Online citizen feedback mechanism. This website-plus-app project in collaboration with Janwani, a Pune-based group concerned with civic issues, records citizens' experiences with PMC departments so that corrective action can be taken. Civic officials have been directed to use mobile applications like WhatsApp to communicate with the public. Mobile numbers of key officials have been put on the PMC website (*Times of India*, September 23, 2014).
4. App to provide information on women's welfare schemes. This was developed in 2015 by the Urban Community Development Department (UCDD). Since 2000, the PMC has introduced 18 welfare schemes for educational and entrepreneurial skills of women from underprivileged families. The app uses a Marathi interface and provides a link for download of application forms. The PMC is working on more such apps supporting PMC services (*Pune Mirror*, March 19, 2015).
5. Online application for schools. Additionally, Pune has introduced an online application process for admission to government and government-aided schools under the Right to Education Act's 25% reservation for students from economically-backward classes. Helpdesks are set up by the PMC at select schools every year to assist parents in submitting their applications and documents online. The Regional Transport Office in the city launched an online appointment system in 2014 which requires applicants to reserve a date and time slot for taking driving tests.

6. Website to demystify the civic budget. In 2016, a website will be launched to demystify the civic budget, in collaboration with Janwani in Pune and another civic group, Janagraha in Bengaluru. The portal will aim to inform citizens on how their money is utilised, and enable them to comment on and participate in the annual budgeting process of the civic body through a dedicated web portal maintained by Janwani.

The CSCs have the potential to be especially useful to the urban poor. However, there is no information available on the extent to which these e-services are actually accessed by, and benefit, economically weaker sections. Janwani acknowledges that users of the participatory online process that it initiated are from better-off groups.

In most years the PMC has allocated less than 0.5% of its budget to e-governance; the actual spending may be less than the budgeted amount. However, increased budgetary allocations for ICT are proposed from the Financial Year 2015-16. Plans are also being made to e-link over 40 departments of the corporation so that, for instance, if the building permission department grants permission for a construction, the property tax department is automatically notified and alerted.

8.5 INTERNET INITIATIVES OF THE PCMC

8.5.1 E-governance in the PCMC

The PCMC's e-governance project, initiated as part of mandatory reforms under the national mission mode project on e-governance in municipalities within the ambit of JNNURM, won the National e-Governance GOLD Award in 2011-12, and is considered a model for several city/state governments.

The PCMC's integrated e-governance system provides several services online: citizens can apply for and receive birth/death certificates online; hospitals can register birth/death events on the PCMC portal, with an automated approval workflow and medical officers signing each record digitally; citizens can view and pay property tax online; business license applications and approval workflows are also online, with payment accepted at CSCs. Citizens can submit plans online for building permissions and these are scrutinised automatically for compliance with regulations. The single-window system also issues no-objection certificates from the fire, garden and drainage departments (E-Governance, PCMC [no date]).

'The largest benefit of the new integrated e-governance system is noticeable in procurement... All tenders are approved and digitally signed and published online. Bids along with relevant documents are accepted online only and are secure and encrypted to prevent fraud and manipulation,' (E-Governance, PCMC [no date]: p15).

The System of Assisting Residents and Tourists through Helpline Information (SARATHI) was launched in August 2013 to help citizens register online complaints regarding civic services. The SARATHI helpline (tel: 88880 06666) receives an average of 150 calls and 400 visits per day from the 19 lakh residents of Pimpri-Chinchwad (Shelke, 2014). These complaints relate to birth and death registration, water supply, non-functioning of street lamps, missing drainage covers or overflowing garbage, dead animals, cleaning of roads, etc. Some 4.18 lakh people had used SARATHI as of May 2015 (*Times of India*, May 17, 2015).

A team of seven handles SARATHI, working in two shifts between 7 am and 10 pm under the supervision of two senior civic officers. Queries are attended to immediately, while complaints are registered online, voice-recorded and forwarded to the concerned department head for action. After fixing the problem the relevant civic official is to call the complainant. A flowchart of each call is maintained and monitored online by senior officers. The municipal commissioner can access any complaint online, in voice or written format.

In August 2014, the PCMC launched eight touchscreen e-kiosks at public locations, in order to reach out to those who were not online and did not know the helpline number. At these unmanned kiosks, which are run with sponsorship from banks, citizens can get information about public services and also register their grievances. The PCMC has 24 CSCs at present and plans to scale them up to 64, one in each ward. It also plans to tie up CSCs with the Maharashtra state government's e-seva kendras so that all governance services can be accessed by citizens at a single location.

8.5.2 Public Wi-Fi project in the PCMC

The PCMC is part of a consortium (which includes funding partner Ford Foundation, tech partner Telxess and research partner CCDS) that is implementing India's first public Wi-Fi project covering an entire slum settlement. The pilot project provides free Wi-Fi access to all 1,300-plus households in Mahatma Phule Nagar. This settlement is one of CCDS's research locations and was selected by CCDS for the pilot. A training centre has been set up within the basti to provide internet access on computers as well as capacity-building/training in computer and internet basics (see Box 8.1). The PCMC is open to extending the Phule Nagar public access project to several other slums.

8.6 PUBLIC INTERNET ACCESS POINTS

As noted in the chapter on modes

of internet access, there are almost no wired internet connections in low-income settlements and few computers/laptops connected by dongles. Those who are online are mostly connected on mobile phones with data access, with the majority using inexpensive 2G packs. A number of private telecom service providers as well as the state-run BSNL offer wired broadband services to Pune and Pimpri-Chinchwad. Often, their cables run just 50-100 metres away from the entrance to a low-income settlement. Many cable TV operators who cater to low-income households also offer wired broadband through their cables. But charges for wired broadband start at roughly Rs 600 per month, which makes it unaffordable for most low-income households. Cable TV operators as well as some private telecom providers in the city, interviewed by CCDS, state that there should be a minimum of 40-50 households in a basti asking for wired broadband before it is worth their while to extend their services into the settlement. This demand is not forthcoming, since consumers find data access on their mobile phones more affordable and convenient, even if it is slower.

One cable TV provider in Janata Vasahat stated that he used to provide six-seven wired internet connections in the settlement earlier. He has withdrawn the service since, 'I did not get enough response for broadband connections as it is not affordable to people here. People prefer internet on mobile or on dongle because it is cheaper'.

8.6.1 Cybercafés

In the absence of public internet access points within their settlements, people who do not have computers for high speed internet access go to cybercafés when they need to submit online forms, download data for school projects, apply for jobs, government entitlements or college admissions, make printouts, scan images etc. Those who have mobile data access but need to use the internet on the computer for more interactive applications also depend on cybercafés.

Ten years ago the city had one or two busy cybercafés on every street, offering internet access at hourly rates. Mobile internet access over the last few years has cut into their clientele and forced many cybercafés to down shutters. By 2014, only 230 cybercafés remained (Rohatgi, 2014).

This decline is in keeping with national and state trends. According to the Cyber Cafe Association of India, there were 27,444 cybercafés in Maharashtra in 2008, but only 14,000 by 2014 (Rohatgi, 2014). Besides declining business after the mobile internet boom, cybercafé owners report security surveillance and red-tapism as reasons for closure.

Resource-poor users such as those from the study settlements are the hardest hit by the closure of cybercafés and the absence of any other public access points. Coffee shops, airports, the campuses of elite educational institutions and similar Wi-Fi environments do not cater to the needs of the low-income populations under study.

None of the study settlements has a cybercafé within the basti. In most cases a cybercafé is located 500 metres to 1 km away, a distance that women in particular are not always allowed to travel. Charges range from Rs 20 to 40 per hour. Clients from the study settlements report that they use the cybercafés for social networking, gaming, e-mailing and downloading songs, but equally for printing and scanning facilities, and for school projects, submitting forms and booking tickets. Additionally, the staff who run these centres serve as information intermediaries, mentors and translators for users who are unfamiliar with the internet or need translation from the English language.

The owner of one cybercafé near a large settlement in the city says that approximately 25% of his clientele is from Wadarvadi, and the rest from middle class localities nearby. Fourteen computers share a 1.5 mbps connection from a private telecom provider, so downloading is slow and heavy files cannot be downloaded at all. Most of the clients from the settlement are men in the 18-30 age-group. They come in to play online and offline games, check their Facebook accounts, download songs, and fill online forms. Some come to submit PCMC online tenders. Just two or three girls from the settlement come in regularly, mostly to research school/college projects or fill admission forms. They use Facebook only after they have finished their work. One young girl comes in regularly to apply for government jobs. The girls don't have mobile phones, though many of the boys have smartphones. Many of these customers need assistance in filling online forms, and school drop-outs have greater difficulty in accessing the internet.

A strange class system has divided this cybercafé. Female clients from the middleclass neighbourhoods around the cybercafé have objected to the Wadarvadi boys peeping to see what they're doing online. So now, one row of computers is for Wadarvadi residents and another row for other clients. This system, the owner says, ensures that the middleclass girls are not troubled by the Wadarvadi boys. The owner himself sees the customers from Wadarvadi as troublemakers who argue over payments and are a nuisance to other customers. He demands identity proof and has closed circuit TV at the café to regulate the activities of his customers.

8.6.2 Common Service Centres

The city administrations in Pune do not run any public internet centres where individuals may access the internet themselves. However, as mandated by the Maharashtra state policy, both the PMC and the PCMC operate Common Service Centres (CSCs) where citizens can apply for different e-governance services. The PCMC also offers unmanned e-kiosks where a limited menu offers information and links to websites connected with governance.

The government has awarded the contract for running CSCs to a private company which in turn provides licenses to individuals or agencies to run these CSCs as franchises all over Maharashtra.

Interviews with staff and franchise owners reveal that the CSCs in fact cater mostly to residents of low-income settlements. People in the CCDS study locations were aware of the CSCs and the services they offer. One of the CSCs reported that 40 to 50 people are served every day, with the number going up to 100 at the time of applications for admission to educational institutions, when various certificates are required.

CSCs provide national, state and local government services. The most common services people apply for here are issue of a ration card, addition or deletion of names from ration cards, certificates (domicile, caste, income, residence and senior citizen), affidavits (for the regional transport office or for

name change), and applications (for national pension schemes, employment card or permission for holding cultural programmes). One of the CSCs also offers banking services and has recently started a Bank of Maharashtra counter to enable people to open bank accounts under the National Jan Dhan Yojana or National Mission for Financial Inclusion. This centre also provides online admission services for universities. Fees for services at the CSCs range from Rs 25-120. One franchisee admitted that he charged more than the government rate which is inadequate to sustain the running of the CSC.

The PMC claims that all its CSCs are functional, but visits to several centres tell a different story. According to Rahul Jagtap, head of the computer and statistics department, PMC, 'Whenever there is a report of a kiosk being inactive, it is because of road-digging or development/expansion of an area'.

8.7 STATE-RUN DIGITAL LITERACY TRAININGS AND SERVICES

8.7.1 MKCL's MS-CIT courses

Advertisements for the popular three-month MS-CIT (Maharashtra State Certificate in Information Technology) course, formulated by the Maharashtra Knowledge Corporation Limited (MKCL), are plastered all over low-income settlements in the city. Young people are keen to complete the course because it is mandatory for application to government jobs.

MKCL is the nodal agency providing computer and digital literacy training in Maharashtra. Founded in 2002 by the state government's department of higher and technical education, it operates through an extensive network of franchisees.

MKCL has 5,400-plus Authorised Learning Centres (ALC) across the state conducting the MS-CIT course, and 400 of them are in Pune district. Eight to 8.5 lakh students take the course across Maharashtra every year. Besides the MS-CIT course, MKCL also designs and offers courses in Tally, web programming and other computer applications.

The fee for the MS-CIT course is Rs 3,350, but the PMC waives the fee for students from families earning less than Rs 1 lakh annually, paying this to MKCL on behalf of the students.

The course material is available in Hindi, Marathi and English. Of the 132 hours of MS-CIT training, eight are devoted to use of the internet. No minimum qualification is required for MS-CIT. Even fourth standard students may take the course. All ALCs must meet MKCL's standards for infrastructure and trainers.

Some 85 lakh students have taken the MS-CIT course so far, 55% male and 45% female. MKCL has also tied up with the UCDD of the PMC (set up in 1986 to address the needs of the urban poor) to run seven computer-related courses. The basic computer course covers word processing and use of the internet. UCDD awards the certificate for this basic course. UCDD does not charge any fee for candidates from families earning less than Rs 1 lakh annually either, but accepts a refundable deposit of Rs 500. This entitles the candidate to take five courses, of which typing and English are mandatory and three are optional. Similarly, the UCDD has tied up to run five PCMC vocational training centres. MKCL also partners with the state education board to provide the IT literacy curriculum for students in Standards 1 to 4, and the MS-CIT

course for students in Standards 5 to 7. MKCL provides all the learning material to 120 computer labs shared by more than 300 schools in Pune. Internet is part of the MS-CIT curriculum for schoolchildren as well. Most of the computer labs, according to MKCL, have internet connections but even if they don't MKCL has developed a quasi-online system that provides the user a learning interface similar to that available online. The quasi-online system has been developed keeping in mind the needs of centres across Maharashtra, many of which have no connectivity.

8.7.2 Computer education at the school level

The PMC's education department places substantial emphasis on computer literacy at the school level. The computer education programme was launched in 2008 to train students in basic IT skills. A total of 307 schools in 140 buildings across Pune City cater to 1 lakh students. Computer education is provided from Standard 1 onwards. The PMC has entered into a contract with MKCL, under which MKCL appoints 15 zonal officers per administrative ward to monitor and evaluate the schools in their zone. MKCL appoints the teaching staff for the computer classes. MKCL has prepared a basic computer literacy syllabus for Standards 1 to 4 and a special syllabus for Standards 5 to 7 which prepares them for the MS-CIT exam. Students must undergo 150 hours of computer training to be able to appear for the MS-CIT exam.

The PMC claims that all schools have computer laboratories with approximately 20 computers each. However, according to the deputy education officer, School Board, PMC, there are just 118 computer labs in the 140 buildings. In addition, each class has a strength of 40, which means students are required to share computers.

The PMC Education Board set up four e-learning schools in 2013 and another three in 2014. These schools do not conduct internet-linked online courses but they do use audio-visual learning material projected on LCD screens. At one of the e-learning schools, each class has an LCD screen. But the other schools have been provided around five LCDs screens each. Teachers have been trained to incorporate e-learning methodologies in the classroom.

Three of the e-learning schools are English-medium. One is Marathi-medium but with the e-learning material in English. The PMC plans to add e-learning in four additional schools every year.

8.7.3 Comparison of e-learning in government, CSR- and trust-supported schools

CCDS visited 11 schools catering to children from low-income groups in the city: four regular PMC schools, two PMC e-learning schools, two CSR-supported government schools, and two schools and a madrassa run by a public trust.

The four regular PMC schools visited had poor ICT infrastructure. Two of them were being run from the same building in shifts to maximise the use of available infrastructure/resources. Though computer education at these schools begins from Standard 1 with information on the parts and functions of a computer, only in Standard 4 do children begin hands-on use. Half the computers in the common computer lab for the two schools were not working.

At another government school we visited, the computer lab was closed because the school was being renovated, and practical computer classes were suspended. We were told that students have an hour-long computer class once a week; they work in groups, or take turns to access one of the functional computers. This process allows for limited hands-on experience of computers.

These regular schools are also mandated to provide for e-learning and are equipped with an LCD TV in an 'e-learning room' where classes are to be held once or twice a week. At two of the schools visited, the e-learning classes were not being held, reportedly because the teachers had not received the audio-visual course material that is provided on pen drives from the education department.

Thus the best of intentions in providing for e-learning and computer literacy at the regular school level appear to be thwarted by poor implementation.

In comparison, the infrastructure and audio-visual teaching methodologies are markedly superior at the PMC's e-learning schools, the schools run by the Maharashtra Cosmopolitan Education Society (MCES) for Muslims from poorer socioeconomic backgrounds, and government schools with special civil society/corporate initiatives.

E-learning schools: The PMC's e-learning schools have well-maintained computer labs with 30-35 computers each, and LCD screens with projectors in classrooms (see Box 8.3 on the PMC's Rajiv Gandhi E-learning Academy).

CSR-supported schools: The Pune-based company Thermax operates seven PMC schools where they recruit the teaching staff, manage maintenance and provide improved facilities for e-learning, computer training and internet connection. Young volunteers from the Teach for India initiative are placed at these schools.

One of the PMC's vidyaniketan schools, meant for meritorious students, that has been adopted by Thermax over the last seven years, has an audio-visual room and a well-maintained computer lab where students take a 40-minute computer class twice a week. The computer lab has a broadband internet connection and students are assigned projects for which they are required to access the internet. Students are also allowed to use computers during the breaks and after school hours. Since the vidyaniketan has been adopted, the syllabus too has been redesigned.

The IT company Zensar supports computer laboratories in two PMC schools located in one building, one for boys and the other for girls. There was no computer education at these schools until Zensar set up the labs. There are 14 computers in each of the schools now, maintained by Zensar. Zensar's initiative is limited to students of Standards 6 and 7, who are taught the Computer Masti program developed by IIT-Mumbai and InOpen technologies. Computer Masti has various levels but the students are taught up to Level Two, including Scratch and Animation, which helps them make creative school projects. Students of Standards 1 to 4 are not given practical training but are taught about computers with the help of LCDs installed in their classrooms.

Trust-supported schools: PMC-run Urdu-medium schools have been equipped with state-of-the-art computer laboratories by the Maharashtra Cosmopolitan Education Society, a trust which runs several educational institutions in the city. The foundation has taken responsibility for computer training at these schools, teaching the MS-CIT course and the Computer Masti program. Unlike the other PMC-run schools, all these schools have been provided with broadband internet.

Group discussions conducted with children at the schools – government, CSR and trust-supported – revealed marked differences in the students' awareness of the internet and its uses as well as their confidence in using the internet, including for their school curriculum (see Box 8.2 on the Urdu Girls School and Box 8.3).

8.8 COMMUNITY-LEVEL INITIATIVES FOR COMPUTER LITERACY

In addition to state and local governments and the public-private partnerships in schools mentioned above, some NGO and CSR initiatives also focus on computer literacy and digital inclusion of the poor at the community level.

In 2014, Zensar started a community learning centre in partnership with Digital Empowerment Foundation (DEF), National Association of Software and Services Companies and the PMC in a low-income settlement in the Yerawada area of Pune. The centre aims to provide ICT training to at least one member of every household in the settlement and to enable them to access the internet. The course is designed by DEF and has seven learning modules. Currently, women and children from the community are enrolled at the centre.

Deepgriha Society has been running a training centre for youth in the 18-30 age-group since 2007. This is supported by the Tech Mahindra Foundation and is known as the Tech Mahindra SMART (Skills for Market Training) Centre. It offers a three-month course aimed at providing youth with income-generation skills. Training in computers and internet is an integral part of the course, along with spoken English.

The infrastructure is provided by Tech Mahindra. The centre's computer lab has 26 computers where youth are taught in batches of 25 by trained staff and volunteers. Twenty-six batches have graduated from the course and many have found placements

in data entry, telemarketing and similar jobs.

8.9 SUMMARY

Even before the Digital India policy was announced by the Centre in 2014, the state of Maharashtra had put several systems in place to take public services and entitlements to citizens' doorsteps through e-governance. The city administrations have also made efforts to take government services to citizens through e-governance schemes.

The PCMC has won several awards for its integrated e-governance systems which have become a model for other states and municipal corporations. Both the PMC and the PCMC run a network of Common Service Centres where citizens can apply online for documents and certificates. The CSCs mainly cater to poor and marginalised communities that may not have the infrastructure or ICT skills to negotiate e-governance platforms by themselves.

But no special efforts to provide high-speed/subsidised internet access for the urban poor and marginalised have been undertaken by either the state government or the city administrations, with the exception of the ongoing public Wi-Fi project in Mahatma Phule Nagar in the PCMC. This despite the fact that Pune was the first off the mark in considering universal internet access for its citizens: as early as 2006-7 the PMC had envisaged an ambitious universal internet access system in partnership with Intel which, unfortunately, did not get off the ground.

The Maharashtra Knowledge Corporation Ltd promotes digital literacy through the MS-CIT computer course using a state-wide network of franchisees. The training is made available free of cost for students from families earning less than Rs 1 lakh annually. MKCL also partners with PMC and PCMC schools for computer literacy trainings and learning material.

Government schools begin computer education from Standard 1, but there is a wide gap between intention and implementation. Children from disadvantaged families need much more exposure to ICTs at school than children from the middle class, because often the school is the only place where they are exposed to computers and the internet. A largely theoretical ICT training at the school level leaves them with a severe digital disadvantage. The difference that quality ICT infrastructure and training makes to the students' ICT competencies is quite apparent at the city administration's own e-learning academies which have well-equipped computer labs and incorporation of audio-visual learning methods.

ENDNOTE

1. Worldwide Interoperability for Microwave Access, a wireless network standard

Box 8.1
Wi-Fi Nagari

In early-2015, 1,300 families, or more than 4,000 residents of Mahatma Phule Nagar, a slum cluster near the Maharashtra Industrial Development Corporation estate in Bhosari, Pimpri-Chinchwad, got 24-hour Wi-Fi connectivity. The pilot project is India's first Wi-Fi project for an urban slum. The project is managed by a consortium that includes Telxess Consulting Services (technical and implementing partner), Ford Foundation (supporting partner), CCDS (research partner, responsible for selection of project location and compilation of base data on socio-economic conditions and internet access), and the Pimpri-Chinchwad Municipal Corporation (facilitating partner).

The pilot was conceived as a model for overcoming barriers to internet access in marginalised areas of the city where few families have computers or even smartphones, where there is poor connectivity and no wired broadband provisioning, and where many still do not know of the existence of the internet or have the ICT skills or autonomy to use the internet.

With a leased line from a private telecom service provider, a network of routers perched on rooftops across the settlement provides connectivity in all the lanes and bylanes as well as inside some of the homes. The settlement is spread over less than 1 sq km. Data transfers are free for the first 18 months of the pilot for all users with valid user names and passwords. By mid-2015, over 400 residents of Phule Nagar had registered to use the network, most of them connecting via mobile phones.

The pilot project acknowledges that addressing digital inequality will require more than just providing technological access; it also needs to build the digital literacy of those who have never used an internet-linked device or who know very little of what the internet offers. Especially important is providing a safe learning environment for women and girls who are discouraged from going online in patriarchal environments. A full-fledged computer and internet literacy centre has therefore been set up in the basti, which runs three-month certificate courses in batches throughout the day.

By July 2015, more than 300 residents had been trained in computer and internet basics, the majority of them women and children with no prior exposure to computers and internet. Despite the many daily batches, 112 applicants were waitlisted for the computer class. Within three months many women who had never used a computer before had made online purchases and helped their children with internet research for school projects. They were also demanding faster speeds and better connectivity within their homes.

Box 8.2
Computer masti at Azam Campus

‘I teach whatever I learn in computer class to my younger brother and sister,’ says a grinning 12-year-old Nazia (not her real name). ‘This way, even if we are studying in different schools, our knowledge of computers is equal.’ Nazia studies at the Anglo Urdu Girls High School managed by the Maharashtra Cosmopolitan Education Society (MCES), at Azam Campus, Pune. MCES’s PA Inamdar Information and Communication Technology Academy of Pune (ICTAP) provides digital learning for students at all its institutes from Standard 1.

The MCES was established in 1948 to provide education to the economically, educationally and socially weaker sections of society. Eighty percent of their students are from poor Muslim families.

‘The digital divide is growing wider and soon there will be a section of society that will get further marginalised in a digitised world because of their limited access to digital learning and digital technologies,’ says MCES’s president, PA Inamdar. ‘We decided that we would provide digital education to every single student at a low cost so that they have the same opportunities as, or better than, students who belong to a more privileged part of society.’

Photograph: Ruchi Sawardekar

Digital learning is compulsory for all four schools run by the MCES on Azam Campus, namely the HGM Azam Urdu Primary School, the Anglo Urdu Girls High School, the Anglo Urdu Boys High School and the English Primary School. ‘Twenty percent of class time per week is dedicated to digital learning,’ says Inamdar. ‘The students spend at least one hour of their day on the computer.’

Each institution on Azam Campus is equipped with a computer laboratory with a minimum of 40 computer systems. Over the last 10 years, over 2,800 networked computers have been set up on the campus. Campus-wide free Wi-Fi is provided at high speeds.

The computer science syllabus for the school level is based on the syllabi of the Maharashtra Knowledge Commission Ltd’s digital literacy course MS-CIT, the national IT literacy course ‘Course on Computer Concepts’ and the Computer Masti program formulated by IIT-Bombay and InOpen Technologies. The teachers of these courses are all trained annually at workshops at IIT-Bombay under the Computer Masti program. All the staff at Azam Campus, close to 1,800 teaching and non-teaching staff, have also passed the MS-CIT.

By the time they reach secondary school, the students are proficient at basic computer operations. ‘Close to 6,500 Urdu-medium students have passed the MS-CIT before Standard 8,’ says ICTAP academy director, Mumtaz Sayyed.

The ICTAP has also set up some 40 centres for free digital learning in various institutions in and around Pune including 21 Urdu-medium municipal corporation schools and several madrassas. The infrastructure, including the computers and internet connection, as well as the teaching staff, including one computer teacher and one spoken-English teacher, are provided by ICTAP. Students from the Azam Campus schools take part in national-level digital competitions like the National Cyber Olympiad.

Of around 27,000 students studying at Azam Campus, roughly 8,000 are students from Standards 1 to 12. ‘Most of the children who study at the MCES schools live in slum areas and are from minority communities,’ says Anglo Urdu Boys School principal, Sikandar Shaikh. ‘Our target is to provide quality education to even the poorest students.’

~ Ruchi Sawardekar, netpehchaan.in, January 2015

Box 8.3
Digital natives of Satara Road

When Parth Kakade, a Standard 5 student of Rajiv Gandhi Academy of E-Learning at Sahakarnagar, Pune, begged his parents to buy him a computer, his father Prakash bought a secondhand machine worth Rs 5,000 and attached it to the LCD TV they already had.

‘We couldn’t afford a laptop or a brand new desktop. But Parth has become obsessed with computers at school, so finally we decided to buy this. We cannot afford an internet connection now, but maybe in future we will,’ says his mother Rohini. The Kakade family lives in a tiny, pucca house in Laxminagar, a slum pocket near Pune’s Parvati Hill.

The Rajiv Gandhi E-Learning Academy is a showpiece for the Pune Municipal Corporation (PMC), which claims the school was the first e-learning academy to be run by a city administration, and catering largely to children from informal settlements, with little or no access to computers or modern teaching methods. The school is much sought after by parents in different slum pockets along Satara Road; children from Janata Vasahat, Dandekar Bridge, Shiv Darshan, Upper and Lower Indiranagar study here.

‘Only three houses in our locality have desktop computers,’ says Parth. ‘A majority of my friends visit two net cafés to surf the internet or play computer games.’

Parth can’t access the internet at school yet. Only students from Standards 8 to 11 are allowed to use the net at the computer lab. The school has two air-conditioned computer labs, each with 50 internet-linked desktop computers. Every student is required to use the computer once a day, for at least 35 minutes. Students from Standards 1 and 2 are taught the basics of computers, while those in Standard 3 and above are allowed to use them.

The modern, four-storey school building houses around 1,300 students, studying from pre-primary to junior college (till Standard 11). Only children of poor parents, whose annual income is less than Rs 100,000, are admitted. ‘The parents of a majority of students are not educated and do odd jobs in the city,’ says local Congress corporator Aba Bagul, who envisioned the project and persuaded the PMC authorities to set it up in his electoral ward.

Bagul says it was a conscious decision to choose the Central Board of Secondary Education (CBSE) over the state education board syllabus, as the CBSE syllabus was available in audio-visual format. ‘Each classroom is provided with audio-visual facilities so the students can learn by seeing the diagrams, audio and visual clips,’ he explains, adding that the teachers too have a separate room where they can prepare for classes with the help of computers and the internet.

Students are familiar with Google and Wikipedia; they surf current affairs, science, history, geography and access images for their project work. They also use online dictionaries. Access to social networking sites is restricted in school. On our visit to the school’s computer lab, one student was reading the chronology of India’s independence movement online, downloading material for a PowerPoint presentation. A group of Standard 8 students were working on a project on disaster management.

Vivek Badgu from Standard 9 says, ‘We get 45-90 minutes of internet use every day’. He can do experiments online that he cannot do in his school laboratory. Huda Ansari, whose father works in a bakery at Ghorpade Peth, says she prefers doing homework in school rather than at home. ‘It’s easier. The server has all the text, diagrams and pictures loaded for your studies,’ she says.

Autorickshaw driver Anil Kamble got admission for his son Mayan in Junior KG. ‘I had been hearing about the school’s computer and English education for three years. No one speaks English at home or in the vicinity, but my son can recite English poems,’ Kamble said.

Even Standard 1 student Murtuza Shaikh, son of a cab driver, can rattle off the various parts of the computer – CPU, keyboard, mouse – and can manage basic applications on a computer.

‘At first, the children are hesitant. But they pick up very fast,’ said Rebecca Magar, who joined the school three years ago after 16 years of teaching at a convent school in the Pune cantonment area.

According to school principal Arun Kamthe, the school lays stress on the English language and all subjects are taught in English. ‘English is a world language and computers can be operated with full perfection only if one has command over the language,’ he said.

According to Kamthe, the school has 100% attendance every day, something other civic schools can only dream of, plagued as they are by the problem of dropouts. ‘This is because of the computers and the good meals provided by the school,’ Kamthe said. ‘We want to teach computers to students at an early age because we want them to face the world with confidence. We want our students to join IITs and IIMs in future, for which computers, the internet and English are a must.’

~ Gitesh Shelke, www.netpehchaan.in, December 2013

9 CONCLUSION

9.1 INTRODUCTION

Five computers connected to the Web 24X7 were stationed in a booth in a Delhi slum in 2000, their monitors protruding through holes in the wall, along with joysticks and buttons that substituted for keyboard and mouse. Children interacted with the computers without any instructor or mentor. The process allowed children to learn at their own pace and speed. They quickly learnt to click, drag, cut, paste, launch some programmes, and get onto the internet.

The project came to be known as Hole in the Wall, and was celebrated worldwide as a groundbreaking model of digital inclusion.

It quickly became apparent, however, that the children were spending most of their time drawing or playing computer games. There was little interaction with the internet because it functioned poorly, no computer/internet literacy programs had been made available, and little content was available in the only language the children knew – Hindi. There was no community involvement in the running of the booth either. Parents began to question the value of the experiment because it seemed to end at entertainment for the children (Warschaeur, 2003).

Hole in the Wall illustrated that reducing inequalities in access to and use of digital technologies is not just about the provisioning of hardware and software. Digital inequality is embedded in a complex array of factors encompassing physical, digital, human and social resources and relationships. The technological context cannot be looked at in isolation.

The lessons of Hole in the Wall are relevant to the task of internet inclusion in India today when the focus of the state, policymakers and the telecom industry appears to be on macro-level issues of technology access, and when the increasing number of consumers with devices and data connections is being seen as internet inclusion.

This chapter discusses the need for a different approach to the digital divide, and makes some recommendations for the internet inclusion of marginalised communities in urban India.

9.2 GOING BEYOND TECHNOLOGY

'Internet in India has now become inclusive, which augurs well for the industry and society at large,' stated the representative body of internet and mobile value-added services, Internet and Mobile Association of India (IAMAI) in September 2015 (IAMAI, 2015). IAMAI put the number of internet users in India at 352 million by June 30, 2015, more than the entire population of the US (PTI, 2015), and declared that the country would have 500 million internet users by 2017 (Tech Desk, 2015).

This conflation of number of internet users with internet inclusion needs to be questioned.

Our study, one of the first to examine the extent of the digital divide in a fast-growing Indian metropolis, provides a reality check. It points to a digitally divided city.

The CCDS study reveals that if at least five out of 10 residents of Pune city as a whole are online, as suggested by industry estimates (IMRB-IAMAI, 2014, Mumbai), less than two out of 10 individuals in the low-income areas of the city surveyed use the internet. This low level of penetration is despite keeping the definition of internet user wide enough to include not just

data subscribers but everybody who has used the net anywhere, on any device, over the last three months.

Our study has also pointed to the ways in which digital inequality overlays economic and socio-cultural exclusion in the low-income, resource-poor and diversely-literate communities under study:

- The marginalised geographical areas under study pose infrastructural constraints. Network connectivity and coverage in these slum settlements is poor. No wired broadband services are offered. No public Wi-Fi networks or public access points exist within these areas.
- There is a clear correlation between economic deprivation and internet exclusion. Households at the lower end of the wealth index are much less likely to be online than those at the higher end. Nearly 55% of internet users belong to the upper fourth and fifth wealth quintiles. Households that can afford enabling infrastructure including computers, dongles, smartphones and feature phones are far more likely to be online. The absence of an internet-ready device is reported as a major barrier to access, especially for women, the most disadvantaged group in these socially-excluded communities. Economic constraints make it difficult for users in the study locations to afford computers, and those who do have computers cannot get wired broadband connections, even if they could afford them.
- Education is also strongly correlated with internet use. Those who have no education, or only primary education, are least likely to be internet users. Households that have even one member who is in the final year of school or has completed schooling are much more likely to be online.
- Education is also strongly correlated with patterns of use: users with higher levels of education report use of the internet for purposes other than entertainment and social networking, while the handful of respondents who are users despite having no education mainly use the internet for entertainment and social networking, which can be managed with audio-visual, rather than text-based content.
- Lack of skills to use computers and other digital devices is reported by non-users as a major barrier to internet use. And it is the poorest, the least-educated, the older age-groups and women who are most likely to lack the opportunities to acquire ICT skills.
- Women, who face discrimination in the male-dominated environments under study, lag far behind men in ownership and use of computers, mobile phones and internet. Women who do use the internet don't have the autonomy to log on when, where and how they want to. Infrastructural barriers and economic barriers also hit them hardest, because they neither have the financial capital to buy their own devices nor the freedom to visit public access points outside the settlement.
- There are major age barriers, with only 7% of users above the age of 35. The few users above 35 tend to be those who have stable livelihoods.
- Finally, and significantly, there are the attitudinal barriers in these socially-excluded environments. Many non-users, who have always suffered information poverty, believe the internet offers nothing that can be relevant to their restricted lives.

It's a vicious circle.

The inequalities in society cause an unequal distribution of resources, including digital resources. So, those with the least income, education and autonomy have the poorest access to digital technologies. This lack of access to an essential resource for modern life causes information poverty, which leads to unequal participation in society. Unequal participation in society reinforces social inequalities (van Dijk, 2013, p 33).

Over the two years of our study we have observed the diffusion of internet in the study settlements accelerating. The point this research flags is: **greater internet penetration and use will not automatically ameliorate digital inequality.**

The CCDS survey on barriers to internet access reveals two levels of digital inequality:

1. The first-level digital divide between the internet haves and have-nots, users and non-users.
2. The second-level digital divide, also called the capability divide, which affects those who are users, but with differential skill levels and use of internet applications.

The first-level digital divide results mainly from lack of awareness about the internet, absence of the technological capital to connect (computers, mobile devices capable of internet access, public access points within settlements), economic barriers that make it difficult to afford hardware and data services, skill barriers with low levels of education and absence of ICT training and support, and socio-cultural barriers that limit women's access.

The capability divide is more complex, and often overlooked.

Our study reveals that while internet users have the operational skills to connect on low-end mobile devices, at cybercafés or workplaces, the majority use the internet for entertainment and social networking, and to a lesser extent for purposes such as educational research, searching and applying for jobs, or searching and applying for government services and entitlements. Many of these users lack the autonomy to access the internet whenever and wherever they choose. They also lack social support in getting connected or trouble-shooting. The absence of social support makes it difficult for them to learn to use the internet for more than entertainment, social networking and simple searches.

These are the users who, wooed by low-cost offerings by telecom hardware and service providers, and aggressive marketing by e-businesses, are amongst those swelling the ranks of internet users in India. Telecom companies are tying up with internet giants like Facebook to offer free bundles of apps and internet services to mobile telephony subscribers. Though technically all these subscribers have access to the internet, whether they can be included amongst the information haves – and beneficiaries of the internet 'revolution' – is debatable. They may more appropriately be termed the 'have-less', a term first used to describe low-income, migrant, working-class or unemployed urban populations in China (Cartier et al, 2005). These internet users may spend several hours a week on online entertainment and social networking but have no knowledge of browsers, e-mail accounts, or other diverse uses of the internet. Qiu, who first coined the term 'have-less', believes it would be a serious mistake to equate this group with the haves (Qiu, 2009).

Any long-term and meaningful digital inclusion policy then must

Photograph: Vivek Singh

aim to provide equal internet access to all.

9.3 DIGITAL INCLUSION POLICY

Digital inclusion policy is generally focused on overcoming uneven access to technology. But if ICTs are to be seen as a tool for the empowerment of people, a way to bridge the other divides of society, then digital inclusion policy must be organised around access as well as adoption and application (Becker et al, 2012, p 9). 'Access principles address the infrastructure a community needs to have in place in order to provide opportunities to benefit from digital life. Adoption principles look to overcome individual barriers that make use of broadband technology less likely, even when access is available. Finally, the application principles look at specific purpose areas where the thoughtful deployment of broadband technologies can enhance the economic success of communities and the lives of their residents.'

While the equality-of-access orientation centres around physical access to digital devices, the equity-orientation focuses more on increasing the likelihood that all users, especially the poor and disadvantaged, can take advantage of the information available online to improve their day-to-day lives. 'For example, an equality orientation might be satisfied with the presence of computers in all public libraries and public schools. An equity orientation, however, focuses attention on increasing awareness, amongst all members of the population, that information is available, where the information exists, and how to navigate websites to find information when it is needed,' (Gomez, 2015).

In India, where, as this survey shows, physical access to technology is still a major hurdle, we will need a combination of the equality-of-access and the equity-orientation.

India has no explicit policy for bridging the digital divide. But the central government's Digital India programme promises 'Digital Infrastructure as a Utility to Every Citizen, Governance & Services on Demand and Digital Empowerment of Citizens' (Kumar, 2015), suggesting that both access and adoption issues are on the radar for the federal government.

On the access side the Digital India programme focuses on rural India, promising wired broadband connections for 250,000 gram panchayats (funded from the Universal Service Obligation Fund[1]), mobile connectivity to 42,300 villages, internet-linked common service centres for all villages, and conversion of 150,000 post offices into multi-service centres (Thakore, 2015).

For urban India, the programme mandates public Wi-Fi spots for 1 million-plus cities and tourist destinations, communication infrastructure in all new urban development/construction and licensing of 'Virtual Network Operators'[2] to bring down costs and take broadband access to remote areas.

Public policy makes no mention of infrastructure-provisioning for underserved and marginalised urban areas, including the low-income settlements and slums that house the urban underclass.

While privatisation has been an important component in the extension of telecommunications access to low-income consumers, our study reveals the poor and uneven quality of internet access provided to the base of pyramid users. The poor quality of access also limits patterns of use. For more intensive use of the internet, such as filling in and submitting forms for admission to educational institutions and jobs, or applying for government entitlements, respondents report that they are largely dependent on commercially-run cybercafés. At the time this study was conducted there were no free – or even subsidised – high-speed internet services at public libraries or other public spaces that could be easily accessed by the study populations.

While ICT provisioning need not be entirely government-owned, it is important to recognise that 'the diffusion of any technology is a site of struggle, with access policy reflecting broader issues of political, social and economic power' (Warschauer, 2003, p 35). Any technology that overcomes – or compounds – disadvantages related to poverty or social exclusion cannot be left entirely to market forces, lest the market continue to develop services for those with greater economic resources, resulting in a two-speed internet where economically stronger users move on to faster and faster broadband superhighways with full access to everything the internet has to offer, while the economically weaker users struggle along with low-end mobile devices, slow services and limited baskets of internet applications offered by telecom players who are expanding their markets in the name of 'connecting the poor'.

Support and incentives, particularly from the state, will be required to meet the needs of low-income populations and level the playing field.

On the adoption side, Digital India reaffirms the National Digital Literacy Mission target of one digitally literate person in every household. But there is no policy or programme aimed at bringing digital empowerment to the most digitally excluded groups, including women and the poor.

Maharashtra's state initiatives (discussed in the previous chapter) including the MS-CIT digital literacy trainings and ICT training as part of school curriculum from Class 1, address the adoption and capacity-building requirements of the urban poor more specifically, with fee waivers for low-income households, while its common service centres help the urban underclass apply for and receive government services and entitlements. While this is a good beginning, the state must

focus attention on providing equal access to women, the disabled and other particularly vulnerable groups within the urban underclass, and on building their capacity to use the internet to the fullest.

9.4 RECOMMENDATIONS FOR DIGITAL INCLUSION

9.4.1 Reframing the digital divide debate

At the outset, this research recommends a change in the way the digital divide debate is framed. From a focus on technology per se and getting people connected – anywhere, anyhow – to a focus on the social contexts of technology.

The overall challenge is not how to overcome the digital divide but how to expand access to and use of ICTs to promote social inclusion.

At the policy level, it is important for governments, urban planners and civil society in India to realise that 'where and how information is or is not accessible can reinforce privilege and limit opportunities for individuals in underserved and marginalised communities' (Gomez, 2015).

Research on the barriers to digital equality and needs assessments of particularly vulnerable populations must feed into and inform public programmes such as Digital India.

9.4.2 E-governance and social inclusion

The purpose of e-governance is to bring government to the doorstep of citizens.

But governance does not become inclusive by simply putting government resources and services onto online systems and adding an 'e' before governance.

Setting up systems for equal access to information, and equal opportunities to use that information, must become an integral part of e-governance.

Lack of literacy, lack of access to media, and social isolation all serve to distance the poor from government resources and information. This lack of access to government further marginalises them. Only 12% of users in the study settlements had used the internet to apply for or find out about government services and entitlements, or to conduct any online transaction. Even users from the upper wealth quintiles did not report greater use of the internet for government services or online transactions, suggesting that the process doesn't work, is user-unfriendly, or is not addressing the particular needs of the poor.

E-governance programmes must therefore be carefully designed to meet the needs of the poorest and most marginalised. Simpler user interfaces, minimal text, and multilingual options need to be developed. Mechanisms to help the marginalised negotiate e-governance systems must be put in place. The helpdesks set up to assist the poor in Pune to make their online applications for admission to schools under the 25% reservation for economically-weaker sections are a good example of such mechanisms. The PCMC's SARATHI programme for grievance redressal is another, where complaints can be lodged online as well as by telephone, and soon via an app. Such systems encourage and aid communication from the bottom up.

In the absence of such mechanisms, e-governance will only end up creating one more barrier between government and the marginalised citizen, a barrier that puts them at the mercy of touts and middlemen who will help them negotiate – at a cost – the digital interface.

9.4.3 Motivation

RAISING AWARENESS OF THE INTERNET AND ITS BENEFITS

Our data have revealed that 41% of non-users in low-income settlements are still not aware of the internet (many users too are only partially informed, confusing the internet with Facebook or WhatsApp). To develop the motivation to go online, communities must understand the benefits and relevance of the internet.

Beyond general awareness, concrete examples of use should be developed for particular communities, which will be more successful in demonstrating the value of the internet for them.

BUILDING RELEVANT (LOCAL) CONTENT AND SERVICES

Amongst non-users who are aware of the internet, aspiration to go online is high. 73% said they would like to go online in the future, and 78% said that the internet was as important as any other basic amenity. Though this might indicate that high levels of motivation already exist amongst non-users who know what the internet is, a sizeable 22.5% of non-users said they didn't think they needed the internet, indicating that the internet may not have much that is relevant to them.

Equally important, therefore, will be the building of local content that is relevant to marginalised communities, helping them access information related to livelihoods, health, housing, education, personal enrichment, public amenities and entitlements, in languages they are comfortable in.

The absence of content in the local languages is a deterrent to more diverse uses of the internet by diversely-literate populations. The PMC's own website is available in English only (with not even a Google translate function), though the PCMC offers both English and Marathi interfaces. Several documents on the PMC site are uploaded in pdf format in Marathi. But they are available at links that must be accessed in English. Language is a particular barrier for the over-35 age-groups who are less proficient in the English language than younger people who study English in school, either as the primary medium of instruction or as a second language. Younger users have worked around the language barrier by becoming proficient in the use of the Roman script to text and search in Marathi, Hindi and other languages.

ADDRESSING SOCIAL ACCEPTABILITY

46.4% of non-users said the internet could have a negative effect. An even higher 61.9% of users agreed that the internet could have negative effects. While it is important that users continue to be aware of the potential for misuse and misinformation on the internet, the pervasive mistrust of the internet in the study settlements and fears about its dangers, especially for women, contribute to the digital divide and the yawning gender gaps in access.

To build social support for use of the internet, much greater awareness will need to be built in local communities on online safety and responsible use. Family and community support is an important driver of internet use. Social support for internet use will encourage more women, in particular, to use the internet. It will also widen the patterns of use.

9.4.4 Access/Infrastructure

Access involves provisioning of devices and conduits.

DEVICES

While the prices of computers and smartphones are dropping, our data show that the most

marginalised – particularly women and those in the lowest wealth quintiles – still cannot afford even feature phones that are capable of connecting to the internet.

One way to tackle this problem could be to introduce learn-and-earn programmes in which low-income participants who successfully complete several levels of ICT training are offered a free/subsidised device.

Enabling access to text-to-speech and voice recognition software for the visually disabled as well as for those with little or no education could help.

A more holistic solution to the problem, however, is to set up public access points within the settlements. These centres would offer high-speed internet access on computers at subsidised rates. Such centres would address the needs of these communities at several levels:

1. Offering access at affordable rates to those who are offline because they do not have the infrastructural and economic capital to go online;
2. Providing access for women, in particular, who tend to have neither the infrastructure to connect nor the freedom/financial resources to visit commercially-operated public access points at faraway locations;
3. Allowing interactive functions such as filling in and uploading of complex forms and user interfaces, downloading of data, and secure online transactions, for which these communities are dependent on cybercafés;
4. Providing experience of the full and free internet, rather than the limited basket of services that telecom providers bundle in with low-cost data subscriptions; and
5. Mentoring new users who are finding their way around the internet, and helping citizens negotiate e-governance services themselves rather than going to a common service centre.

Such centres can be operated by commercial organisations, government, educational institutions or civil society organisations. The Directorate of Libraries is one organisation in Maharashtra that could expand the number of public libraries, add digital infrastructure, and offer digital literacy courses and programmes. The location of public access points within the settlement is key to their success, not only because it makes it easier for women to access the internet but also to increase the sense of community ownership and social support for the adoption of internet technologies. The presence of trainers and mentors to help community members locate and access the information and services they need is also important for their success. These public access centres could over time become hubs for community media production.

CONDUITS

Concrete plans need to be made at the city level to extend high-quality broadband infrastructure to low-income areas. Diversely-literate and multilingual communities in fact need higher bandwidth and speeds, because much of their interactions on the internet tend to be audio-visual, not textual.

State, city administrations, telecom service providers, corporate houses and civil society organisations could be roped in to support and facilitate high-speed broadband coverage of these areas. For instance, subsidies for cable TV providers could enable them to offer wired broadband services at cheaper monthly rates to the low-income households they already provide cable TV to.

The local municipal administrations

could encourage the public sector telecom organisations BSNL[3], BBNL[4] and RailTel[5] to extend their networks into low-income settlements by charging lower reinstatement charges for services provided to marginalised areas and subsidising the monthly internet subscriptions of low-income households.

Free or subsidised Wi-Fi networks such as the one set up in Phule Nagar (see box in Chapter 8) could be set up in other settlements to introduce low-income communities to the internet. The presence of a computer and internet literacy centre within settlements providing Wi-Fi coverage is important. The success of this model is visible. Three months after the Wi-Fi network was introduced, women who had never used the internet before had taken the training courses offered and become so familiar with the internet that they were able to shop online and help their children with internet research for their school projects. However, the downside of Wi-Fi technologies has also become apparent: users report that speeds are low, connectivity is not uniform all over the settlement, power outages disrupt the network, and use of a public network hampers privacy.

As the TRAI says in its recommendations to the Department of Telecom on the National Broadband Plan (May 4, 2011), an effective broadband network would be a combination of wireless and wireline technologies, with the emphasis on fibre to the home in the metros and large cities. 'Wireless in access network may provide wider coverage but lacks high capacity bandwidth support... It is difficult to provide high speed broadband with good quality of service using only wireless technology.'

9.4.5 User capability

It's simplistic – and wishful thinking – to assume that once connected, citizens will be empowered to use the internet in useful and meaningful ways.

'If, as Castells suggests, "the internet is the fabric of our lives", and if those living within this fabric are to have the freedom to achieve the lifestyles they desire, then they must be able to acquire new media literacies,' (Mansell, 2002).

These new media literacies entail more than just the ability to read and write. Yes, apps, touchscreens, stripped-down websites with graphic prompts for navigation and greater use of audio-visual content are

making it easier for those with minimal education to use the internet, but differing levels of ICT skills and education will determine, in the future, how people use the internet and what benefit they derive from it. Focusing on the technology of access in the absence of an equal if not greater focus on user capability will result in a further stratification where the have-less will not use the internet to its full potential, while the 'creamy layer' of the knowledge economy will use it to get even further ahead by seeking and creating new knowledge.

Absence of ICT skills and education poses one of the biggest barriers to internet access for the marginalised. Twenty-seven percent of non-users in this survey said they were not online because they didn't know how to use the internet. Another 16.2% of non-users cited lack of education. Although those who already use the internet have not explicitly cited lack of ICT skills as a barrier, the data show that users with a higher level of education are far more likely to use the internet for purposes beyond social networking and entertainment, such as education and job search.

The one-size-fits-all three-month ICT training offered in Maharashtra via MS-CIT is not enough. Shorter workshops and trainings, with flexible timings and audio-visual instruction, offered to the socially excluded in their own neighbourhoods, will encourage more people to begin using the internet. Workshops must be pitched at various levels, beginning with basic workshops to overcome the discomfort with computers and culminating in workshops that help users evaluate the credibility and reliability of the information they source on the internet, and also help them use multimedia to create their own content.

The quality of ICT education at the school level must be improved. The infrastructure must be up-to-date and fully functional; children should be allowed hands-on training from Standard 1; instructors should be trained in imparting ICT skills. There is a marked difference in the knowledge of ICTs between children in the government-run e-learning academies and the other schools. This difference is also visible in government schools where civil society organisations offer e-learning and ICT trainings. The transformation of all schools into e-learning academies must be hastened, otherwise children from low-income families will continue to be at a digital disadvantage, lacking any exposure to ICTs at home, and getting only cursory knowledge at school.

ENDNOTES

1. The Universal Service Obligation Fund of India aims to provide widespread and non-discriminatory access to quality ICT services at affordable prices to all people in rural and remote areas (http://www.usof.gov.in/usof-cms/home.jsp)

2. Virtual Network Operators (VNO) are telecom service providers that rely on the network of other telecom companies to provide services to consumers. A VNO buys bulk talktime and bandwidth from an operator and then sells it to users. It can provide any or all the services that are being provided by the network operator

3. Bharat Sanchar Nigam Limited is one of the largest and leading public sector units providing a range of telecom services in India

4. Bharat Broadband Network Limited set up under the Companies Act by Government of India has been mandated to create the National Optical Fibre Network (NOFN) in India

5. RailTel Corporation of India Limited is a public sector undertaking which extends broadband and application services to the masses through the RailWire platform

REFERENCES

Banerjee A, Bertrand M, Datta S, Mullainathan S (2009) 'Labor market discrimination in Delhi: Evidence from a field experiment'. *Journal of Comparative Economics*, 37.1: 14-27. Available at: http://dx.doi.org/10.1016/j.jce.2008.09.002 (Accessed on September 2, 2015)

Bapat M (2009) 'Poverty lines and lives of the poor: Underestimation of urban poverty – the case of India'. Human Settlements Programme, International Institute for Environment and Development (IIED), London, UK. Available at: http://iied.org/pubs/display.php?o=10567IIED

_____ (1981) 'Shanty town and city – the case of Poona'. *Progress in Planning*, Vol 15, Part 3. Pergamon Press, Oxford

Becker S, Crandall M, Coward C, Sears R, Carlee R, Hasbargen K, and Ball MA (2012) 'Building digital communities: A framework for action'. Washington, DC: Institute of Museum and Library Services

Cartier C, Castells M, and Qiu J L (2005) 'The information have-less: Inequality, mobility and translocal networks in Chinese cities'. Studies in International Comparative Development, 40 (2), pp 9-34

Castells M (2005) 'The Network Society: From knowledge to policy'. In Castells M and Cardoso G (eds), *The Network Society: From Knowledge to Policy*. Washington, DC: Center for Transatlantic Relations, Paul H Nitze School of Advanced International Studies, Johns Hopkins University

_____ (2001) *The Internet Galaxy: Reflections on the Internet, Business and Society,* Oxford, England: Oxford University Press

_____ (1998) *The Information Age: Economy, Society and Culture. Volume 3: End of Millennium*. Oxford: Blackwell

CHF International (2011) 'Socio-Economic profile of slums in Pune under Utthan'

Chinese Internet Network Information Centre CNNIC (2015) 'Statistical report on internet development in China', p10. Available at: http://www1.cnnic.cn/IDR/ReportDownloads/201507/ P020150720486421654597.pdf (accessed on July 29, 2015)

DiMaggio P, and Hargittai E (2001) 'From the "Digital Divide" to "Digital Inequality": Studying internet use as penetration increases'. Working Paper Series #15, Summer 2001, Centre for Arts and Cultural Policy Studies, Princeton University

Directorate of Information Technology, Government of Maharashtra (2014) 'State of e-governance in Maharashtra 2014'. Available at: https://www.maharashtra.gov.in/Site/upload/WhatsNew/State%20of%20e-Governance%20in%20Maharashtra%202014.pdf (accessed on September 21, 2015)

Gokhale V A (2014) 'A tiny whole world. In Nnamdi Elleh' (ed), *Reading the Architecture of the Underprivileged Classes*. Surrey, UK: Ashgate Publishing. pp137-152

Gomez K (2015) 'Closing the digital divide'. *The Huffington Post,* February 19. Available at: http://www.huffingtonpost.com/kim-gomez/closing-the-digital- divide_b_6701446.html?ir =India& adsSiteOverride=in

Government of Maharashtra (no date). Available at: https://it.maharashtra.gov.in/1083/eGovernance-Policy (accessed on September 21, 2015)

Grant Thornton India (2011) 'Appraisal of Jawaharlal Nehru National Urban Renewal Mission (JNNURM) Final Report – Volume I'. Available at: http://jnnurm.nic.in/wp-content/uploads/ 2012/06/Appraisal-of-JnNURM-Final-Report-Volume-I-.pdf (accessed on August 13, 2015)

Gurumurthy A (2006) 'Promoting gender equality? Some development-related uses of ICTs by Women', Development in Practice, 16(6), pp 611-616

Huyer S (2006) 'Understanding gender equality and women's empowerment in the knowledge society'. In Nancy Hafkin and Sohia Huyer (Eds), *Cindrella or Cyberella: Empowering Women in the Knowledge Society*, Bloomfield, CT: Kumarian Press, Inc

IMRB-IAMAI (2014) 'Internet in India 2014'

Intel (2012) *Women and the Web: Bridging the Internet Gap and Creating New Global Opportunities in Low and Middle-Income Countries*, Intel Corporation

International Telecommunication Union ITU (2014) 'Manual for measuring ICT access and use by households and individuals'. ITU, Geneva: Switzerland. Available at: http://www.itu.int/ dms_pub/itu-d/opb/ind/D-IND-ITCMEAS-2014-PDF-E.pdf

International Telecommunication Union (ITU) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (2014). *The State of Broadband 2014: Broadband for All* – A report by the Broadband Commission. Geneva, Switzerland: Broadband Commission, p 102

Internet and Mobile Association of India (IAMAI) (2015) 2014-15: 'The Big Internet Numbers'. Press Release, September 2, 2015. Available at: http://iamai.in/PRelease _detail.aspx?nid =3626&NMonth=9&NYear=2015

Internet World Stats (no date), Usage and Population Statistics. Available at: http://www.internetworldstats.com/ surfing.htm

Kakroo U (2007) 'Promise of Connected Communities – The Indian Story'

Karve Institute of Social Service (KISS), 'Socio-Economic Survey of Pune City, 2008-09'

Kumar R (2015) 'Exploring Digital India's transformative plans'. Agenda. World Economic Forum. April 27. Available at: https://agenda.weforum.org/2015/04/exploring-digital-indias-transformative-plans/

Mansell R (2002) 'From digital divides to digital entitlements in knowledge societies'. *Current Sociology*, 50 (3), pp 407-26

MASHAL (2011) 'Slum Atlas of Pune City'

McKinsey & Company (2014) 'Offline and Falling Behind: Barriers to Internet Adoption'

Muley S (no date) 'Demographic projections for Pune Municipal Corporation, 2001-2027', Gokhale Institute of Politics and Economics, Pune

Murthy G (2014) 'Potential for mobile finance for women in India: Evidence from the FII Tracker survey', InterMedia. Available at: http://finclusion.org/wp-content/uploads/2014/10/India-GSMA-Presentation_Gayatri-Murthy.pdf (accessed May 27, 2015)

Nambiar N (2014) 'Maha Digital Locker plan to roll out soon'. *The Indian Express* (November 13)

Norris P (2001) *Digital Divide: Civic Engagement, Information Poverty and the Internet Worldwide,* Cambridge, MA: Cambridge University Press

Population Foundation of India (2012) 'State of Inclusive WATSAN in Cities: Facts and Factors'. Available at: http:// hupindia.org/files/2754113621275 41WASH_Fact_n_Factors,_Pune. pdf

Press Trust of India (2015) 'India now has 350 million internet users'. *The Hindu* (September 2, 2015). Available at: http://www.thehindu.com/business/internet-users-in-india-cross-350-million/article7607676.ece

Pune Municipal Corporation Pune: 2012. 'Revising/updating the city development plan (CPD) of Pune city 2041 – under JNNURM'. Executive Summary, Final Draft CDP, Page 2. Available at: http://www.punecorporation.org/ pmcwebn/informpdf/CDP/1_CDP_Intro.pdf

Qiu J L (2009) 'Working-class network society: Communication technology and the information have-less in urban China'. Cambridge, MA: The MIT Press

Rohatgi M (2014) 'Smartphone effect? Cybercafés take the exit route as losses mount'. *The Times of India* (October 26). Available at: http://timesofindia.indiatimes.com/city/pune/Smartphone-effect-Cybercafes-take-the-exit-route-as-losses-mount/articleshow/44936284.cms

Shelke G (2014) 'PCMC's e-governance initiative is a runaway success'. Available at: http://netpehchaan.in/internet-inclusion/pcmc-s-e-governance-initiative-is-a-runaway-success.html

Shelter Associates (no date), available at: http://shelter-associates.org/sites/default/ files/PatilEstate.pdf

Tata Institute of Social Sciences (2009) 'Citizens Guide on Status of Pro-Poor Reforms in Maharashtra', TISS, Mumbai

Tech Desk (2015) 'IAMAI says India will have 500 million internet users by 2017'. *The Indian Express* (July 21). Available at: http://indianexpress.com/article/technology/tech-news-technology/iamai-says-india-to-have-236-million-mobile-internet-users-by-2016/

Thakore A (2015) 'Bridging the digital divide: Piecing together the policy'. Netpehchaan.in. June. Available at: http:// netpehchaan.in/digital-divides/bridging-the-digital-divide-piecing-together-the-policy.html

The Economist (2014) 'Width, not depth' (July 28). Available at: http://www.economist.com/blogs/freeexchange/ 2014/07/poverty-measures

Times of India (2013) 'Activists question utility of Jawaharlal Nehru National Urban Renewable Mission projects', (February 4)

US Department of Commerce and National Telecommunications and Information Administration (1995) 'Falling Through the Net: A Survey of the 'Have-nots' in Rural and Urban America'. Washington DC: National Telecommunications and Information Administration. Available at: http://www.ntia.doc.gov/ntiahome/fallingthru.html

van Dijk Jan AGM (2013) 'A theory of the digital divide'. In: Massimo Ragnedda and Glen W Muschert (eds). *The digital divide: The internet and social inequality in international perspective*. New York, NY: Routledge

_____ (2012) 'The evolution of the digital divide – The digital divide turns to inequality of skills and usage'. In Bus J, Crompton M, Hildebrandt M and Metakides G (Eds), *Digital Enlightenment Yearbook 2012*. pp 57-75. Amsterdam: IOS Press

Verma V (2012) 'Non-discrimination and Equality in India: Contesting Boundaries of Social Justice', Routledge Contemporary South Asia Series, Routledge: New York

Warschaeur M (2003) *Technology and Social Inclusion: Rethinking the Digital Divide*. Cambridge, MA: The MIT Press

_____ (2003) 'Technology and equity: A comparative study'. Paper presented at the Annual Meeting of the American Educational Research Association, April 24, 2003. Chicago, Illinois

Wynne M E, Perry K A, and Cooper L F (2009) 'Innovating for Inclusion: A Digital Inclusion Guide for Those Leading the Way'. Redmond, Washington: Microsoft Corporation

ACRONYMS & ABBREVIATIONS

APL	Above Poverty Line
ALC	Authorized Learning Centre
BBNL	Bharat Broadband Network Limited
BPL	Below Poverty Line
BSNL	Bharat Sanchar Nigam Limited
CDP	City Development Plan
CHF	Community Housing Foundation
CNNIC	Chinese Internet Network Information Centre
CSC	Common Service Centre
CSR	Corporate Social Responsibility
DCB	Dehu Road Cantonment Board
DNT	Denotified Tribe
DTH	Direct To Home
GB	Gigabyte
G2C	Government to citizen
ICTAP	Information and Communication Technology Academy of Pune
IAMAI	Internet and Mobile Association of India
ICTs	Information and Communication Technologies
IMRB	Indian Market Research Bureau
ITU	International Telecommunication Union
IT	Information Technologies
IWS	Internet World Stats
KCB	Kirkee Cantonment Board
MASHAL	Maharashtra Social Housing and Action League
MB	Megabyte
MCES	Maharashtra Cosmopolitan Education Society
MIDC	Maharashtra Industrial Development Corporation
MKCL	Maharashtra Knowledge Corporation Limited
MS-CIT	Maharashtra State-Certificate in Information Technology
NT	Nomadic Tribe
NTIA	National Telecommunications and Information Administration
PCMC	Pimpri Chinchwad Municipal Corporation
PCNTDA	Pimpri-Chinchwad New Town Development Authority
PDS	Public Distribution System
PMC	Pune Municipal Corporation
SARATHI	System of Assisting Residents and Tourists through Helpline Information
SARATHI	Stamp and Registration Assistance Through Helpline Information
SC	Scheduled Caste
SHGs	Self-Help Groups
ST	Scheduled Tribe
TRAI	Telecom Regulatory Authority of India
UA	Urban Agglomeration
UCDD	Urban Community Development Department
UNESCO	United Nations Educational, Scientific and Cultural Organisation
2G	Second-generation mobile systems
3G	Third-generation mobile systems

GLOSSARY OF HINDI/ MARATHI WORDS

Adivasi	Indigenous people belonging to the Scheduled Tribes
Ambil Odha	A nullah or gully ('odha' in Marathi) flowing from Katraj Lake to Mutha River
Anganwadi	Government-sponsored child-care and mother-care centre in India started as part of the Integrated Child Development Services scheme in 1975 to combat child hunger and malnutrition
Basti	Hindi word commonly used for low-income urban settlements, particularly slum settlements
Dalit	Those belonging to the Scheduled Castes
Madrassa	A school attached to a mosque where students study theology
Mithai	Indian sweets
Pucca House	A house which has walls and roof made of the following material: Wall: Burnt bricks, stones (packed with lime or cement), cement concrete, timber, etc Roof: Tiles, GCI (Galvanised Corrugated Iron) sheets, asbestos cement sheets, RBC (Reinforced Brick Concrete), RCC (Reinforced Cement Concrete), timber etc
Kutcha House	The walls and/or roof of which are made of material other than those mentioned above, such as un-burnt bricks, bamboo, mud, grass, reeds, thatch, loosely packed stones, plastic, tarpaulin, etc
Semi-Pucca House	A house that has walls made of pucca material but a roof of material other than those used for pucca houses
Safai Karmacharis	A person – generally a dalit – engaged in, or employed for, sanitation work including manual scavenging and cleaning of sewage
Taluka	A sub-division of a district comprising several villages organised for revenue purposes

INTERVIEWS/INTERACTIONS CONDUCTED FOR THIS RESEARCH STUDY

As part of qualitative research and reportage for articles and short films, in-depth interviews were conducted with approximately 100 members of low-income communities (internet users and non-users) in the research locations and across Pune. These included disabled students of Pune University. Names of the interviewees are being withheld to protect identities. Additional interviews were also conducted with owners and staff of CSCs (common service centres), mobile shop owners, mobile repairers, mobile recharge-sellers, cable TV providers and cybercafé owners in and around all the research locations. Names are being withheld on request. Amongst others interviewed for this report are:

Meera Badve, Founder/Manager, Niwant Andh Mukta Vikasalay, September 2014

Meera Bapat, Independent Researcher, August 14, 2013

Rashmi Bhake, CSR, Zensar, February 23, 2015

P G Bhandare, DGM, BSNL, March 3, 2015

Pramod Bhimrao Bhosale, Chief Accountant, Documentation Department, PCMC, November 27, 2015

Sarika Bhosale, Trainer, Digital Learning Centre, Yamuna Nagar, Viman Nagar, December 15, 2014

Dilip Kashinath Gavde, Additional Commissioner, Madhyavarti Bhandar (then Deputy Commissioner – Slums) PCMC, September 30, 2013

Ravi Ghate, Director, SMSONE, Pune, September 2013

Satya N Gupta, Senior Fellow, Neeti Foundation, New Delhi

P A Inamdar, President, MCE Society, December 17, 2014

Rahul Jagtap, Head of the Department, Computer Department, PMC, September 9, 2014

Disha Kene, Transgender activist

Naim Keruwala, Assistant Director, Governance, Janwani

Vijaya Khairkar, Professor, Geography Department, University of Pune

Ahmed Khan, Computer Instructor, Madrassa Baitul Uloom under Ummat Educational & Charitable Trust (for Boys), Kondhwa, March 16, 2015

Soleha Khan, Assistant School Leader, K C Thackeray Vidya Niketan, Somwar Peth, March 4, 2015

Girish Kishnani, DGM, Marketing, Uninor, April 13, 2015

Anita Kotalwar, System Analyst, e-Governance Department, PCMC, November 27, 2015

Sharad Mahajan, Executive Director, MASHAL

Zigisha Mhaskar, Independent research consultant, CHF International, August 2013

Hanumant Nazirkar, Acting Project Director, Urban Community Development Department, Pune Municipal Corporation (PMC), September 9, 2014

Anil Padale, Administrator, Deepgruha Society, June 3, 2014

Dhananjay Pardeshi and Shubhangi Chavan, Deputy Education Officer, School Board PMC, October 13, 2014

Sujeet Pathak, Area Manager, Pune Region, MS-CIT, Maharashtra Knowledge Corporation Limited, January 30, 2015

Asang Patil, Deputy Project Officer, PMC, November 28, 2014

Ganesh Patil, Computer Instructor, Pune Blind School, March 12, 2015

Nilkanth Dondiram Poman, Chief Information and Technology Officer, Pimpri-Chinchwad Municipal Corporation (PCMC), March 30, 2015

Shalini Sachdev, School Leader, K C Thackeray Vidya Niketan, Somwar Peth, March 4, 2015

Ketki Salunke, PR & External Communications, CSR Initiatives, Uninor, April 13, 2015

Mumtaz Sayyed, Director, MCE Society, PAI-ICT Academy, January 15, 2015

Krishna Shewale, Administrative Officer, Pune Blind School, March 12, 2015

ABOUT THE RESEARCH TEAM

Anjula Srivastava, Research Associate, CCDS: Anjula holds a doctoral degree in Population Studies from the International Institute for Population Sciences, Mumbai. She was earlier associated with Saksham, The Global Fund to Fight AIDS, Tuberculosis and Malaria, Round-7, HIV/AIDS Counselling Programme at Tata Institute of Social Sciences, Mumbai and the Centre for Comparative Studies in Race and Ethnicity, Stanford University, USA. Her areas of research include gender and labour market; HIV/AIDS; and urban poverty and technology.

Swati Shinde, Senior Researcher, CCDS: Swati has a Master's degree in Anthropology from University of Pune. She has been working as a researcher for the last nine years in areas such as HIV/AIDS, youth health, migrants and vulnerability, mental health and empowerment. Her present areas of research include urban poverty, governance and access to technology.

Hutokshi Doctor, Founder-Director, CCDS: A journalist with 30 years of experience in media and communications, she worked in senior positions in mainstream media before setting up CCDS in 2002 to focus on research and communications for social change. She has edited CCDS's award-winning knowledge portal Infochangeindia.org and *Infochange Agenda* since inception, and conceptualised and guided Open Space, CCDS's youth outreach programme in Pune and other cities for a decade.

Shirish N Kavadi was Project Director from March 2014 to June 2015. Shirish has a PhD in history and a Master's in political science from the University of Bombay. His career, since 1980, has straddled both academia and the non-government sector. His research interests are: the history and politics of health and medicine with special focus on philanthropy and medicine, access to justice, law and judiciary, and tribal rights.

Abdul Shaban: Presently Professor and Deputy Director of Tata Institute of Social Sciences (Tuljapur Campus), Shaban has been teaching a course on 'Social Justice and the City' to MPhil and PhD students at TISS (Mumbai) and was the Course Coordinator for the MA in development studies. His areas of specialisation are social exclusion in urban India, and Muslims and development. Shaban did his Master's at JNU and his MPhil and PhD from IIT-Mumbai.

Sandhya Srinivasan: A noted researcher and writer on public health and development issues, she has a Master's in public health from Columbia University, and a Master's in sociology. She is consulting editor to the *Indian Journal of Medical Ethics,* and consulting editor, public health, to Infochangeindia.org. She was a Panos Reproductive Health Media Fellow and an Ashoka Fellow.

Nagmani Rao: Associate Professor at the Karve Institute of Social Service, Pune, Rao is a specialist in gender issues and social movements. She has over 30 years of experience in community social work, research, mass mobilisation and advocacy.

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