Improving Customer Access to Council Services in the London Borough of Greenwich

An Interactive Qualifying Project Report submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
in partial fulfilment of the requirements for the Degree of Bachelor of Science

SUBMITTED BY:

Anthony Crasso

Jacob DeLew

Lisa Pugsley

Andrew Sealey

Nicholas Walsh

PROJECT ADVISORS:

Dominic Golding and Ruth Smith

Worcester Polytechnic Institute

SPONSOR LIAISON:

Jules Spain and Nick Kimber

Greenwich Council

DATE:

29 April 2010

Abstract

This project's purpose was to help the London Borough of Greenwich implement the Internet as an access channel; however, new technology breeds new problems. Many citizens, in the Borough and around the world, are "digitally excluded," due to factors including lack of motivation, access or skill. The data collected showed that those who live in deprived areas, are older, have a lower income, or are disabled are known to be affected. The Council was advised on how to develop its digital services while not excluding particular groups of residents.

Acknowledgements

Our team would like to thank the many people at Greenwich Council and Worcester Polytechnic Institute that made our project possible. First we would like to thank Jules Spain and Nick Kimber for all of their time and support with the project. We would also like to thank Bob Hills for assisting with editing our survey, Marilyn Pearson for accompanying us while conducting our surveys, and Georgia Jelliman for helping us getting acquainted with Greenwich. In addition, we want to thank all of our interviewees for taking time to speak with us and giving us valuable information: Andy MacDonald; Hatice Choli, who also brought us to see Greenwich Online Centres; Gillian Palmer; Sue Brown; and Iris Lapinski.

We would also like to thank Professor Dominic Golding and Professor Ruth Smith for their guidance and helpful comments throughout the project.

Authorship

All team members contributed equally in every aspect of the project.

Executive Summary

The London Borough of Greenwich is in the process of delivering a major program of investment in its service delivery infrastructure, known as the Modernisation Programme, an initiative designed to create a more customer-centered approach to the way services are delivered. Ultimately, the Council would like to offer more of its services through the Internet both for the convenience of its customers and to reduce costs over the long term. The central issue with furthering the use of the Internet and technology is that residents who already are disadvantaged either economically, educationally, or geographically will not be able to take advantage of web-based services and the social rift that already exists will be deepened. The purpose of our project was to study this phenomenon known as the "digital divide," and aid the Council in further developing the Internet as means of service delivery. In doing so, we formulated recommendations on how the Council can address issues of digital inclusion so that the development of digital access channels does not render particular groups of residents unable to access Council services.

The team analyzed data from various sources to obtain an understanding of the digital profile of Greenwich, in particular three wards in the east of the Borough: Plumstead, Abbey Wood, and Thamesmead Moorings. These wards were selected because their socio-economic profile suggests that residents living in these areas would experience digital exclusion – there would therefore be considerable value in establishing local patterns and preferences and designing interventions on the basis of this evidence. We accomplished this by surveying residents in the target wards to determine overall access and use of the Internet based on demographic factors and geographic location. Using data from the Indices of Deprivation we were able to identify the more deprived geographic subsections within Greenwich, known as Lower Super Output Areas (LSOAs). We analyzed three months of service requests collected by the Council's Customer Relationship Management (CRM) system and associated each request with a Lower Super Output Area. This allowed us to compare the interactions of customers from the more deprived areas to those living in more affluent areas. Through our analysis of these data, we were able to build a detailed profile of the residents' patterns of access and relate them to location and socio-economic characteristics.

Our survey results revealed that roughly 70% of residents in the east of the Borough had access to the Internet at home, which is lower than the London average of 80%. We also confirmed the existence of a digital divide in Greenwich as anticipated based on an understanding of national and regional trends. Specifically, people who were older, disabled, or have a low income were less likely to have access to the Internet. Another interesting aspect of the survey was the high penetration of information and communication technology, with 87% of people having at least a mobile phone and 73% having cable or satellite television. There appears to be a clear division of use based on social class where housing tenure is used as a proxy measure, where 81% of people in non-council housing have home Internet access as opposed to 50% of residents living in council housing. Other clear economic factors play a role, because those who lived in the least deprived LSOA were 13% more likely to have home Internet access than those in the most deprived areas.

When asked how the Council can improve access to online services, 24% of people said public computers should be easier to access, and 31% wanted help and training at free access points. Though it appears that there are readily available public Internet access points and information and communication technology training facilities in Greenwich, there is still a sizable population that does not use the Internet. Correlating what we found from our interviews with what we learned in our interviews, we found that many people who did not use the internet have had negative impression of their own educational experiences, both creating a lack of knowledge of the technology and a reluctance to seek training to attain that knowledge. Others had been too old to have acquired such training, outside of for their job if at all, and felt themselves too old to have to both with learning it. Still others were harder to read and felt that the internet simply was not compatible with their lifestyle. This would suggest that the reason for the existence of a divide comes down to residents' lack of confidence, skills or formal education, trust in the technology, and their awareness of the existing free training and facilities.

With the CRM data we also noticed that fewer requests were done by email in deprived areas, which further indicates a digital divide. Telephone was the primary method for requesting services from the Council shown by 71% of requests from the CRM data being done by telephone, which was further confirmed by our survey results showing that 58% of people who contacted the Council in the past six months

did so by telephone. Overall, only about 4% of all the requests were done by email, which indicates that there may be scope to increase the proportion of transactions carried out over the web if the Council were to increase the range and value of web-based transactions that residents are able to carry out over the website. There was also a significant difference in the types of services that are requested by the most and least deprived residents. Requests from the least deprived LSOAs predominantly related to universal services such as waste while the majority of requests from deprived LSOAs were for more complex services with eligibility criteria such as disability services and housing benefits. The CRM data also showed that the more deprived LSOAs in the Borough generally had more service requests. This shows that residents in these areas have the most to gain by having the Internet as an access channel, yet at the same time are less likely to be able to take advantage of it. However, it should be remembered that the types of service requests residents living in deprived LSOAs are likely to raise with the Council are also more complex and sensitive and therefore more difficult to deliver online.

The results from our data analysis combined with information from interviews conducted with experts in the Council and the private sector have brought us to formulate several recommendations. The Council should:

- Update and maintain the current web site and web service system, focusing on improving the functionality and user interface. This is for two primary reasons: the website must function as advertised to give the best possible first impression, encouraging users to continue their use. Similarly, the website must be easily understood and navigable otherwise users will get discouraged.
- Utilize existing Council assets, such as school Information and Communication Technology suites, children's centers, and UK online centers to better inform, train, and provide access to the people. This would enable the Council to address lack of skill at a minimal cost. Since many buildings and trained personnel already are available we feel it would be best to invest in those rather than a new program.
- Look into providing alternative means of disseminating information and requesting services, such as SMS and Digital TV. From our

survey we saw a high permeation of mobile phone and digital TV technology, and as such they would lend themselves well as a means to request services as well as disseminate information.

- Maintain trusted intermediaries for requesting services. Certain services do not work well being accessed online, people will still have situations that require the clarity of a face to face or telephone interaction, and some will simply not adopt modern technology into their lives. Due to such issues there will continue to be a population who will not access online services for the foreseeable future.

These recommendations will provide a framework in which the Council can develop its digital services and manage residents towards less expensive access channels while ensuring that the development of the web as a way of accessing Council services does not unnecessarily exclude particular groups of residents.

Table of Contents

Table of Figures

Table of Tables

Introduction

For the past half century the whole of UK governments, local and national alike, have been reforming how they serve their people in order to adapt to changing ways of life. Recently, in 2004, Greenwich Council enacted its "Modernisation Programme," which was an initiative set out to update the Council's service provision on numerous fronts, including the implementation of the web as an access channel. The Council processes thousands of service requests a day at their centers around the Borough, and still more by phone, so in general, the process of getting services from the Council is a lengthy and inefficient process. The web could help streamline this process; however, with the integration of new technologies come new issues that must be dealt with.

As technology advances at a nearly exponential rate, keeping up is not always easy or desirable for all. Now that applying for jobs or to schools and universities, and managing one's bank account (and many other tasks) are all simply, securely and efficiently done online, technology has become more or less essential to function in modern society. Due to this fact, the lack of access to the Internet and related technologies has started to deepen preexisting social divides based on income, age, and level of education. The way that the digitally excluded define their lives will continue to diverge further from the way that the digitally included do so, unless a more elegant solution can be determined to make sure that all can still benefit from the same level of access. Through research into the field known as the "digital divide," analysis of customer relationship management (CRM) data maintained by the Borough, and our own surveys administered in selected wards in the Borough, we were able to derive telling patterns between economic, social and geographic criterion and prevalence of digital technology in the lives of Greenwich citizens. Using this knowledge, we have tried to answer the question of what can be done to reach out to the digitally excluded, especially in the context of using web based service requests.

Section 1: Literature Review

All around the world, state and local governments are incorporating digital technologies into the way they interact with their citizens. In part, these efforts are driven by the need to reduce environmental and economic costs, but they also represent a concerted effort to improve the provision of services. Despite all the obvious advantages of "going digital," many problems remain in moving to a digital form of government.

Generally speaking, the penetration of digital technology is quite advanced in the UK in comparison to other countries. In 2009, the percentage of households with Internet access in London reached 80%, which is the highest proportion of any region in the country of England (see Table 1 below), and has grown substantially from just 69% in 2007. Providing services using the Internet, the Boroughs in Greater London have the opportunity to reach the vast majority of their people. However, the remaining fifth of the population still represents over a million people without access to the Internet in their own homes, and thus without access to digital information about the Council services in their area. A recent report on Greenwich found that "[m]any communities lacked knowledge about services and how to access them" (Social Inclusion & Justice Division, Chief Executive Dept, 2007). It is important that the Council addresses this population in order to prevent a further schism between the informed and the uninformed.

	Internet access		
	2007	2008	2009
Per cent			
London	69	73	80
East of England	67	70	77
South East	65	74	75
South West	69	67	72
East Midlands	59	61	67
West Midlands	56	61	67
North West	56	56	67
North East	52	54	66
Yorks & Humber	52	62	64
England	61	66	71
Wales	57	67	68
Scotland	60	61	62
UK	61	65	70

Base: All UK households

Table 1 - Household Internet Access

(*Internet access households and individuals* 2009)

To better comprehend the current state of affairs, we will take a detailed look at the history of service reform in Britain and how the varied views of past prime ministers played a role. Later, we examine the inner workings and structure of local government, as well as the initiatives taken to combat long standing issues and implement more modern techniques. Then we will discuss specifically Greenwich Council's efforts to modernize as a part of their aptly titled "Greenwich Modernisation Programme." Lastly, to identify the social impacts of developing the web as an access point for services, we explore the issue of the digital divide to assess who could be left behind and why.

Service Reform in Britain

The foundation for the current British system of government service delivery was laid in 1942 by the Beveridge Report, which focused on improving standards by providing "universal access to services" (Alldritt, Masters, Gerritsen, & Kippin, 2009). Beveridge wanted to make sure that "all citizens without distinction of status or class [were] offered the best standards available in relation to a certain agreed range of social services" (Beveridge, 1942). Beveridge identified three main principles: "1. The central state as the guarantor of universal access to services of the highest quality based on need, not ability to pay; 2. Services are mostly funded by general taxation; and 3. [Services are] delivered primarily by the state itself" (Alldritt et al., 2009).

There has been much service reform in the last thirty years because of various challenges to the continued implementation of Beveridge's principles. One major challenge was the fact that a centralized system can guarantee "uniformity in adherence to rules, prices, and minimum standards," but there are disadvantages in that the central state is unable to respond to changes in citizen's needs on a local level, which causes a disconnect between the government and the citizens (Alldritt et al., 2009). Because of various reasons, some people have been in favor of state control, while others were completely opposed to the idea.

Britain's first female prime minister, Margaret Thatcher, held office from 1979 to 1990 and was responsible for a revolution in service reform "particularly with regards to the welfare state and provision of public services" (Alldritt et al., 2009). Thatcher's "New Right" ideology, which focused on the ideas of free market and

social conservatism, emphasized control of spending on public services. Thatcher also set out to reduce public borrowing and public expenditure, centralize local government, and bring market principles to public services (Alldritt et al., 2009). This "marketisation" of services was accomplished partially by the Local Government Acts in 1980 and 1988, which were responsible for compulsory competitive tendering (CCT) (Alldritt et al., 2009). CCT was meant to stimulate competition in order to make government and health services more efficient (*Compulsory competitive tendering (CCT).*2010).

John Major, who was in office 1990-1997, continued Thatcher's ideas of cost efficiency, "marketisation," and decentralization, but people felt that the system was "unresponsive to the particular needs of individuals" (Alldritt et al., 2009). In order to improve accountability, Major commissioned the Citizen's Charter, which consisted of six principles for public services: "clear published standards, consultation of users and customers, increased information to enable citizens to find out what services are available, more and better choice, greater accessibility, greater responsiveness when things go wrong, extension of New Public Management reform, and [it] sought to strengthen the accountability of service providers to service users"(Alldritt et al., 2009).

To some, Thatcher and Major reformed services by adopting corporate approaches, but many viewed their Conservative reign as an effort that starved local governments of funding, which prohibited growth and major reform. Thatcher and Major were mostly concerned with cost efficiency and other economic benefits. Thatcher's view on local government was that "She did not believe in it as a separate or alternative focus for public policies and she abominated what she saw as inefficient, wasteful and all too often wrong-headed ways" (Evans, 1997). She proceeded to strip certain local authorities of their powers, and even eliminate some completely. To do this, she made sure local government capital expenditure was reduced. For example, from 1977 to 1987, capital expenditure was reduced from 2.6 to 1.3% of GDP, compared to 4.1% in 1967 (Evans, 1997). Figure 1 shows the change in total public expenditure as a percent of GDP from 1978 to 2008. In 1985, in another Local Government Act, Thatcher proposed to eradicate the Greater London Council (GLC) along with six other Metropolitan Authorities and dissolve their responsibilities into 32 different Boroughs and metropolitan districts. The left-wing

leader of the GLC, Ken Livingstone, publicly opposed Thatcher's ideas (Evans, 1997).

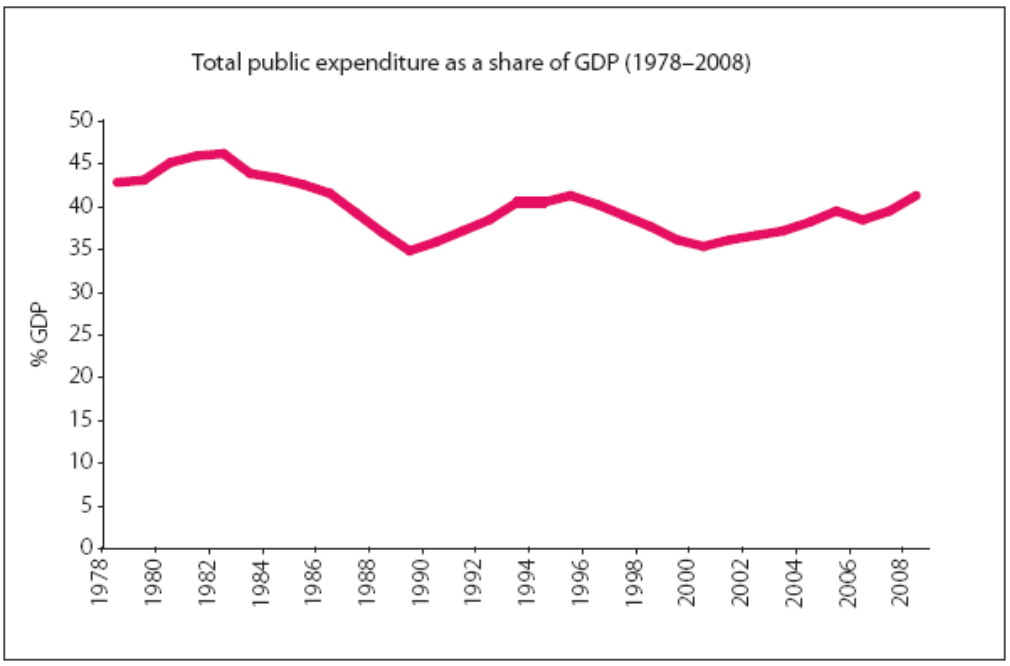


Figure 1 – Total Public Expenditure as a Share of GDP, 1978-2008

(Alldritt et al., 2009)

Ironically, major steps in service reform did not commence until the Labour party came to power under Tony Blair in 1997, with massive improvements in areas such as education, health, and town planning. Many believe Thatcher's "near-destruction" of the Conservative party enabled the Labour party to climb to power (Gray, 2004). Tony Blair came into office with an economy which had recovered from the recession of the early 1990s. He originally placed a freeze on public spending levels, but once it was released, there was a huge investment in public services. He encouraged greater competition and choice with the National Health Service and enacted major welfare and pension reform, but his main focus was on education (Alldritt et al., 2009). Blair brought his New Labour party ideas to create his own approach to service reform, which some say finally "humanized" the ideas of Thatcher and Major. This approach included "top down (through regulation and

targets), bottom up (though user choice and voice), and side on (through commissioning, contestability and workforce capacity and capability)" (Alldritt et al., 2009). Figure 2 illustrates the major elements of this approach.

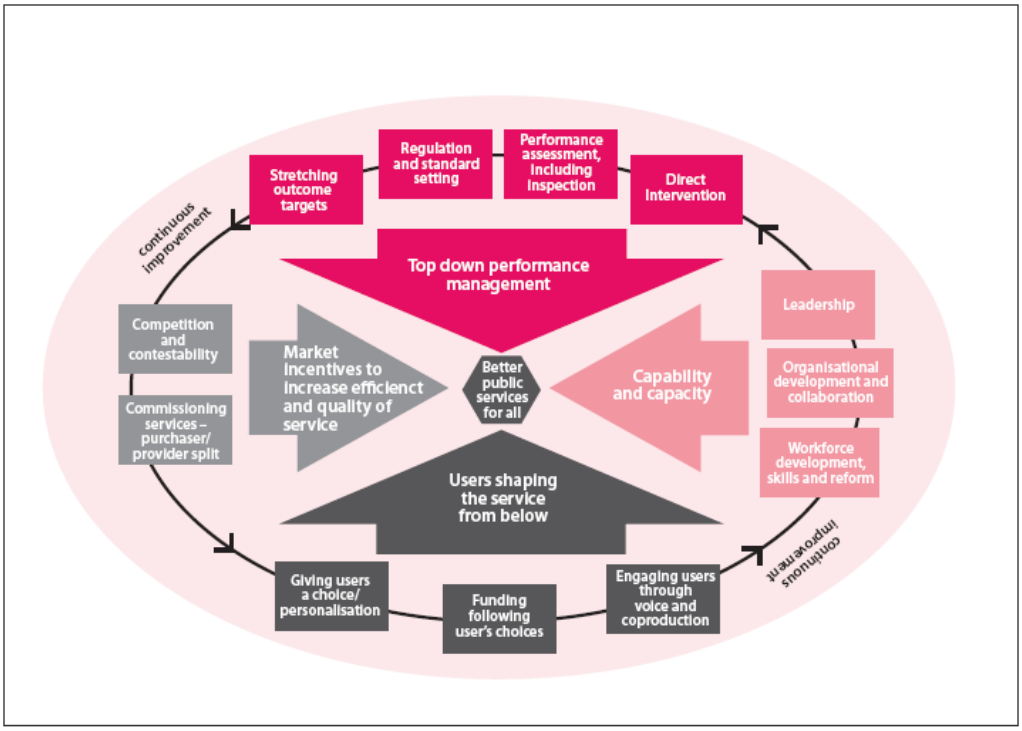


Figure 2 – Blair's Approach

(Alldritt et al., 2009)

Gordon Brown (2007-2010) has built on many of the ideas for service reform initiated by Tony Blair. For example, citizen empowerment extends individual budgets into public services, which means "by giving individuals a personal budget to spend on the support that they need most, they will be able to design and receive an overall higher quality, tailored service" (Alldritt et al., 2009). Although there are many benefits to this approach, it also caused some abuse of the system through fraud (*Individual learning accounts* 2002). Brown believed that "enabling more personalised services by giving citizens the information and power to shape services around their needs and aspirations, rather than by assuming that someone in the Government knows best" is the best way to empower citizens (*Excellence and fairness: Achieving world class public services* 2008). These ideas are represented in Figure 3.

Figure 3 – Brown's Ideas of Excellence and Fairness

(*Excellence and fairness: Achieving world class public services* 2008)

Local Government in the UK

The United States is a federal state. While national laws exist, each state also has its own legislature and state laws on everything from gun ownership to taxation vary from state to state. By contrast, the UK is a unitary state, governed as a single unit by Parliament in Westminster. Parliament is "constitutionally sovereign," meaning that the Scottish Parliament, Welsh and Northern Ireland Assemblies, and Britain's several hundred local authorities are all "subordinate" (Wilson & Game, 2006). While the UK is a unitary state, local governments are constantly being restructured. For example, Thatcher abolished the GLC in 1985/1986, but the Greater London Authority (GLA) was created in May of 2000 with 25-member Assembly and the country's first directly elected executive mayor, Ken Livingstone (Wilson & Game, 2006).

In 1997, there was a plan to develop Regional Development Agencies (RDAs), which were "business-led bodies responsible for developing and delivering

economic strategies for their respective regions – overseen by 'chambers' or assemblies of councilors, business people, trade unionists, and religious leaders" (Wilson & Game, 2006). Rather than being elected, the representatives would be ministerially nominated, and the Government hoped that they would transform eventually into elected regional assemblies. This would be a move towards a reduction in the numbers of councils and councilors (Wilson & Game, 2006). However, in November 2004, this plan was rejected, but proposals for structural reform still exist. This also led to the re-emergence of elected mayors.

The number of non-elected or indirectly elected local government representatives in the UK greatly increased during the 1980s and 1990s, when certain service responsibilities were taken from local authorities and given to Government-appointed agencies, known as "local quangos" (quasi-autonomous non-governmental organizations). Some examples of quangos are Urban Development Corporations for inner city development, Learning and Skills Councils, Housing Action Trusts, and governing bodies of grant-maintained schools and colleges. A huge increase in the number of quangos has caused "fundamental change" in the local government system (Wilson & Game, 2006). Because of this, the term "local governance" was coined to describe the "extensive network of public, voluntary and private sector bodies that are nowadays involved in policy-making and service delivery at the sub-central level" (Wilson & Game, 2006). This leads to another central feature of local government, known as partnership working, which is when councils work through outside organizations to deliver services that they themselves used to be responsible for.

This has all lead to the ironic term, the "Contracting Authority," both in the sense that local authorities have gradually become smaller in size, and also have been outsourcing more and more of their functions. Thatcher's CCT encouraged competition, though did not necessarily encourage outsourcing if the smallest "bid" came from within the Council's own work force. The CCT was replaced in 1997 by the Best Value service provision, which was a legal requirement for councils to consistently improve efficiency of services, outsourcing if necessary. It consisted of four Cs, where councils needed to: "*Challenge* the way in which their services were currently being provided; *Compare* their performance with that of others; *Consult* extensively on a plan to deliver continuous service improvements; and *Compete*, wherever practicable, with other potential service providers in implementing that

plan" (Wilson & Game, 2006). Because of this, the "Contracting Authority" became known as the "Commissioning Authority."

Since the 1980s, councils have tried to improve by taking a "public service orientation or customer service culture" approach (Wilson & Game, 2006). Local council services used to be "tolerably" efficient, but the certain needs of the consumer weren't often taken into consideration (Wilson & Game, 2006). However, councils now recognize citizens as customers, meaning "people able to make choices, with the right to the information on which to base those choices, the right of redress if dissatisfied with the service received, and the right to go to other providers" (Wilson & Game, 2006). Because of this new attitude, councils have developed many "customer first" initiatives, such as integrated service centers and more interactive websites (Wilson & Game, 2006).

Many use the terms "local government" and "local self-government" interchangeably, because they believe that local communities and leaders should be able to make their own decisions based on the interest and well-being of their citizens. However, UK local authorities do not have complete power to do this, since the law restricts them from making all their own decisions. If a council acts outside its powers, such as spending money it is not authorized to, it has acted "ultra vires," meaning "beyond the powers" (Wilson & Game, 2006). In the Local Government Act of 2000 made it so councilors who were guilty of this would be held liable. This act also introduced another measure, the "power of well-being," which allowed local authorities to "think more of the policy outcomes they wish to achieve and the innovations they might make, rather than focusing exclusively on the delivery of existing services" (Wilson & Game, 2006).

Because the UK is a unitary authority and local authorities are subordinate, Parliament can restructure the system any way it likes, at any time. The system can be described as "semi-autonomous," meaning that there are partially self-governing bodies. While some European countries have constitutions, "in the United Kingdom, with no comparable single constitutional document, there is in theory no limit to the sovereignty of Parliament. There is correspondingly no constitutional protection for local government: neither for the rights of individual councils nor for the system as a whole" (Wilson & Game, 2006).

Reinventing Government in the UK

The "reinvention" of Government in the UK has long been a topic of hot debate. Many aspects of UK Government reflect outdated traditions that, more and more, conflict with the modern lifestyles of the governed. For example, the Anglican Church is still the state religion and still rules on legislation even though only 10% of the population are active church-goers (Hadaway, 1998). Moreover, in a recent survey conducted by Greenwich Council it was found that over half of their population either did not know, or felt the Council did not tell them, what the Council even does! (Office for National Statistics, 2009) There are numerous theories as to why there is such a disconnect between the governed and governing body and, likewise, many theories as to how to combat the issue. In this review we have chosen to focus on what we found to be the most prevalent issue, departmentalism, and then discuss one of the most prevalent new approaches to overcoming the problem, e-government.

Departmentalism

The issue of departmentalism has been present in UK local government for decades, and is the major issue that the UK has been trying to escape. It stems from a time when each department would be made up of professionals with very specific skills, and thus very different agendas and motivations. As society changed, this fragmented system remained the norm, including the lack of continuity and order that came with it. The national government has been trying to correct this issue as far back as the sixties. For example, the government tried to combat departmentalism by creating "corporate centers," and replacing "the traditional clerks with chief executives" (Cole & Fenwick, 2003). Unfortunately, with each new push there have been new setbacks and ultimately much of the system has remained unchanged. During this most recent bout with departmentalism however, the Labour Government has chosen a tried and true model for comparison – the corporation. Ideally, even though a corporation comprises separate departments, there is a strong sense of cross-departmental unity generally brought forth primarily from the existence of an executive board with representatives from each department. To get a better sense of the current state of affairs, we will detail a specific case in Devon County Council.

Devon County was chosen for study by the *International Review of Administrative Sciences* due to a long history of departmentalism, but the results of

the study were very promising (Cole & Fenwick, 2003). The Council benefited from having a committee created of representatives from various service areas that had to approve any office proposals. This allowed for a process more akin to having a board of directors, each of whom has their own interests and skills but together accurately represent the point of view of the Council as a whole, which is precisely what the modernization program had intended. In addition to the success of a committee with diverse interests, the study on Devon County also showed many of the members of the Council now had cross-departmental responsibilities, further eliminating the presence of departmentalism. The final way in which the study showed a corporate nature in the county of Devon, was in the creation of seven partnership officer positions that were to coordinate all of the services in each district. This by itself is rather unremarkable, but the fact that these positions were then consolidated and moved to the post of Deputy Chief Executive is remarkable. This shows the flexibility that a council can have when operating more like a corporation.

E-Government

The modernization of government is more than just correcting the issues of yesteryear; it is also the incorporation of new technologies that are now mature enough for use in a government setting, most notably the Internet. The direct use of the Internet in government has come to be called "e-government," and has a variety of interesting uses not the least of which is access to government services from the comfort of the user's own home or other chosen venue. The national strategy for local e-government was published in November 2002, and between 2001 and 2006 £625M was spent on developing e-government in the local governments (Brown, 2008). When given the opportunity, several local councils of London were able to come up with some very compelling ideas, including: virtual viewing of properties and neighborhoods (London Borough of Camden), tackling rural social exclusion (East Riding, North Cornwall and Test Valley), and community involvement and empowerment (London Borough of Sutton and Preston). In addition to the local governments, there are several national projects looking into effective use of e-government, including: "Digital TV (DigiTV): This focuses on enhancing channel strategy and helping to bridge the digital divide, the RYOGENS Project (Reducing Youth Offending Generic National Solutions) which is aimed at tackling crime and anti-social behavior as well as supporting vulnerable young people and ENCORE

(Environment and Community Online Residents' E-Services) which centers on making environmental information easy to find" (Brown, 2008).

The goal of implementing e-government, however, is ultimately to manage customer relations more like a business. According to Silcock, e-government is ". . .the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees," but more importantly, "it has the power to create a new mode of public services where all public organizations deliver a modernized, integrated and seamless service for their citizens" (Silcock, 2001). Furthermore, the Office of the Deputy Prime Minister, the governing body generally responsible for managing the local governments, reports the outcomes of successful local e-government are "right first time" customer service with maximum cost effectiveness, social inclusion and the promotion of active democratic participation (King, 2007). Another key use of e-government would be to collect data for better customer relationship management (CRM). CRM techniques are generally used to collect and organize large amounts of data relating to a population. Many businesses use CRM to first determine the needs of its customers and then keep them by delivering services that are tailored specifically to their needs. Used correctly, CRM can also reduce costs by efficiently managing information and allowing for consolidation of customer service operations. The primary users of CRM are companies and businesses although it is being used increasingly in government settings. In particular, a number of local governments in the UK have been implementing CRM software and for the most part have seen favorable results (King, 2007). For example, the Council of Medway (population 253,500) created a multi-channel contact center in 2006 that uses CRM with the goal of reducing long term costs. As a result, the Council is expecting a return of £1.5 million by 2010 and has received awards for "Excellence in Customer Service" (Lager, 2008). While CRM can be quite beneficial, there are many barriers and challenges to implementation. According to John Kost, group vice president of Gartner CIO Research, "CRM, to be effective, almost always requires significant cultural or behavioral changes by government, but not that many government officials are willing to manage those cultural changes" (Lager, 2008). A related barrier to effective CRM deployment is that government often doesn't view its population as customers, which inhibits the provision of quality customer service.

The Internet by definition is cold and impersonal but it is an unparalleled data collection tool. By using e-government to collect demographic and other information about the customers, the in-person experience that they receive can be modified accordingly. The potential for this technology is seemingly endless, but there are some challenges in the way of its effective use. First of all, the funding will become an issue, if it hasn't already: the total spent on UK e-government totaled only 12.2B in 2003/4, but it rose to a forecast of 17.9B for 2007/8. Secondly, when given the nearly unlimited possibilities of the Internet, creating a coherent and consistent experience across all of the government pages would be a large logistics problem. Finally, one would have to consider the change in management involved in adding a completely new element to the local government.

Redbridge i

The Redbridge council has done a lot to modify how their citizens interact with them on a digital level. In their words, they wanted to "explore what the opportunities presented by the amazing tools invented by Amazon, Wikipedia, eBay, MySpace and Google Maps ... could mean for the public sector," in order to provide "property referenced data and interactive mapping, user personalization, [and] improved transactional capacity," among other things, which is evident in the website they produced. The site presents itself in a format similar to that of a social networking website rather than the typical, stoic, format government websites generally adopt; the first thing the user sees when they load the main page is a list of the most frequently accessed online services and information, the local councilors and their contact information, and recent updates in local neighborhood activity. Obvious parallels can be drawn between this presentation and commonly used sites such as Facebook or Twitter, which presumably was the intended point, since a vast number of Internet users spend their time on such websites and are as such very familiar with that style of set up (Jaxa-Chamiec & Fuller, 2007). Other useful features include having a section on the main page that allows users to report common issues, such as complaints about fly tipped (illegally dumped) materials, dog fouling, etc, which are frequently accessed services. As a result, most of the primary services offered by the Redbridge council online are all available with a minimum number of "clicks," which is beneficial for a number of reasons. Firstly, customers will lose interest the more they have to work to find their desired information; secondly, a minimum number of

page loads would be preferable for those who do not have a fast computer or connection. The final technique that Redbridge implements is the use of Google maps. When reporting a pothole, or finding the nearest services, Google maps is used as a means of representing that data in a user-friendly manner, as opposed to the less streamlined method of filling out a form, or giving verbal directions by phone. This allows people to accomplish the same goal but more quickly and more simply.

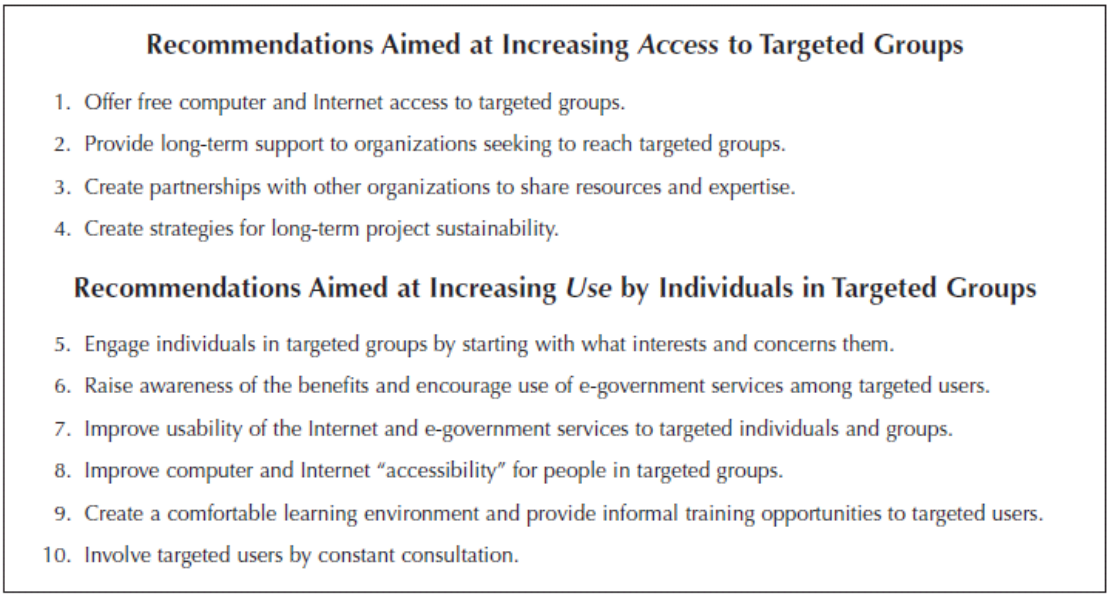
All this considered, even if a Borough has a very user-friendly and highly functional website it is only as useful as the results that it is able to produce. After reviewing the posts in the Redbridge-i forums, several users complained that although they reported things online they were seldom addressed adequately without follow up phone calls. However, most users were highly appreciative of being able to interact with their representatives in a meaningful way, both with the Mayor's blog and with citizen participation in the forums. Having a highly accessible website, while very important, is only one piece of the grander and significantly more complicated puzzle.

US Inclusion Strategies

The UK government can benefit greatly by looking at the United States as an example of some of the best e-government systems and strategies of inclusion. West found the US ranked highest among a review of 198 countries based on the number of publications, databases, and online services available on government websites, though of course these are not necessarily measures of satisfaction with of the efficiency of e-government (West, 2007a). In a similar study specifically on the US, West found that 86% of the state and federal sites offer fully executable services online, while Boeltzig and Pilling found that 99% of US services are online, 7% higher than the UK (West, 2007b; Boeltzig & Pilling, 2007). Much like the UK, the US realizes that though there are many advantages to an electronic form of government, there must be actions taken to bridge the digital divide. To learn from the US we will look into several digital inclusion strategy case studies.

Digital inclusion strategies involve three common themes; increasing Internet access, offering of education and training, and increasing e-government participation. Based on twelve case studies conducted throughout the US and the UK, Boeltzig and Pilling make ten recommendations to improve digital inclusion (Figure 4). These

recommendations will help formulate ideas of digital inclusion techniques for Greenwich Council to pursue.



Recommendations Aimed at Increasing *Access* to Targeted Groups

1. Offer free computer and Internet access to targeted groups.
2. Provide long-term support to organizations seeking to reach targeted groups.
3. Create partnerships with other organizations to share resources and expertise.
4. Create strategies for long-term project sustainability.

Recommendations Aimed at Increasing *Use* by Individuals in Targeted Groups

5. Engage individuals in targeted groups by starting with what interests and concerns them.
6. Raise awareness of the benefits and encourage use of e-government services among targeted users.
7. Improve usability of the Internet and e-government services to targeted individuals and groups.
8. Improve computer and Internet "accessibility" for people in targeted groups.
9. Create a comfortable learning environment and provide informal training opportunities to targeted users.
10. Involve targeted users by constant consultation.

Figure 4 – Recommendations for Increasing Access and Use

(Boeltzig & Pilling, 2007)

A case study done on the eRutherford program in Rutherford County, North Carolina provides a good example of a program that tried to address many of the main issues of the digital divide and covers many of the recommendations. To increase access to Internet, Rutherford County worked with local Internet services providers (ISPs) to provide affordable Internet services to the more remote and rural areas of the county. Also, to increase access they established 18 public access sites in locations they thought would best serve residents that were in most need of public access. The report stated "…some residents would not use public libraries or would not feel comfortable going to a community college…" to use the Internet; due to this, they used more public for-profit establishments such as coffee shops and restaurants (Boeltzig & Pilling, 2007). One task they found difficult to accomplish was providing digital literacy training. This proved to require too many resources and this part of the program was aborted, although some of the public access sites individually tried to offer some form of training to those in need. This study also suggests that feelings of intimidation can be a barrier with older modes of government access in offices and buildings, not only with a new technology.

The Computers for Homebound and Isolated Persons (CHIPS) program in Knoxville, Tennessee is another interesting effort to promote digital inclusion. This is a good example of a minimally funded program that is run mostly on donations and volunteers. CHIPS provided donated computers and free Internet access to homebound seniors with the help of volunteer mentors in providing extensive training and support. This program struggled when a grant from the US Department of Commerce ran out and though this caused them not to be able to take on any new clients they were still able to provide support to those already in the program. Currently they are up and running on a community grant from the Knox County government. Ultimately it was said that "using refurbished systems and volunteers for technical support and training was really what made the program sustainable" (Boeltzig & Pilling, 2007).

The United States, on a federal level, is also trying to combat the digital divide with a National Broadband Plan developed by the Federal Communication Commission (FCC) for Congress. The plan has the goal of "home broadband use by 90% of Americans by 2020, compared to 65% today" to avoid creating a divide in those who have the means to easily communicate and find jobs and those who cannot; which the Knight Foundation President and CEO Alberto Ibarguen referred to as, a "new category of second-class citizens" (FCC, 2010).

Greenwich Modernization Program

Much of Greenwich's housing was built directly after World War II when the Council was focusing on the development of public housing and urban infrastructure and the delivery of social care. However, much of this housing infrastructure declined in the decades of industrial decline that soon followed. In this post-industrial era, the economy in Greenwich was collapsing and the Borough showed "signs of severe urban decay and suffered high unemployment, poverty, dereliction and environmental degradation" (*Greenwich modernisation programme (summary and purpose).* 2005). Council services were cut, and facilities such as schools and libraries became run down. Things began to change in the late 1990s with the development and implementations of the Council's Corporate Plan to improve the environment, boost morale in the Borough, increase employment, and improve housing. The Council

realized that it must "provide the leadership in the Borough which will bring improvement to the economic, social and environmental well-being of the area" (*Greenwich modernisation programme (summary and purpose).* 2005).

Greenwich Council began a "Modernisation Programme" in 2004 in order to improve the way services are delivered. The program had ten main goals, which all fit in to certain themes of the 'Greenwich Strategy': "a place to live," "a place to work," and a "Greener Greenwich" (*Greenwich customer centered and integrated approach*2009). The first goal was to develop an electronic government by investing in an improved information and communication technology (ICT) infrastructure, at the same time ensuring that a digital divide doesn't prevent some customers from accessing essential services. The program also sought to develop community centers (in Eltham and Woolwich) which would provide integrated leisure, educational, and service functions. Other objectives of the program included improving school facilities by renovating and building schools, improving housing standards, and creating children's centers that combine education, childcare, family support and health services (*Greenwich modernisation programme (summary and purpose).* 2005).

As part of the Modernisation Programme, the Neighbourhood Services and Property Strategy was intended to develop a new website, a 24 hour contact center, and various integrated service centers in key community areas to pull all the pieces of the Programme together (*Greenwich modernisation programme (summary and purpose).* 2005). The main goal of the strategy was to "achieve a customer centered and integrated approach to delivering services that are cost effective, efficient and of high quality" (*Integrated front offices.*2009). Overhauling the current system, the Council created an integrated front office environment that focuses on customer service, and allows the customers flexibility in the method of access chosen.

A large part of the investment of the Modernisation Programme went towards new community centers within Greenwich. These Local Service Centers are meant to provide integrated leisure, library, and service center environment in order to bring Council services closer to residents. First to open was the Riverside Centre in May 2007, then The Eltham Centre in November 2007. Two more state-of-the-art centers, Woolwich and Greenwich Centers, will open in 2010 and 2011 (*Integrated front*

*offices.*2009). The ten main projects of the Modernisation Programme are explained in Table 2 below.

The Modernisation Programme Office, established in 2005, invested £800 million in various projects, including the integrated front office project (*Integrated front offices.*2009). The goal of this project was to increase efficiency yet reduce costs while also increasing the customer service experience by changing to a front and back office system. In order for the system to work successfully, a new Customer Relationship Management system was developed, in the form of a Customer Contact System (CCS) which allowed for communication between the two offices. This way, "[the] front office staff in the Council's contact center [is able to] capture relevant information through different channels [telephone, Internet] and then either deal with the query immediately or relay the service request electronically to the back office" (*Integrated front offices.*2009).

The Council's next step is to improve the CCS so that all services may be handled in the same fashion. They also would like to improve their website so that online service requests will directly feed in to the CCS (*Integrated front offices.*2009). Currently, when a customer completes a web form on the Council's website such as reporting a pothole, an unformatted email is sent to an employee who then has to manually reenter it into the CRM system. Ideally, information from these web forms would be sent, correctly formatted according to customer, directly into the database of the CRM.

Area of Focus	Description
Electronic Government	Develop the Council's ICT infrastructure which is currently close to collapsing to ensure public services are accessible to all and achieve greater integration and co-location of services. Projects include infrastructure & portal, land & property, customer relationship management system, human resources & payroll, financial systems, data & integration, and document image processing
The Eltham Centre	Provide an integrated leisure, library, and local service centre with Greenwich Community College occupying the upper floors, in order to bring Council services closer to residents
Woolwich HQ	Make Woolwich the primary municipal centre in the Borough, where all of the Council's back office staff will be located. Will also include a major Local Service Centre with access to all Council services, a library, café, and meeting space
A New Heart for East Greenwich	Develop an integrated service centre at the former Greenwich District Hospital site that includes a library, a leisure centre, a health centre, retail, and car parking
Schools Reorganisation Programme	Provide an integrated approach to the provision of community services in schools including facilities for play, sports, music and arts, early years provision, libraries, open learning centres, community meeting space, and access to family support
Building Schools for the Future	A national 10-15 year programme to lift educational attainment through a complete transformation of England's secondary schools
Children's Centres	Tackle child poverty through an integrated approach that joins together education, childcare, family support and health services
Neighbourhood Services and Property Strategy	The future plan for delivery of council services which includes a new website offering online payments and bookings, a 24/7 Contact Centre, and a network of Local Service Centres
Housing Renewal	Developing and improving housing stock in the areas of Kidbrooke, New Haddo, and Woolwich
Service Delivery	As well as the Local Service Centres, e-Government and ICT will be used by improving the website with e-form facilities and a multi-channel contact centre. Customers will be able to access services in any way they want at any time, and get and give information to the Council easily

Table 2 – Ten Key Projects of the Modernisation Programme

(*Greenwich modernisation programme (summary and purpose).* 2005)

Digital Divide

The world is increasingly more reliant upon technology to improve the way of life for many people on a global scale. These efforts to move towards digital technology are driven by many factors, including environmental and economic costs. However, cost is not the only factor considered, but also the potential improvement to the way services are delivered, if not the services themselves. As the government integrates more technology into service delivery, more people get left behind, causing a divide. With 92% of the UK's government services available online, there is still some level of exclusion between those who have access to these services and those who do not (Boeltzig & Pilling, 2007). This "digital divide" is the growing disparity between those who are able to use technology to access services, and those who are either forced to or choose to use other methods. While the government is attempting to bridge the gap by providing training courses and free access to computers, and supporting their online services at the Council buildings; the divide goes beyond that, because citizens lack access, knowledge, and motivation to really accept and integrate the Internet into their lives.

The issue of the digital divide has been at the forefront of debates throughout the United Kingdom and the world at large. In the past few years, more in depth studies have been conducted to assess the feasibility and nature of Internet use. The larger issue is not just computer access, but also a person's ability to either afford or obtain public access to the Internet. In fact, according to the UK government, "inequality in the use and application of digital technologies is a new driver of social exclusion in the 21st century, which risks accelerating existing social divides and creating new ones" (*Digital inclusion - communities and local government.*). The overarching goal, for local government, is how to make their services available to a wider population using the Internet while not widening the socioeconomic gap that already exists. The divide between those who have access and those who don't is due to three main factors: access to the Internet, a person's skill and confidence in using a computer and navigating the Internet, and motivation to use the Internet (*Understanding digital exclusion research report.*).

Access to the Internet

Over the past few years, Internet access in UK households has been increasing. A study shows that within the last three months, 94% of adults in the greater London area have accessed the Internet at their household in the last three months. However, this also means that over three quarters of a million people are not able to access the Internet in their homes (Office for National Statistics, 2009). Table 3 shows the ways in which UK adults had accessed the Internet in the past three months. Results from the years 2007 to 2009 show an increase in the number of people who are accessing the Internet by most means, except for at the workplace, which has slightly decreased. While the previous statistics in Table 1 show that 80% of households had Internet access in 2009, this statistic (94%) may be a more accurate representation of the amount of people, rather than households, that have access to the Internet at home.

	2007	2008	2009
Per cent			
Home	87	90	94
Place of work (other than home)	44	44	43
Another person's home	19	20	28
Place of education	12	14	15
Hotspot (wi-fi)	2	5	6
Internet cafe	4	5	6
Public library	4	4	5

Base: UK adults who accessed the Internet in the last three months

Table 3 - Adult Internet Access

(Office for National Statistics, 2009)

Socioeconomic and demographic factors generally determine the level of accessibility to services and information. In the early part of the 21st century the main issues with Internet access were: "affordability, time, training or support, literacy levels, disabilities and usability of interfaces" (*Understanding digital exclusion research report.*). With advances in technology and declining costs (see Figure 5), the barriers posed by affordability, training/support, and usability of interfaces are now less imposing. Figure 5 shows a noticeable decline in the costs of

broadband Internet in the UK at various speeds, from 2002 to 2006. However, there are still some people for whom cost is still a major hurdle (*Digital inclusion - communities and local government.*).

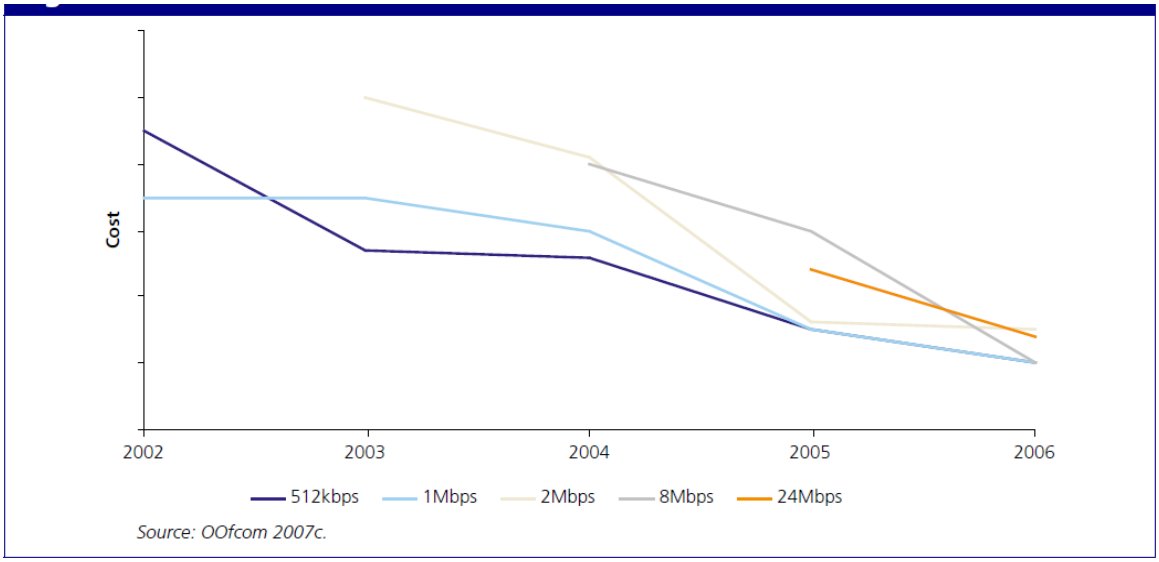


Figure 5 – Trend in Internet Broadband Cost in the UK from 2002-2006

(*Digital inclusion research.*)

Although the price of computing technology and services seem to be getting lower by the day, some cannot afford the £200 pounds for a computer, let alone the monthly cost of Internet access. Recent data indicate that 18.6% of the total population of non-users in the UK does not access the Internet in any way due to cost (see Figure 6). This means there are many people who want Internet access and cannot afford it, either at home or pay points such as Internet cafés. This causes a large amount people that can overwhelm the resources available at public access points. This has become an issue at local libraries and council centers, where people can access the Internet and possibly receive help or training if needed, but often need to wait extended periods of time to use a computer (*Greenwich service centres satisfaction study*2009). Table 4 shows that 19% of non-users would consider using the Internet in the future if the cost of computers or the Internet were lower, and 14% said they would use it in the future if they could receive free IT training.

Factor	Percent of non-Internet users citing this factor
Nothing/will never use it in the future	60
Better training:	
• Free IT training	14
• More convenient learning facilities	10
• Better learning facilities	8
Reduced costs:	
• Reduced cost of computers	12
• Reduced cost of the Internet	7
More time	6

Table 4: Factors Which May Encourage Future Use of the Internet

(Morris, Goodman, & Brading, 2006)

An important issue to consider is children's available access to the Internet. If a child does not have the proper access to computers and the necessary training provided at school, then it is likely they will be digitally excluded now and later in life. The UK has spent billions of pounds placing computers in classrooms and averages 4 students per computer. This increase in access to students and the younger generations opens the door to competent use later on in life (BBC, 2010; Jaxa-Chamiec & Fuller, 2007; Morris et al., 2006).

Another means of access to the Internet is through mobile phones, including smart phones, which are becoming more prevalent each day. Many governmental and other agencies have been looking into mobile phones to reach out to those who may

not have a computer with Internet access at home, however it has been shown that 99% of those with smart phones already have Internet access through a home computer (Jaxa-Chamiec & Fuller, 2007).

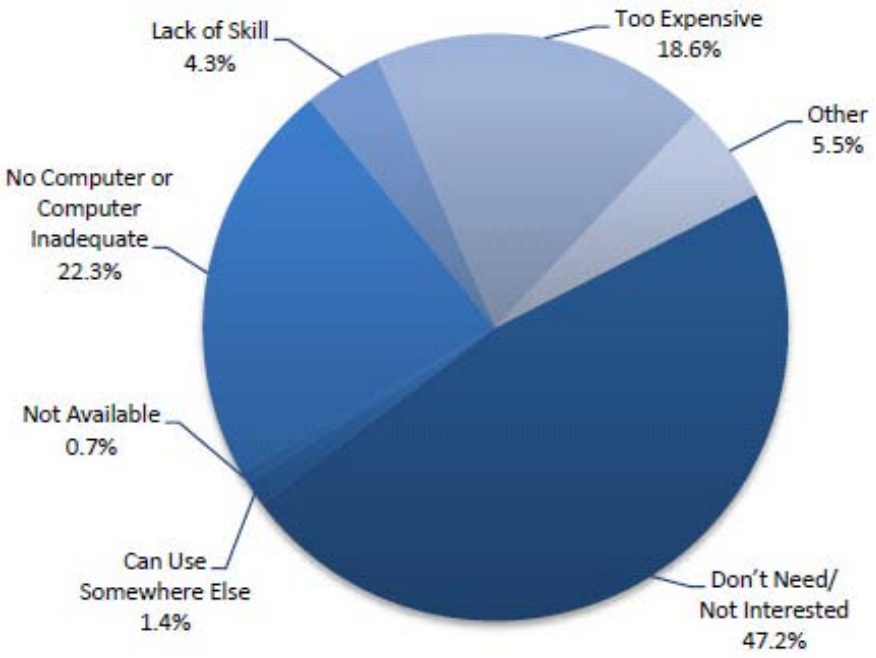


Figure 6: Main Reason Given for No Internet Use, 2009

(*Digital nation* 2010)

Gordon Brown's Digital Economy Act, passed 8 April 2010, places certain regulations on Internet access in Britain. It would have included a plan to provide 2Mbps broadband Internet access to citizens by 2012, with 90% of households and businesses receiving access by 2017 (Digital Britain team, 2009). However, the 50p per month landline tax which would have funded this program was dropped by Labour in order to get support for the Finance Bill to pass in the wash-up period. It is speculated that if Labour wins the election, the tax would be reinstated (Kobie, 2010). If a program such as this were to be instated, Internet access in the UK could increase dramatically, although would not erase the problem completely. Receiving free Internet access could erase affordability issues and possibly encourage more people to use the Internet, but many other factors will still prevent some from doing so.

Given the current state of global economic affairs and the recent state of the global economic downturn many governments have looked towards improving their economic outlook in the short and long term future. With an effort to try and bring people into the pool of Internet users, governments, especially the UK, have projected economic gains for every person that becomes an Internet user.

> Extrapolating through the EU's eGEP model estimate of 1.54% growth to EU GDP would equate to £229 per 'digitally engaged citizen'. That is equivalent to an additional £1.1 billion of total GDP if 4.8 million people are moved from exclusion to inclusion (Jaxa-Chamiec & Fuller, 2007).

This means that if 4.8million people who are excluded became Internet users it is projected that the UK's GDP would increase by £1,100,000,000. This increase represents only 0.05% increase in GDP (CIA, 2010), the year on year increase would be almost instant, with room to grow larger. The more people online, the more goods and services can be traded throughout the world. With government involvement and money for commercial interests significant enough the digital divide may see a narrowing in the coming years, but may trade that for a deepening of the divide (Arthur & Wintour, 2010).

Navigation Skill and Confidence

Many UK citizens feel as though the Internet is too difficult to use, it is too complex, and/or it is not secure enough (*Understanding digital exclusion research report.*). This group consists mainly of elderly people, those with disabilities, and those with other barriers such as language (Jaxa-Chamiec & Fuller, 2007; Morris et al., 2006; Sipior & Ward, 2005) . With training and support, the confidence people have in their skill set can be boosted. Table 5 contains results from a small US case study which shows that people perceived themselves to be at a higher skill level after receiving training. Although it uses a small sample size, one would expect that effective training will generally increase a person's skill and also their perceptions on how skilled they are.

Many people have a legitimate foundation for fears regarding the security of the Internet. With recent news reports of credit card and identity thefts reaching an all time high, the concern for one's personal information is valid, leading to a lack of confidence in the system (see Figure 7). This confidence can be gained through proper

knowledge of protocols and data protection used to transfer information and ultimately boils down to good Internet use habits. Figure 7 shows the opinion of people from 26 countries on which aspects of using the Internet concern them the most. The most concerning was fraud, followed by violent and explicit content, threats to privacy, state censorship of content, and the extent of corporate presence. The security concerns cross into the realm of a person's perceived ability to use the Internet; "whether an individual is able to, and feels able to, make effective use of the technology." (*Understanding digital exclusion research report.*).

Those who are not skillful in computer use are generally those who do not want to use a computer, or the Internet (Boeltzig & Pilling, 2007). The issue of skill is being addressed at the bottom level of the spectrum by putting emphasis on the use of technology in schools. The use of computers in schools will alleviate the issue in the long term, “Nearly half of the digitally excluded are over 65 – but demographic change will only extend digital inclusion very slowly” (Jaxa-Chamiec & Fuller, 2007). While skill can be a deterring factor for some, the issue of access can be tied to the issues of skill and confidence. Those with computers at home are more likely to be of a proficient competency regarding computers than those who do not (Boeltzig & Pilling, 2007; Jaxa-Chamiec & Fuller, 2007).

Computer Experience	Community Participants (n=31)			
	Before Training		**After Training**	
	Frequency	Percent	Frequency	Percent
Beginner	24	77.4	6	19.4
Intermediate	2	6.5	5.14	45.2
Advanced	5	16.1	11	35.5

Table 5: Community Participant’s Self-Assessment of Computer Experience

(Sipior & Ward, 2005)

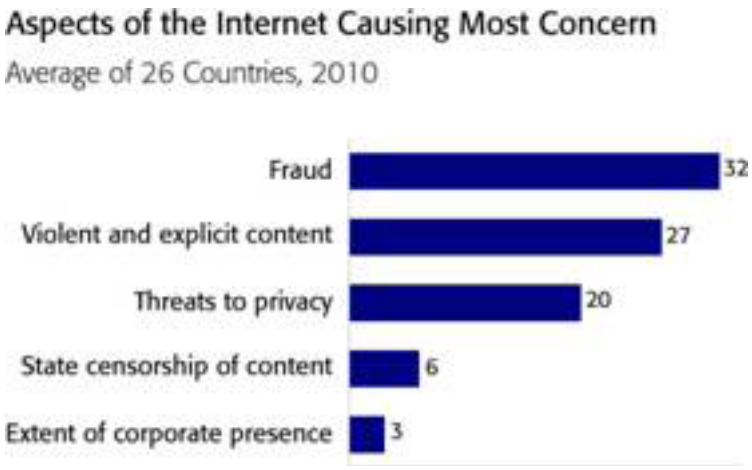


Figure 7: Aspects Concerning Internet Users

(BBC, 2010)

Another factor that influences skill is disability. People with disability issues have trouble with technology access, but at the same time technology itself can be the answer to disabilities (*Digital inclusion research.*). Although disabilities are generally beyond a person's control, certain training or hardware improvements could help those with various types of impairments. Literacy issues could be combated with education, while certain mental impairments or learning disabilities could be helped with specialized training, and those with physical disabilities could be assisted by specialized hardware. A study consisting of adults with learning disabilities found that they all had mobile phones and computer access, but not all had access to the Internet, which could partially be attributed to a fear of learning, need for training, vulnerability, or a need for appropriate ICT to tailor to their needs (*Digital exclusion profiling of vulnerable groups: Adults with learning disabilities: A profile* 2008). Figure 8 shows examples of software and hardware especially for those with learning disabilities, such as voice recognition software and specialized keyboards.

- **"Thunder" voice recognition computer software:** reads out everything that the mouse rolls over on the screen
- **"Dragon" voice dictation computer software:** helps people with reading, spelling and typing difficulties, as it allows the user to create documents, reports, emails all by using verbal commands
- **Voice recognition mobile phones:** useful for partially sighted or blind people, so they can say the name of people to call and the mobile reacts to their voice
- **Specialised keyboards, with extra large buttons:** make usage considerably easier, especially for physically disabled (including people with sight difficulties)
- **Specialised keyboards, with alphabetised key layout:** make it easier for people not familiar with QWERTY keyboards, and who may operate computers more successfully with this type of layout
- **'Pen Readers'** – can be swiped across text on a computer screen, which activates a spoken function, can pick up spelling mistakes and typos more easily

Figure 8: Examples of Software and Hardware Tailored to Meet the Specific Needs of People with Learning Disabilities

(*Digital exclusion profiling of vulnerable groups: Adults with learning disabilities: A profile* 2008)

Individual Motivation

The final issue that is hindering the individual from using the Internet is the perceived value in its use. A person is not going to do something they see no value in, hence the problem of people not using computers who do not understand or see the possible benefits. The issue of motivation may also be related to the previous two categories of access and skill. Those people skilled in computer use and who have ample access will have gained experience and thus can accomplish what they wish in a short amount of time, while those who do not have these traits may be discouraged from using the Internet. Motivation is a multifaceted topic that is affected by access, economics, skill, etc, but there are some who choose not to use the Internet purely because they do not want to use it and/or ignore it. Those who choose to ignore the Internet or not utilize it are taking a "dismissive view." This dismissive view is resulting in a deepening of the divide, even though the divide itself is reducing in terms of access and use (*Understanding digital exclusion research report.*).

Numerous studies have been done to determine the relationship between demographics and the lack of Internet use, and some strong correlations have emerged as a result of that research, most prominently in regard to age (see Figure 9 and Figure

10). The current breakdown shows that the older a person is, the less likely they are to use the Internet. In Figure 9, the access to the Council via the Internet is broken down into age groups, based on previous writings, this figure is showing that those of a younger age do not access council services as much as older people and the elderly do not use or cannot use a computer to do so (*Greenwich service centres satisfaction study* 2009). Figure 10 also shows an apparent correlation between access to Internet and younger age, by seeing if members of different age groups had used the Internet within the last three months, more than three months ago, or never.

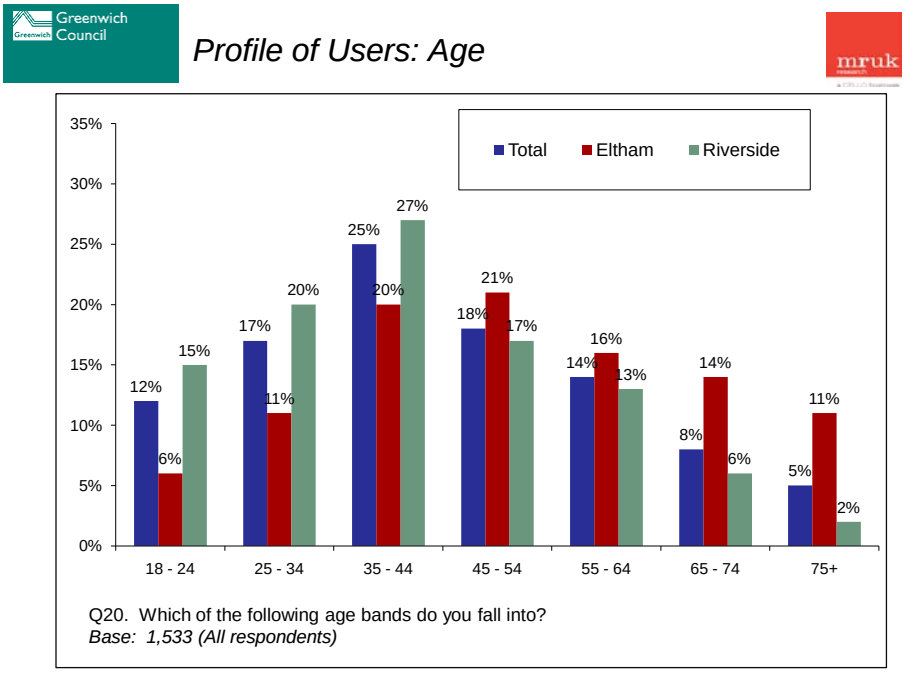


Figure 9 : Age Group Who Access the Council Services Via the Web

(*Greenwich service centres satisfaction study*2009)

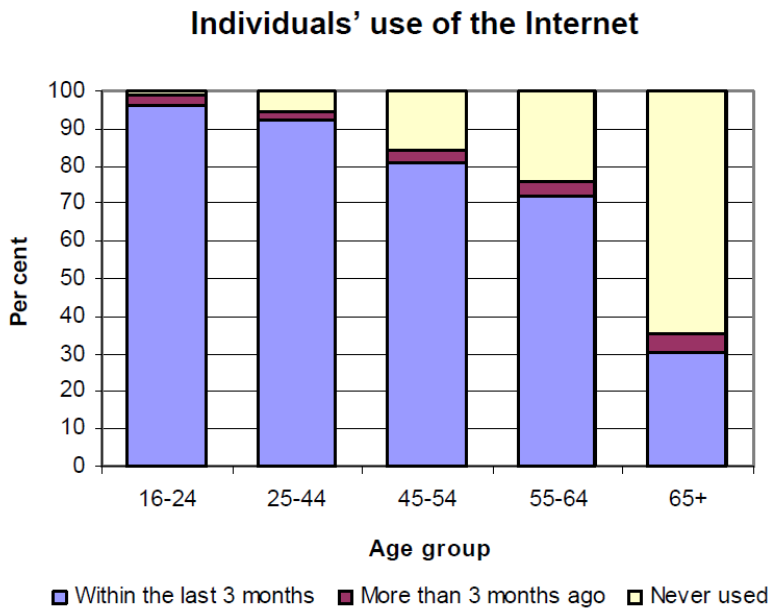


Figure 10 - Individuals' Use of the Internet

(*Understanding digital exclusion research report.*)

Making the benefits of using the Internet known and making training accessible are the two widely accepted ways to convince those who make the choice not to use the Internet interested in using it. According to survey data from multiple studies, anywhere from 24-48% of those not included digitally are that way by choice, as in either not seeing the benefit or lack the desire; see Figure 6, which shows 47.2% of people are non-users because they have no interest in using the Internet (*Digital nation*2010; Morris et al., 2006). According to an international survey by the BBC, 60% of UK citizens said they could live without the Internet (Figure 11). Many people do not see the benefit in moving to a digital life style or are satisfied with their current life styles. Many of the low-income population are motivated and wish to use the Internet but fall into the "no access" group (*Greenwich service centres satisfaction study* 2009). As stated before, the three categories of the digital divide are all interwoven to such a degree that, although each can be separated, a person usually suffers from multiple hindrances.

Conclusion

The literature on the digital divide is extensive and growing all the time. Many different approaches have been proposed to address problems similar to those in Greenwich, and a great deal was learned from reviewing them. We learned that the primary factors limiting individual use of the Internet are access to Internet, navigation skill and confidence, and individual motivation, all of which are multifaceted issues in themselves. We found the groups that are most likely to be disadvantaged include the elderly, those with low incomes, those from rural locations, and those with disabilities. We also gained a working knowledge of current and past programs of service revision, both nationally and in Greenwich, which have lead to the current state of service provision. Specifically, the overhaul of the e-government ICT has lead to the current CRM system which we worked with extensively on site.

Once we had a clear picture of what to expect, it was time to test the validity of our research by conducting surveys and interviews on site. It is easy to over simplify and just assume that we would see specific characteristics based on known criteria for Greenwich, but the literature represents just that: a simplification of a collection of highly varied people and mindsets. By either confirming or disproving trends in the field we were able to formulate recommendations based on similar efforts made in the literature or on our own observations.

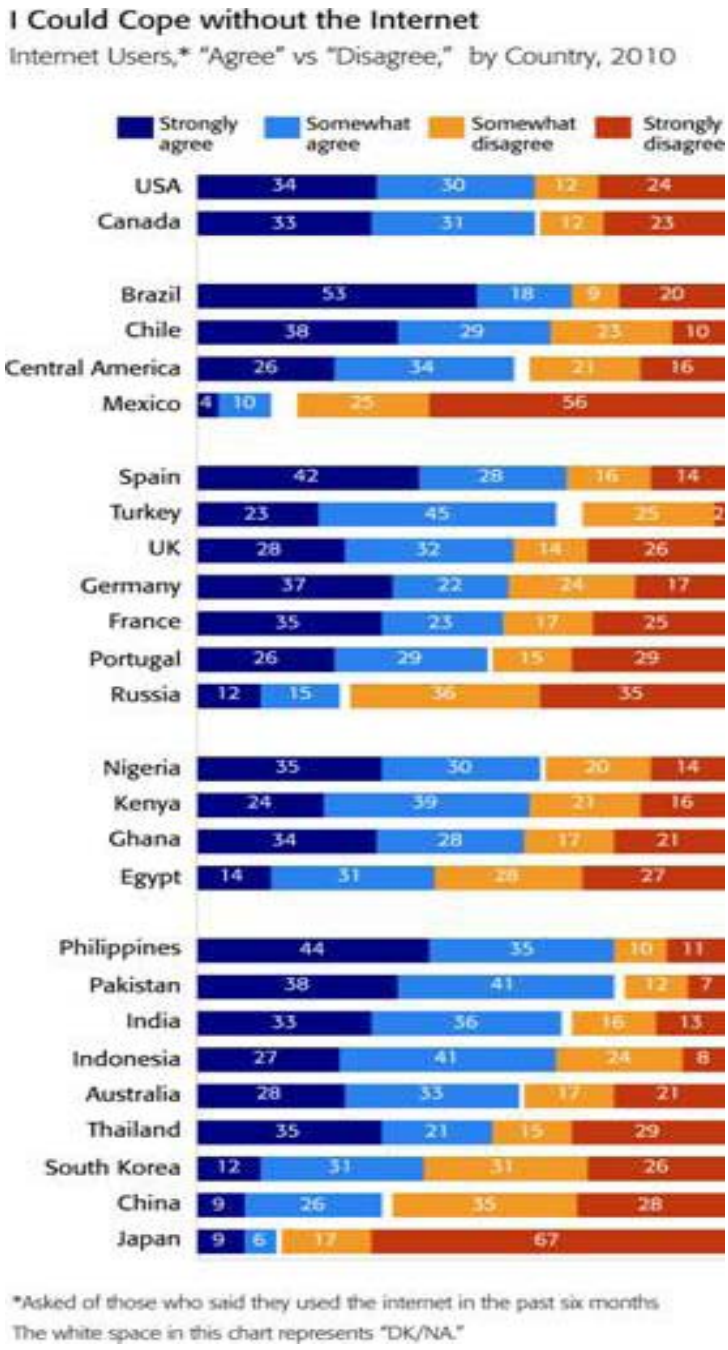


Figure 11: Living Without the Internet

(BBC, 2010)

Section 2: Methodology

The overall goal of this project was to develop an understanding of the 'digital profile' of the Borough of Greenwich, and to identify the issues involved in increasing the range of Council services available on the web as part of the Council's wider customer access channel strategy. The project had four primary objectives and several overlapping tasks necessary to accomplish these objectives.

The first objective was to look at Greenwich's socioeconomic profile with a high concentration on the wards where our survey was conducted: Abbey Wood, Plumstead, and Thamesmead Moorings. This was done by analyzing Indices of Deprivation data that the Council had available. This allowed us to identify the most and least deprived areas in the three wards, which made it possible for us to compare other forms of data analysis to their socioeconomic profile.

We characterized the current use of council services by analyzing Customer Relationship Management system data. Under the Modernisation Programme, the Council instituted a new system to deliver its services and has been keeping careful records of how these services are being used through their CRM system. The project team analyzed these records in order to identify patterns that may be important for future developments in customer access. The project team determined patterns of services usage by customer type within the Borough, and developed a profile of particular customer groups. As part of this assessment, our team compared this data with our Indices of Deprivation analysis to determine service use patterns in the most and least deprived areas.

An integral part of our project was to go to three of the most deprived wards of the Borough: Abbey Wood, Plumstead, and Thamesmead Moorings, to survey the people that are most likely to be digitally excluded to develop patterns of Internet usage. This was intended to not only give us the level of Internet access, but allow us to take a closer look at the profile of the residents that have and don't have Internet access. While some of the analysis will cover the entire Borough, such as the CRM data, our survey focused only on the three wards mentioned. This survey data is also supplemented by existing data from an exit survey done recently in Council service centers. This was done with a much larger sample size and provided additional information for comparison.

In order to characterize the best practice in the public and private sector in relation to addressing the 'digital divide,' we conducted a series of interviews with experts in the field and within the Council. The interviews were supplemented by further background research, especially the review of reports and policy statements recommended by interviewees.

Indices of Deprivation Data

The Indices of Deprivation allowed us to characterize the socio-economic profile of Greenwich and identify key locations within the Borough, and our target wards, that are considered deprived. This also created a foundation for which all of the other data analyzed and collected could be compared to, specifically by the location through Lower Super Output Area (LSOA). An LSOA is a small geographic area used by the Office of National Statistics for the analysis of census data. Each LSOA typically includes 1500 people.

The Indices of Deprivation are measures used by the UK Office for National Statistics to characterize the levels of deprivation in different geographic areas. Originally created in 2004, but updated in 2007, indices include three main categories: the Index of Multiple Deprivation 2007 (IMD2007), the Income Deprivation Affecting Children Index (IDACI), and the Income Deprivation Affecting Older People Index (IDAOPI) (Data Management and Analysis Group, May 2008). Typically, the indices are presented by LSOA which are the default unit of analysis for small area statistics (*The english indices of deprivation 2007: Summary* December 2007). Looking at deprivation on a smaller level also provides the opportunity to combine results to examine larger areas as well.

For this report, and our mapping activities, we focused on a combination of all of the different domains of deprivation in the Index of Multiple Deprivation 2007 (IMD 2007). The IMD combines seven distinct domains, each with the following weights based on their overall contribution to the index: income deprivation (22.5%); employment deprivation (22.5%); health deprivation and disability (13.5%); education, skills and training deprivation (13.5%); barriers to housing and services (9.3%); living environment deprivation (9.3%); and crime (9.3%) (*2007 indices of deprivation for greenwich* 7th January 2007). See Table 6 for descriptions of each of

these domains. Each domain has several component indicators, which have certain criteria:

> "…they should be 'domain specific' and appropriate for the purpose (as direct as possible measures of that form of deprivation); measuring major features of that deprivation (not conditions just experienced by a very small number of people or areas); up-to-date; capable of being updated on a regular basis; statistically robust; and available for the whole of England at a small area level in a consistent form" (*The english indices of deprivation 2007: Summary* December 2007).

In order to map the deprivation data, a new scale from 0-5 was created for each of the domains and new scores based on this scale were given to each of the LSOAs. Then for each LSOA, a graph was made, with the new scale, to represent the living environment, crime, education, income, health, employment, housing, and overall deprivation score. These graphs were then placed on maps of each of the wards with indication as to which LSOA they represented. This was done in order to get a better picture of how deprived these three wards are in comparison to each other, and to visualize specific areas that have more need. Also, the mapping was done so that it could later be compared to CRM data and survey data, also mapped by LSOA, and discussed later.

From preliminary analysis of the deprivation data it was found that Abbey Wood, Plumstead, and Thamesmead Moorings were some of the most deprived wards in the Borough of Greenwich and the entire country. In 2004 there were several areas in the west of the Borough that were among the top 20% most deprived LSOAs in England, but in 2007 much of the deprivation moved to the north of the Borough. Many of these top 20% deprived LSOAs were in the three target wards mentioned and this can been seen in red in the northeast of the Borough map in Figure 12. This figure shows the ward outlines in blue and the LSOA are indicated by the gray lines. Also, to understand why these wards are being targeted, we researched certain relevant statistics. Abbey Wood has a population that is 20.7% non-white, 36.6% economically inactive, and 72.9% of whom only completed school up to level 2, level 1, or don't have any kind of specific qualifications. The similar statistics for Plumstead are 34.9% non-white, 34.5% economically inactive, and 69.5% with a low

level of education; while Thamesmead has 32.8% non-white, 32.1% economically inactive, and 63.6% with a low level of education (*Abbey wood profile*; *Plumstead profile*; *Thamesmead moorings profile*). These wards were chosen for detailed assessment and surveying because we anticipated that a higher level of deprivation would result in a lower level of Internet usage. In turn, the issues of the digital divide would be more prominent in these locations.

Domain	Description
Living Environment (LE)	Measures the quality of housing, air quality, and road traffic accidents
Income (I)	The proportion of the population experiencing income deprivation
Health Deprivation & Disability (HD&D)	Measures the rates of poor health, early mortality, and disability
Employment (E)	Measures the involuntary exclusion of working age population from the labour market
Education, Skills and Training (ES&T)	Measures the education of young people and the lack of skills and qualifications among working age adults
Crime and Disorder (C&D)	Measures crime in terms of burglary, theft, criminal damage, and violence
Barriers to Housing and Services (BH&S)	Measures barriers to housing and key services with respect to geographic or wider barriers such as affordability

Table 6 - Domains of the IMD and their Descriptions

(*The english indices of deprivation 2007: Summary* December 2007)

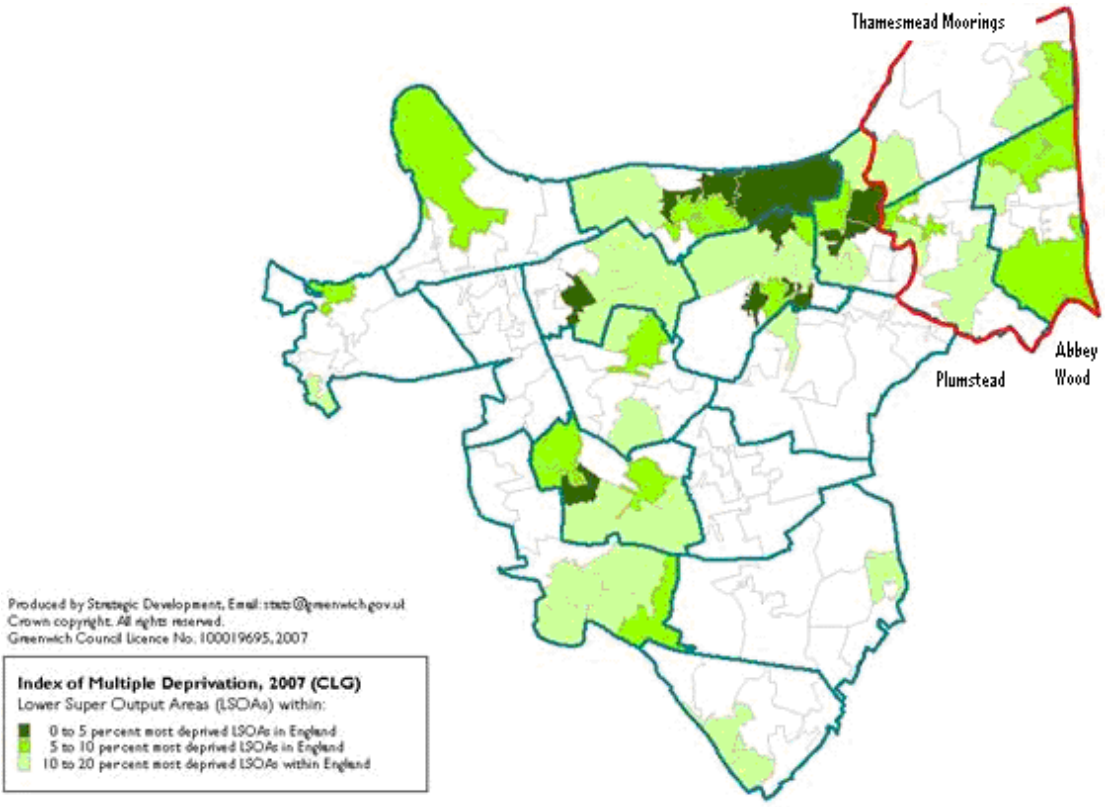


Figure 12 – Index of Multiple Deprivation in Greenwich, 2007

(*2007 indices of deprivation for greenwich* 7th January 2007)

Customer Relationship Management Data

We characterized the current use of Council services by analyzing Customer Relationship Management system data collected by the Council. Under the Modernisation Programme, Greenwich Council has dramatically reorganized how it delivers services. It has also been carefully tracking how these services are used. The CRM system considers a "customer" as either a person, a street, or a specific property. Service requests are linked to customer types; for example, trash pickup requests are linked to a property. Each request is assigned a unique number so that records can be kept. For approximately two and a half years, data from all service requests have been stored in the CRM system with each request being tied to information such as request ID number, address, post code, service request type, LLPG (Local Land and Property Gazetteer) number, location raised (Service or Call

Centre), service request description, UPRN (Unique Property Reference Number), and the source by which the contact was initiated (telephone, email, or in person).

The CRM data we received was for all types of service requests by all methods of contact for three months starting from December 30, 2009. As a result of the immense scale of the CRM system, we received a large number of requests (over 60,000 records) of a wide variety of types. Due to the copious amount of different service types, they were all sorted into one of 12 broader categories based on a complete service description tree that was provided by the Council, which provided several different levels of categories into which each request fit. To associate a geographic area with each request we obtained a database of all postcodes in the UK and their respective LSOA. These data were used to convert the given postcodes in the CRM data to a LSOA. At this point the data was in a format that could then be analyzed effectively.

The main goal of analyzing the CRM data was to determine patterns of service request type and contact method based on various geographic areas. This was accomplished by comparing datasets from the whole Borough, several of the most and least deprived LSOAs determined by the indices of deprivation, the wards identified in our research, and select LSOAs in those wards. We created charts representing services accessed and contact source for each dataset to examine if there were differences in the interactions with the Council between residents in deprived areas and those in the more affluent areas. This would provide us insight into the needs and tendencies of the residents of Greenwich. We also looked at the methods of contact for each request category to see if certain services were accessed more often by particular methods. Using the Indices of Multiple Deprivation data, each of the 143 LSOAs in Greenwich were listed in order from most deprived to least deprived and given a number. A scatter plot of the number of requests from each LSOA was created to see if there is a trend between overall deprivation and the frequency of contact with the Council.

Surveys of Community Residents

Greenwich Council identified three key wards in the Borough in which we conducted surveys: Plumstead, Thamesmead Moorings, and Abbey Wood. The population of these three wards combined is just under 40,000. Surveying the entire population of these three wards would have been “impractical and unnecessary,”

because a small sample will accurately portray everyone as long as it is chosen wisely (Doyle). We ultimately decided to opt for a small sample size due to the time and resource constraints, but utilizing a quota method we ultimately set a goal to collect a sample with 90% confidence and only an 8% error. Our base target was to survey 106 residents in order to make this a statistically valid survey, to represent the approximate 40,000 people living between the three wards. The quota we set forth is described in Table 7 below. The goal was to survey people from specific age groups, ethnicities, and level of income in the same ratios as the current population in the wards. These numbers are based upon the total number, each group totaling to the overall number, and the percentage of each group in the three wards, based on the available information from 2001 census.

Age <25	**Age 25-65**	**Age >65**
15.67 %	**70.82%**	**13.54 %**
Total	100 %	
Ethnic White	**Ethnic non-white**	
70.67 %	**29.33 %**	
Total	100 %	
Council Housed	**Non-Council Housed**	
37.33 %	**62.67 %**	
Total	100 %	

Table 7: Breakdown of the Quota for the Survey

The survey is included in Appendix D. The survey consisted of two parts and asked a variety of questions which were meant to fully characterize Internet usage of participants in the three wards of interest. The first part collected data pertaining to their demographic information, geographic location, about their household/family configuration, then a few brief questions about their technology use and interactions with the Council. The second part of the survey contained questions about the complexity of their Internet use, if any, and their more specific interactions with the Council and its website. The reason for this two part survey is that we wanted it to provide us with a means of being socially conscious, e.g. so those that didn't fit our quota did not continue to the second part and did not feel that they were discriminated

against in any way and that their graciously offered time was not wasted, and also allowed our sponsor to gather some useful data on Greenwich residents they otherwise would not have been able to access. All of these questions served the purpose of determining connections between social characteristics and levels of Internet access within the Borough, and allowed us to develop a detailed digital profile of demographic and geographic groups.

The team first consulted with the Council's communications team to ensure that the survey complied with their standards and was also sensitive to any social and political concerns. This was especially important since the surveys were conducted just prior to the general and local elections. Because of time constraints, instead of a pilot test, the survey was internally reviewed by employees of the Council in order to determine if any questions needed to be revised in terms of phrasing, placement, pacing, and ease of comprehension. In order to avoid bias in the survey responses, we ensured that all questions were asked in the same manner by all team members, as each team member conducted surveys individually. The feedback from the review allowed us to see if any particular questions needed additional clarification, and we either changed the question accordingly or came to a consensus on how we would clarify it in the field. Also, we tried to avoid bias by ensuring an even distribution of demographic groups by performing surveys in areas of high cross sectional traffic, such as libraries, shopping complexes and leisure centers. However, bias could not completely be avoided as day and time of day affect this. We were not able to conduct surveys on weekends, since we were restricted to a four-day window when council staff was available to accompany us to the survey sites. Also, survey responses were strictly from English-speaking residents, as translation was not possible. For sensitive questions on topics such as ethnicity, respondents were shown a card with the response categories, so that they could simply tell us a number which we could directly code. Surveys were anonymous and no names and other identifiers such as specific street address were recorded. However, we did ask for home post codes or street names in order to allow us to geo-reference the data.

With the data from the surveys, the project team examined how socio-economic and demographic factors affected a number of variables, such as who has access to the Internet at home, how use of the Internet varies among different groups of people, and how these groups of people access Council services. To do so, we

entered the data into Microsoft Excel and we created graphical representations of the data in the form of maps and bar graphs, to demonstrate the populations break down by gender, ethnicity, income, level of education, etc versus geographic location. Then we used a variety of simple statistics represented by graphs, to show a trend in overall proficiency and frequency in computer use, ability to access the Internet, and complexity of Internet interaction as a factor of their demographics and geographic location.

Interviews with Key Informants in Private and Public Sectors

We examined how other departments in the Council and other organizations are trying to overcome the digital divide by using technology to promote greater and easier access. This was accomplished through interviews of key government figures and industry professionals who have experience in addressing the digital divide. By determining what has and has not worked for these other sources, we ultimately gained a better understanding of the nature of the issue and the highly variable attitudes with which people deal with it.

Once we arrived onsite, we had access to a wealth of informed individuals employed by Greenwich Council who provided useful insight on our project and recommended others that we could interview. We ultimately interviewed the following individuals within the Council: Hatice Choli, Greenwich Online manager; Gillian Palmer, the director of children's services; Sue Brown, digital inclusion consultant; and Andrew MacDonald, the director of the Computer Bus program. In addition to Greenwich personnel, we also were able to interview Iris Lapinski, the director of the Center for Digital Inclusion.

Based on our preliminary research we decided to conduct semi-standardized interviews with a mix of structured and open ended questions. This allowed us to have a set of predetermined questions, but gave us some flexibility to adapt questions to probe the interviewee further (Berg, 2009). Open ended questions allowed the interviewee to speak freely about their opinions and experiences, which proved to not always align with our expectations. We sought information from the interviewee about the state of the digital divide in their corresponding area, what outcomes have occurred from what they have done in the past, what they expected to achieve as a result of their current actions, an estimate of costs that they have incurred, and what

costs Greenwich Council could expect if they were to implement a similar system. Upon completing our research about the best methods of addressing the "digital divide", we had comprehensive information about the available options for developing the Internet as an access channel and their likely costs and benefits.

Ms. Choli has done extensive study of and work addressing the digital divide in Greenwich; she is even writing her dissertation on the subject. Accordingly, we primarily asked her questions relating specifically to Greenwich issues, rather than the broader aspects of digital exclusion. We conducted a semi-structured interview, face to face at her office. We discussed numerous topics with Ms. Lapinski, including her work addressing the digital divide in London, as well as elsewhere in the world, and what her opinion was of the state of the art techniques seen in the field now. Also, we discussed her research into the use of mobile phones and how they might benefit Greenwich. The CDI has been doing extensive work with the digitally deprived in 13 countries over 15 years, and thus Ms. Lapinski was able to provide invaluable information. Upon hearing about the computer bus program, an initiative of the UK Online fund consisting of a bus filled with computers with satellite Internet access, parked at a strategic location, we decided to see it for ourselves. When we arrived, we met Mr. MacDonald and promptly had an interview with him. He was able to inform us about the nature of UK Online, and how it is related to Greenwich Online, what other initiatives had already taken place by the Council and how they had fared, as well as some background information about the local social climate. Finally, interviewing Sue Brown allowed us to get the opinion of an expert on digital inclusion, which allowed us to gain a deeper understanding of the factors that influence the digital divide. This also allowed us to better understand the nature of the digital divide present in Greenwich, and what techniques she has seen to be most useful in including the disadvantaged.

Section 3: Results and Analysis

Once all of our data were collected and interviews were completed, we assessed how the Council can maximize inclusion of disadvantaged groups if the web were to be developed as an access channel. Our team used data from the interviews, surveys and the other noted tasks to identify which customer groups were likely to benefit or be excluded from the development of the Internet as an access channel. We also assessed how the Council might work with its partners to deliver solutions to address the issues of digital exclusion and estimated the likely costs and benefits to the Council and its customers of developing the web as an access channel. Information from interviews, Indices of Deprivation data, CRM data, and survey data were all analyzed both individually and in conjunction with each other in order to identify and verify patterns and allow us to come to conclusions and formulate recommendations for the Council.

Indices of Deprivation

We used the Indices of Deprivation to create maps showing the socio-economic profile of Greenwich. These maps included graphs of all of the deprivation domains for each LSOA in the three wards. These data are shown graphically for the three target wards, Thamesmead, Abbey Wood, and Plumstead, in Figure 14, Figure 15, and Figure 16, respectively. This approach allowed us to show the locations of most and least deprived areas in a simple map with detail information on each of their forms of deprivation. The Indices of Deprivation analysis also allowed us to compare both the CRM and survey data to levels of deprivation by creating new scales and groupings based on their scores and locations.

The maps and deprivation indices for Thamesmead Moorings, Plumstead, and Abbey Wood, parallel the patterns we noted in the entire Borough of Greenwich. It is clear that there is a high degree of deprivation in the northeast region of the Borough, which is apparent in the relatively high scores across the various indices of deprivation in southeast portion of Thamesmead and the neighboring northeast of Abbey Wood. This shows that deprivation is high in pockets all over the Borough, but especially in the north end; spans multiple LSOAs; and bears little relationship to

political boundaries, such as ward lines. A similar pattern is found in Plumstead (Figure 16), with the neighboring ward of Glyndon, which includes LSOAs in the top 5% most deprived in England adjacent to Plumstead's most deprived wards. Figure 13 shows an example of a graph of Indices of Deprivation for one LSOA, to provide a closer view of those included in the maps. In several of the graphs, one domain in particular (i.e., Barriers to Housing and Services (BH&S)), appears to be anomalously high or low compared with the scores on the other domains for a given area. The BH&S domain is strongly influenced by the geographic location of schools, post offices, supermarkets, and GP surgeries (doctor's offices). Thus, an area may be relatively deprived, but score high on the BH&S if these facilities are located within or close to the LSOA. Conversely, a relatively less deprived LSOA may score low on this domain in the absence of such facilities.

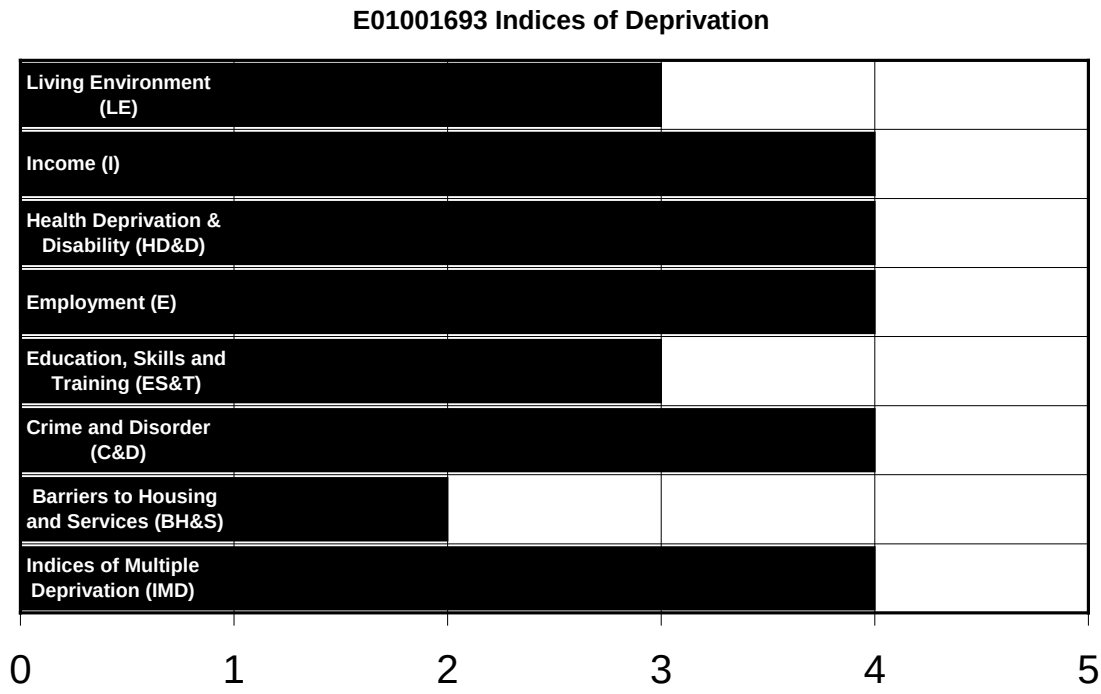


Figure 13: Example Graph of Indices of Deprivation for One LSOA

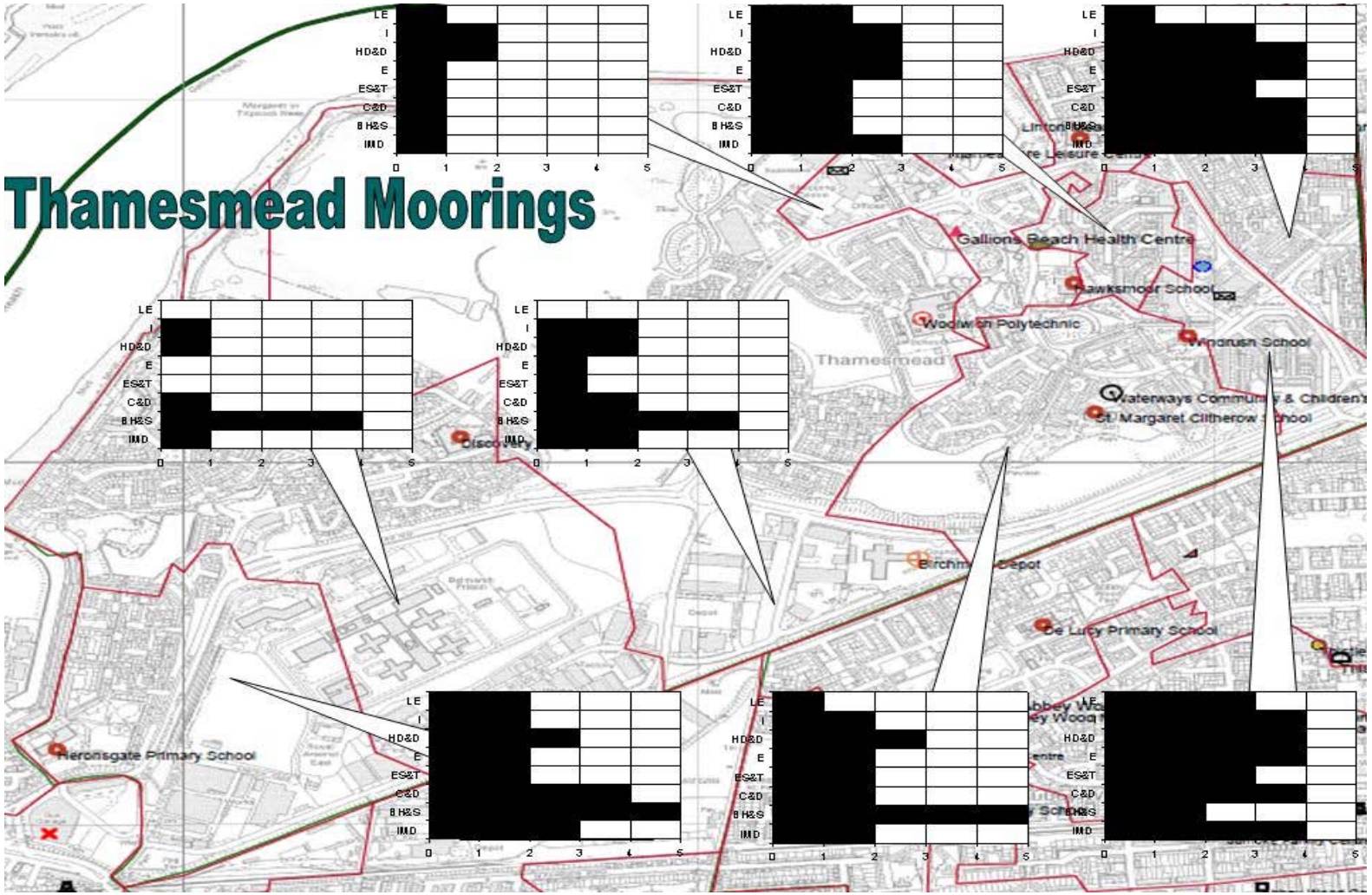


Figure 14: Thamesmead Moorings Indices Map

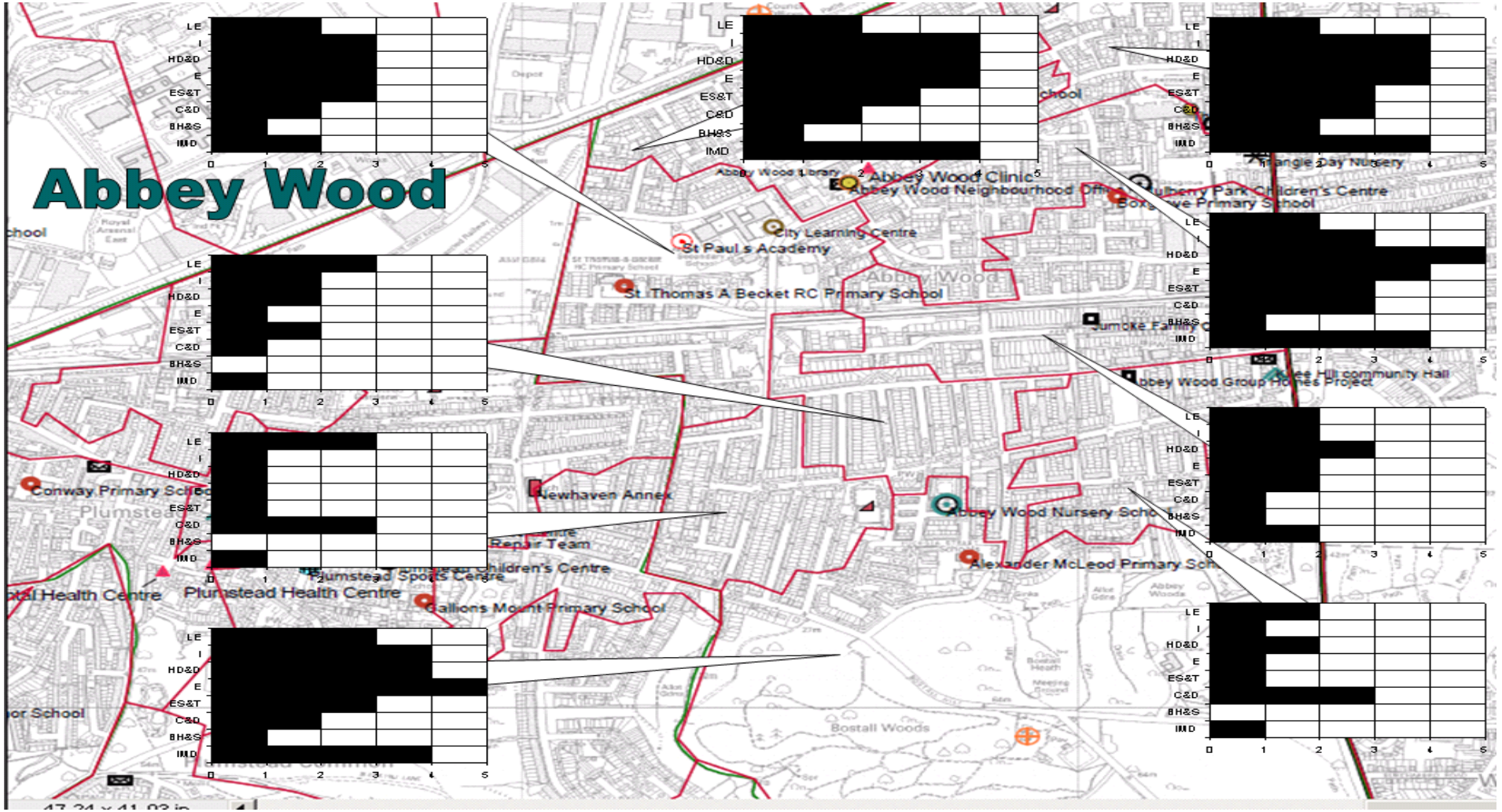


Figure 15: Abbey Wood Indices Map

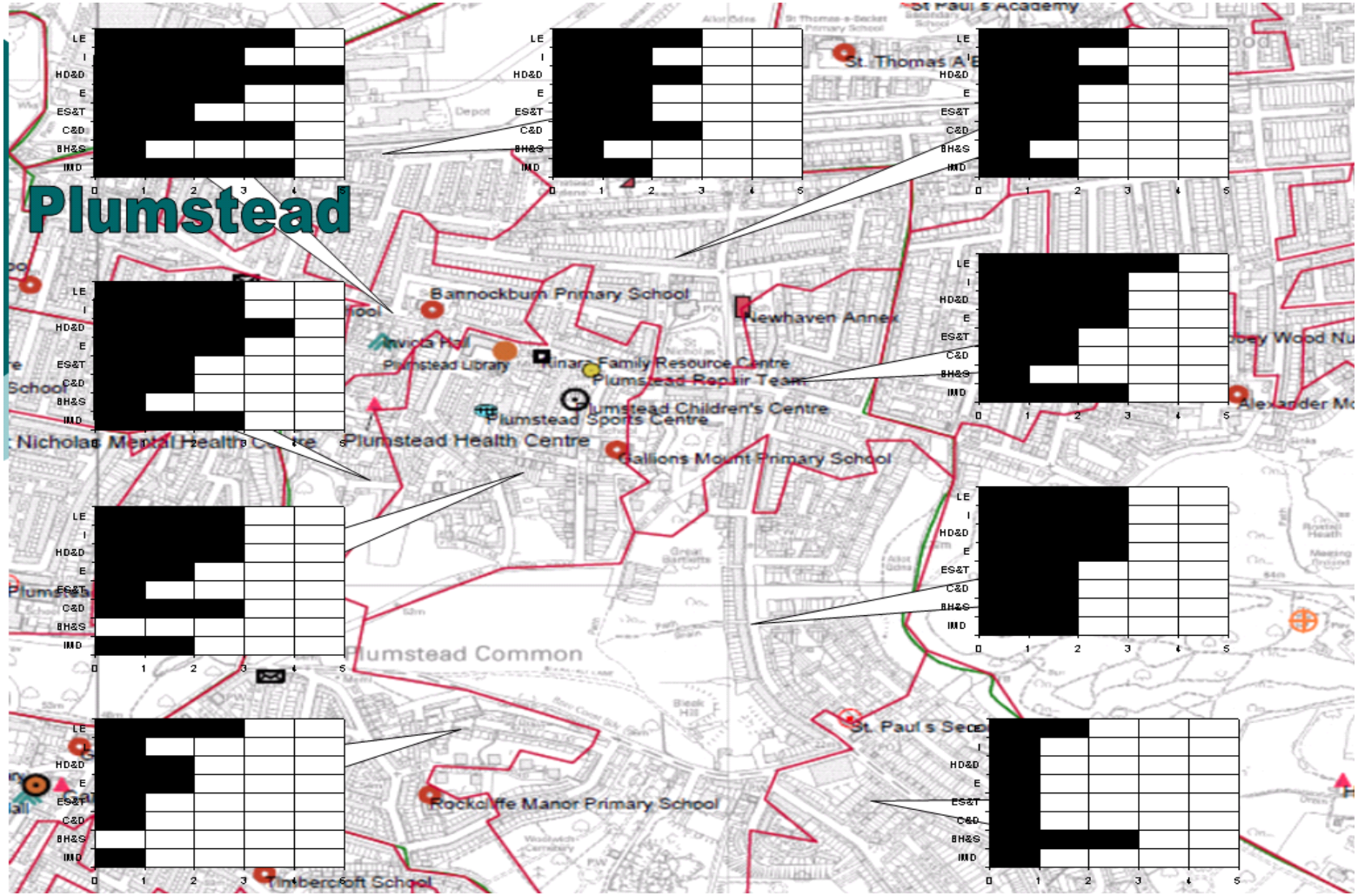


Figure 16: Plumstead Indices Map

The Indices of Multiple Deprivation (IMD) score allowed us to rank the overall deprivation of each LSOA. From this ranking, we were able to indentify patterns in the least and most deprived areas with both the CRM and the survey data. The CRM data had over 60,000 data points and allowed us to span all levels of analysis from Borough level all the way down to individual LSOAs. To complete the CRM analysis on the Borough level we identified the top five most deprived LSOAs and the five of the least deprived based on their IMD score. These LSOAs are shown below in Table 8. When analyzing the CRM data down to the LSOA we identified the most and least deprived wards for each of the three target wards, Abbey Wood, Plumstead, and Thamesmead Moorings. These LSOAs are shown below in Table 9 along with a map displaying the locations in Figure 17.

Most Deprived	Least Deprived
E01001712	E01001606
E01001703	E01001680
E01001631	E01001605
E01001713	E01001596
E01001627	E01001584

Table 8: Top 5 Least and Most Deprived LSOAs in Greenwich

Ward	Most Deprived ◆	Least Deprived ◆
Abbey Wood	E01001574	E01001573
Plumstead	E01001673	E01001670
Thamesmead	E01001690	E01001691

Table 9: Most and Least Deprived LSOAs in the Target Wards

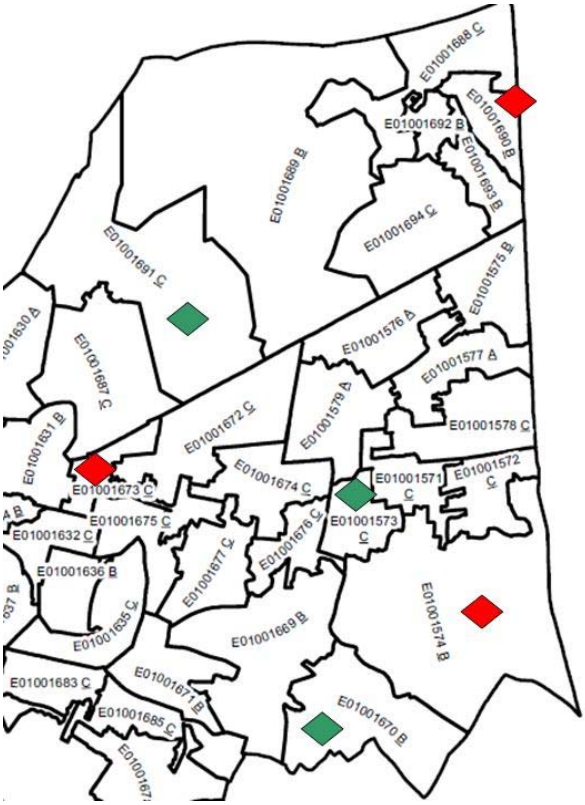


Figure 17: Map of Most and Least Deprived LSOAs in the Target Wards

To analyze the survey data with respect to the Indices of Deprivation, specific LSOA analysis was not possible due to the relatively small size of our survey sample. As a result, only a few survey respondents were located in each LSOA. Furthermore, we could map only two thirds of the completed surveys to LSOAs due to incomplete or incorrect post codes that were received. To address this problem, we grouped the LSOAs into three categories of deprivation (most deprived, average, and least deprived). This gave us approximately 30 completed surveys for each LSOA grouping. The grouping of LSOAs can be seen below in Table 10 and a map of these areas is shown in Figure 18.

Level of Deprivation		
Most	**Average**	**Least**
E01001687	E01001674	E01001691
E01001692	E01001677	E01001573
E01001673	E01001672	E01001688
E01001577	E01001694	E01001572
E01001576	E01001579	E01001670
E01001690	E01001669	E01001571
E01001693	E01001675	E01001671
E01001575	E01001676	E01001689
E01001574		E01001578

Table 10: Target Ward LSOAs Grouping

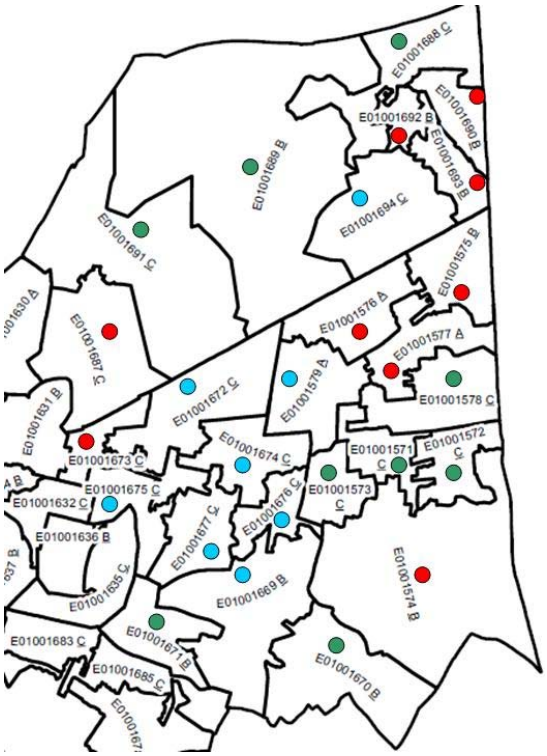


Figure 18: Map of Target Wards Deprivation Grouping

CRM Data

As expected, our analysis of the CRM data helped us gain insight into how residents in different circumstances interact with the Council. In the data we received, there were just over 60,000 requests with 461 different service types. After matching all the postcodes to LSOAs, we assigned approximately 95% of the requests to an LSOA. This is very good considering the fact that postcodes in the UK are frequently

added. Since this is a large amount of data, it was important to come up with methods to isolate different data categories, but analysis was first done on the entire set of data.

By analyzing all of the CRM data, we gain a picture of how the Borough as a whole accesses services. Figure 19 reveals that 71% of all service requests processed by the Council were by telephone and 20% were done in person at either the Eltham or Riverside Centres. Surprisingly, only 4% of all requests were by email which shows us that most residents do not prefer to contact the Council electronically. The 'other' category includes infrequently used methods, such as fax, letters, memos, home visits, and inspections.

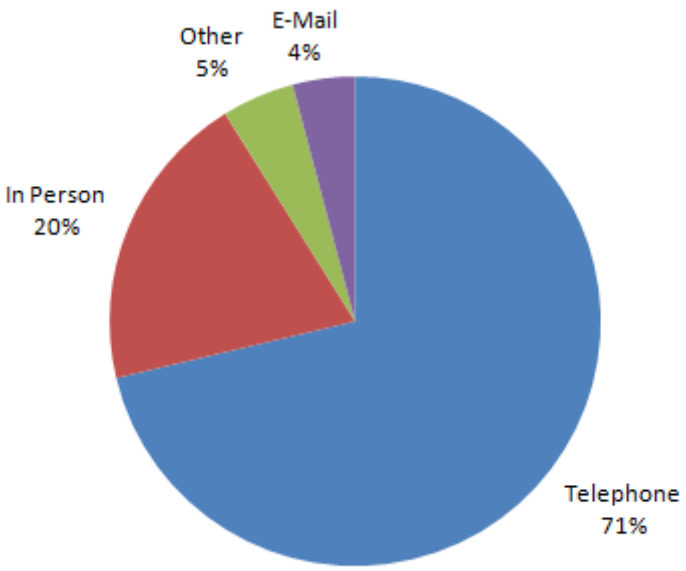


Figure 19: Contact Source for the Entire Borough

We also analyzed what types of services were accessed most frequently for the Borough. Requests relating to bins and waste were most frequent, making 23% of all the requests (Figure 20). The next largest category includes requests that were resolved in the front office and did not need to go to a specialist in the back office. The database did not indicate the actual service associated with these requests. The other important categories were disability services and housing benefits or other benefits which accounted for 12% and 11%, respectively. There were eight other distinct categories but they will be less important when comparing data from different geographic areas of Greenwich.

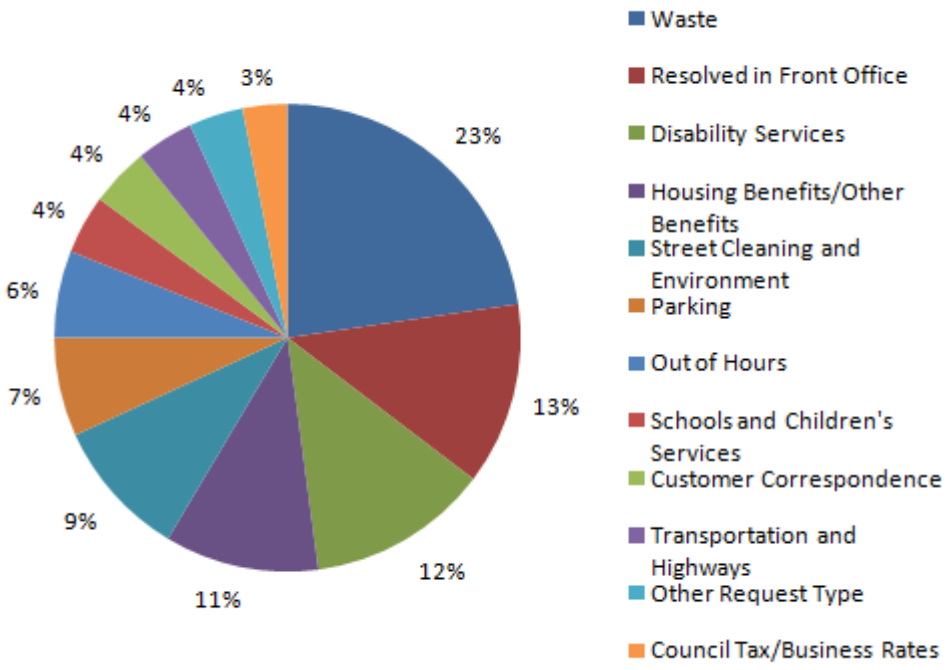


Figure 20: Request Types for the Entire Borough

Now that we had an idea of how people generally access services and what categories those services fall into, we analyzed if certain types of requests were done more often by particular contact methods. Figure 21 below shows that the majority of requests regarding waste issues were by telephone. Many of these requests were for relatively minor issues, such as a missed collection. Disability services, housing benefits, schools and children's services, and customer correspondence had a higher proportion of in-person requests. We assume the reason for this is the need to provide personal details or 'credentials' (i.e., supporting documentation) to receive benefits or have a child admitted to a school. Another anomaly is the large number of requests for street cleaning from the other category which were all done by inspection. Now that we have an overall picture of how service provision occurs in the Borough, we analyzed different geographic areas to determine if there were significant differences, which indeed there were.

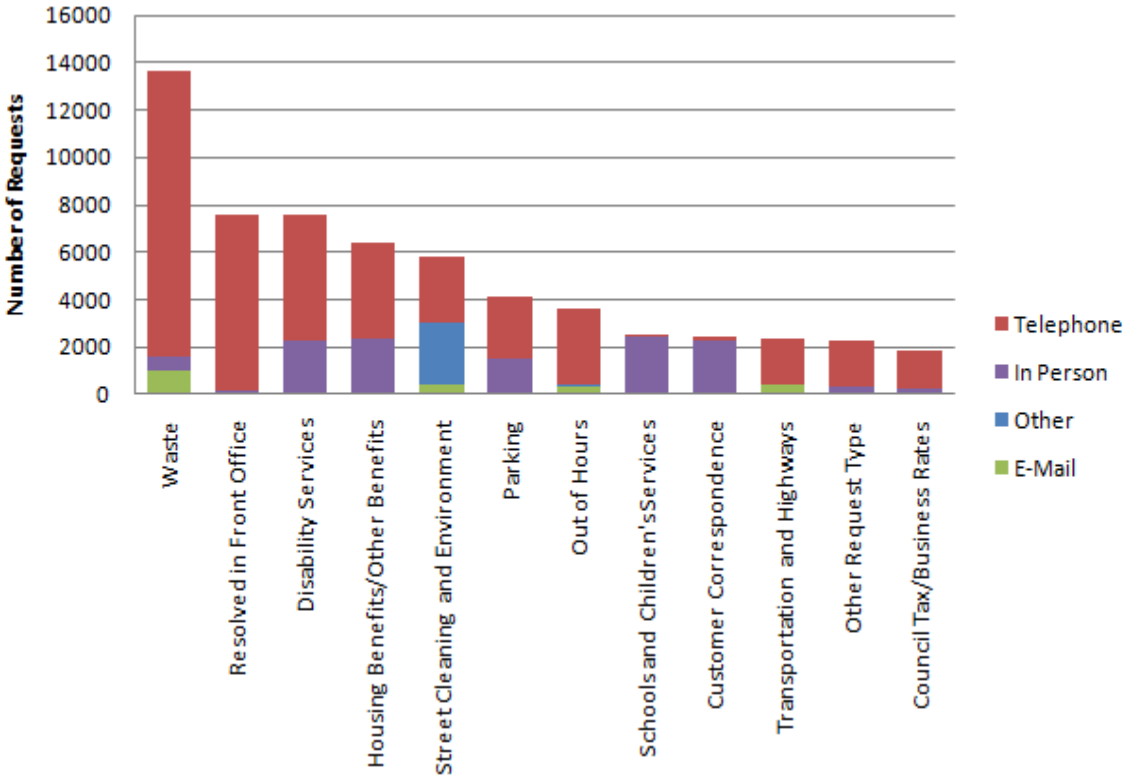


Figure 21: Service Requests by Contact Type

Since we determined the five most and least deprived LSOAs from the overall indices of deprivation, we produced charts similar to those above for both these sets of data. Figure 22 below shows the contact sources for the most and least deprived areas of Greenwich. In the least deprived areas 5.4% of requests were via email compared to only 0.4% in the most deprived LSOAs. While this is by no means conclusive, it clearly points to the existence of a digital divide between the least and the most deprived areas of the Borough. Another important observation is that 15.8% of requests from the least deprived data were done in person at one of the service centres while 27.4% were done in person in the most deprived locations. This is most likely explained by the difference in the types of services that were requested, as seen in Figure 23. The most frequent request types in the most deprived LSOAs after resolved in front office were housing benefits, disability services, schools or children's services, and customer correspondence, which were all identified as categories that were handled more frequently in person. Also, in the least deprived LSOAs, the most frequent request category was waste, which accounted for 52.6% of all requests. This is a striking difference considering waste only accounted for 5% of requests from the most deprived areas. One possible explanation for this could be that the most deprived

areas have a higher concentration of large council housing complexes in which residents would not deal directly with the Council for their waste collection. This would also explain the higher proportions of housing benefit and disability service requests. The LSOAs in each set of data have similar circumstances relating to deprivation but come from varying geographic locations in Greenwich, so we chose to analyze the least and most deprived LSOAs in one ward to determine if the observations above remain consistent for similar geographic areas.

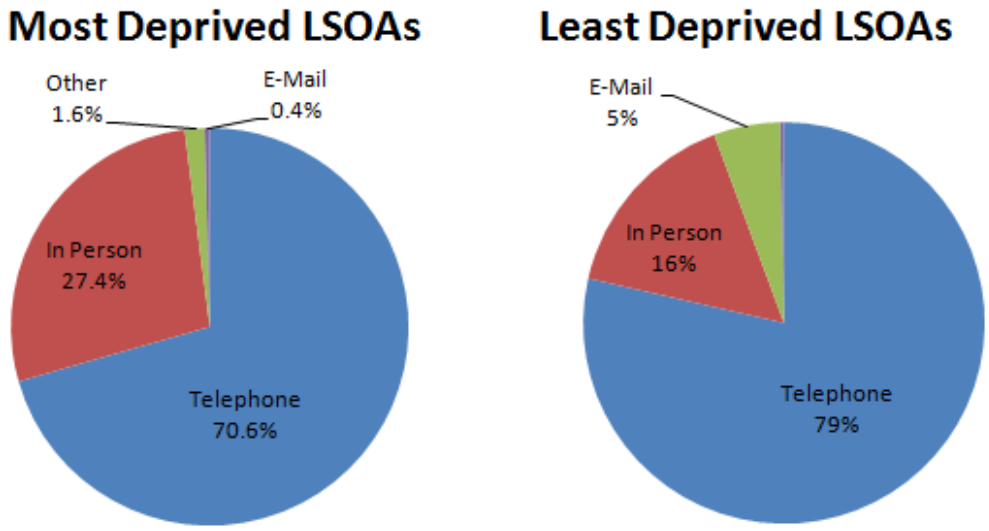


Figure 22: Contact Source for Most Deprived and Least Deprived LSOAs

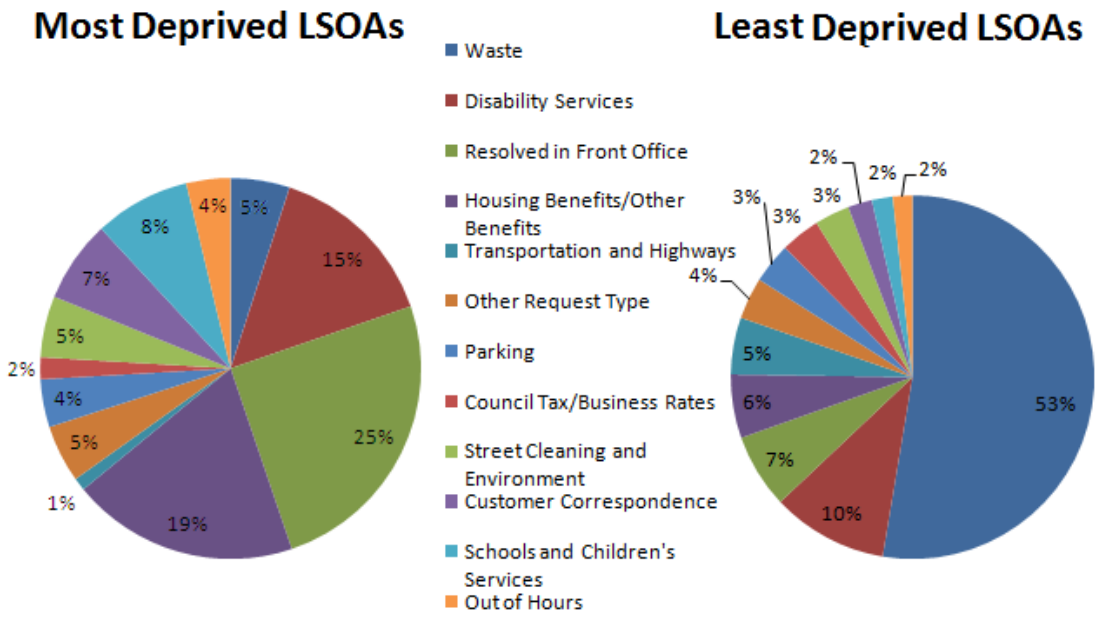


Figure 23: Request Type for Most and Least Deprived LSOAs

We decided to look at Abbey Wood because the most and least deprived LSOAs were directly next to each other. As expected, we observed more in person requests from the more deprived LSOA and slightly more email requests in the less deprived LSOA, as seen in Figure 24. Figure 25 shows that the waste category was much larger in the less deprived LSOA (40% vs. 9%) while housing benefits or other benefit requests were more frequent in the more deprived LSOA (17% vs. 6%). These results remain consistent with our previous findings.

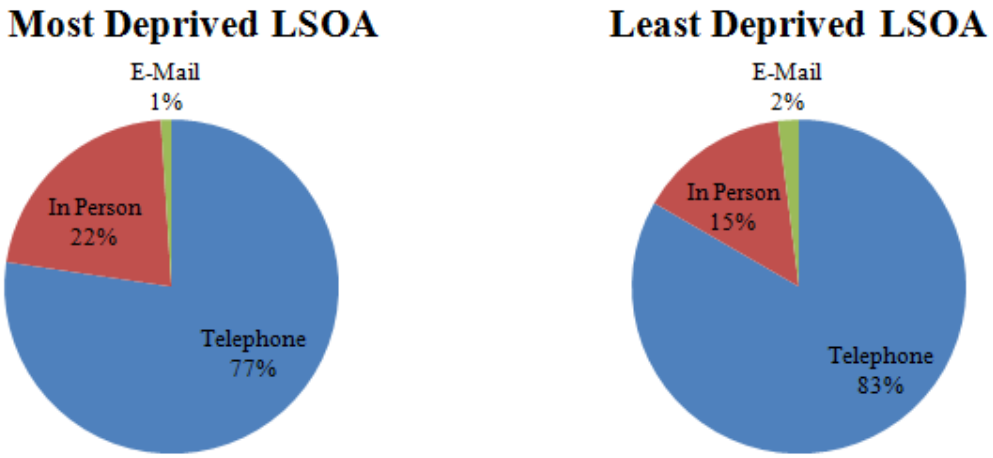


Figure 24: Methods of Access in the Most and Least Deprived LSOAs in Abbey Wood

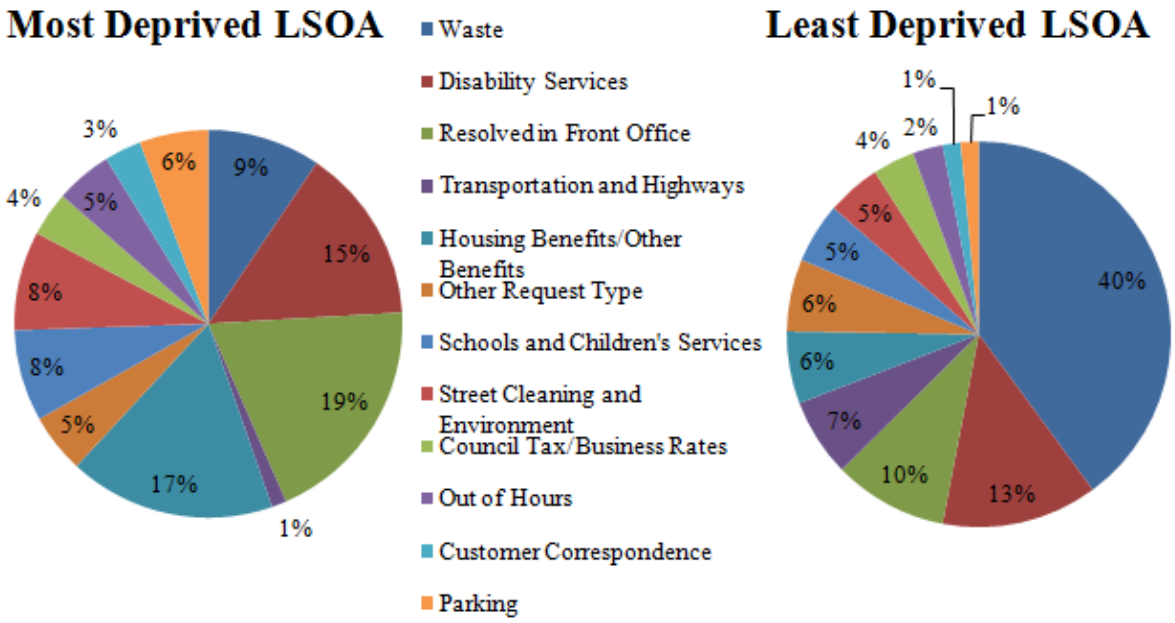


Figure 25: Services Used in the Most and Least Deprived LSOAs in Abbey Wood

We also explored the relationship between the overall deprivation of an LSOA and the number of service requests. Figure 26 below shows a scatter plot that was created by ordering all 143 LSOAs in Greenwich by decreasing Indices of Multiple Deprivation scores. The trend line clearly indicates that more deprived areas (on the left side of the x-axis) are more likely to have a greater number of service requests. Obviously we can't make the assumption that people in an area could eventually never need to make service requests were its deprivation score low enough, but the general observation can be made that people in deprived areas interact more often with the Council. This makes sense as the deprived areas of the Borough are likely to have greater amounts of Council housing with lower income residents who are entitled to claim benefits that residents in more affluent areas are not. At the same time, these deprived areas are more likely to be digitally excluded which only further illustrates the need to address the digital divide if the Council were to offer more of its services online.

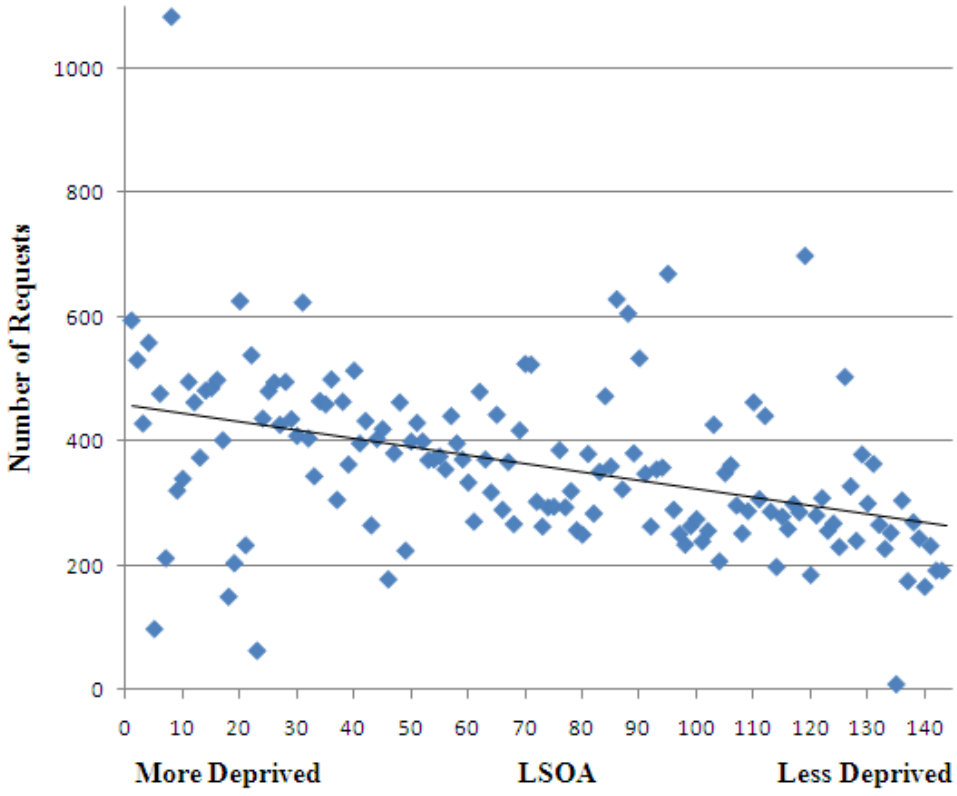


Figure 26: Requests per LSOA Listed by Decreasing Order of Deprivation

Costs

While cost is not the main concern when addressing digital inclusion, it is important to realize that the Council in some ways must operate as a business and take cost into consideration. It is generally assumed that increasing the proportion of Internet based transactions and reducing other forms of interaction would reduce costs over the long term due to the extremely low relative cost of web transactions. Table 11 shows our estimates for the current total yearly cost to the Council of handling the volume of requests that we observed over a three month time frame. The data for the cost per transaction is difficult to determine but these figures were determined based on data released by ESD, which helps local authorities deliver services more effectively (McNish, 2008). Actual costs in Greenwich may vary depending on how they are handled in practice. Table 12 shows the total yearly cost if the current level of requests by email were conducted through a self service web form. This equates to savings of approximately £61,000 per year, but only if the current number of interactions through the Internet remains the same. We then consider that the Internet becomes a more widely used access channel and the current proportion of Internet requests increases from 4.1% to 10% of all requests while telephone and in-person requests decrease. Table 13 reveals that this scenario could save the Council £111,000 per year. While these are rough estimates, they do reveal that the Council would save money with an updated web access channel and could use the savings to further address the digital divide or other ventures.

Contact Source	Cost per Request	Number of Requests	Total Yearly Cost
Telephone	£ 3.39	171,204	£ 580,381.56
In Person	£ 6.56	47,532	£ 311,809.92
E-Mail	£ 6.33	9,892	£ 62,616.36
Total		228,628	£ 954,807.84

Table 11: Estimated Yearly Cost at Current Volumes

Contact Source	Cost per Request	Number of Requests	Total Yearly Cost
Telephone	£ 3.39	171,204	£ 580,381.56
In Person	£ 6.56	47,532	£ 311,809.92
Web Form	£ 0.08	9,892	£ 791.36
Total		228,628	£ 892,982.84

Table 12: Web Access Channel Yearly Cost at Current Volumes

Contact Source	Cost per Request	Number of Requests	Total Yearly Cost
Telephone	£ 3.39	160,000	£ 542,400.00
In Person	£ 6.56	45,628	£ 299,320.47
Web Form	£ 0.08	24,015	£ 1,921.20
Total		229,643	£ 843,641.67

Table 13: Web Access Channel Yearly Cost with Increased Web Usage

Survey Results

In total, we conducted 140 surveys, which was above our quota goal. This gave us a 90% confidence level, with just under a 7% error. The first 58 surveys were conducted in the ward of Thamesmead the afternoon of 8 April and morning of 9 April, at the combined leisure and shopping center. In Plumstead, we conducted 38 surveys on Plumstead High Street and at the branch library on 12 April. Lastly, on 13 April, we conducted 44 surveys in various locations in Abbey Wood, including outside of the library and in Abbey Wood Village, a popular shopping area. Due to time constraints, we were not able to follow our desired quota that was based upon ward, age, and housing condition. We needed as many surveys as possible, and generally administered both parts of the survey to everyone. However, our data showed a close correlation with the desired quota, summarized in Table 14 below. The table below details the percentage of the total sample that was required to fill the quota, compared to the actual percentage achieved in the survey. Not all surveys were filled to completion; those who only received a portion of the survey were generally

people who walked away, complained of it being too long, or lived in a neighboring Borough, such as Bexley. There was additional data available to us via an exit survey conducted by a research group for Greenwich Council, which we were able to compare to our survey to test the validity our own results. This survey consisted of over 2000 people and covered topics such as Internet usage and patterns; data that relates to our research is included in the section to follow.

	Surveys from Abbey Wood	Surveys from Thamesmead	Surveys from Plumstead
% Quota	34.1%	30.0%	36.0%
% of Actual	30.1%	39.7%	30.1%
	Age <25	**Age 25-65**	**Age >65**
% Quota	15.8%	70.5%	13.7%
% of Actual	15.0%	70.7%	14.3%
	Ethnic White	**Ethnic Non-white**	
% Quota	71.0%	29.0%	
% of Actual	66.2%	33.8%	
	Council Housing	**Non-Council Housing**	
% Quota	37.3%	62.7%	
% of Actual	26.4%	73.6%	

Table 14: Quota Results

After analyzing the data provided by the survey, we were able to draw conclusions about the targeted wards' Internet use, social construct, and utilization of council services. The results of the findings of the team's survey provided insight into how the Borough follows the literature and national patterns. The following is our attempt to model our survey data in the manner seen in the literature, in order to lend support and validity to the survey. We also take a deeper look into how the residents utilize Council services and Council access points. Looking at Internet and communication technology use will show potential areas of need that can be focused on to increase access levels. The results depict groups digitally excluded, represented in multiple ways, and focuses on the differences from and similarities to the research. The most pertinent comparisons are outlined in the following sections. Further comparisons and analyses are made in Appendix B: Additional Survey Results and Appendix C: Exit Survey.

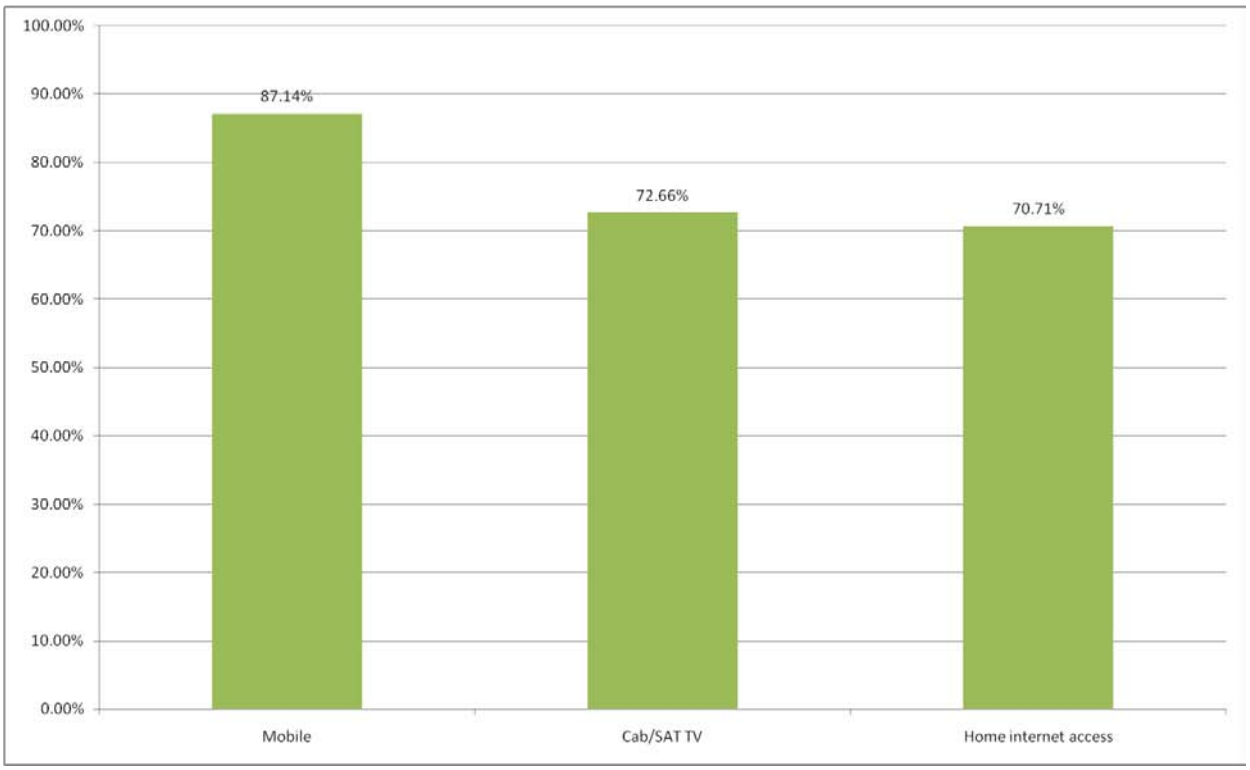


Figure 27: Information and Communication Technology Ownership in Abbey Wood, Plumstead, and Thamesmead Moorings

Figure 27 shows the current ownership of mobile phones, cable or satellite television, and home Internet access as a percentage of the entire survey sample. Out of the 140 people surveyed, 87% owned a mobile phone, which is the most prevalent form of technology in the three wards. This high penetration of mobile phone usage can be used to the advantage of the Council. From the literature, it was obvious that many people utilized mobile phones for very many reasons, but with mobile phones becoming less expensive and the value for money increasing, the adoption of mobile phones is at an all time high. Cable and satellite television is also well represented in the wards with almost three quarters of residents having it in their households, but it is still 15% behind mobile phone use. There are many services offered by companies that provide television services via interactive menus. These "on demand" services can be applied to Council services and if done will clearly reach about three quarters of the surveyed population. The technology that has the least penetration throughout the wards is home Internet access. Only about 70% of people surveyed had Internet access in their household, which is less than the average (80%) for greater London.

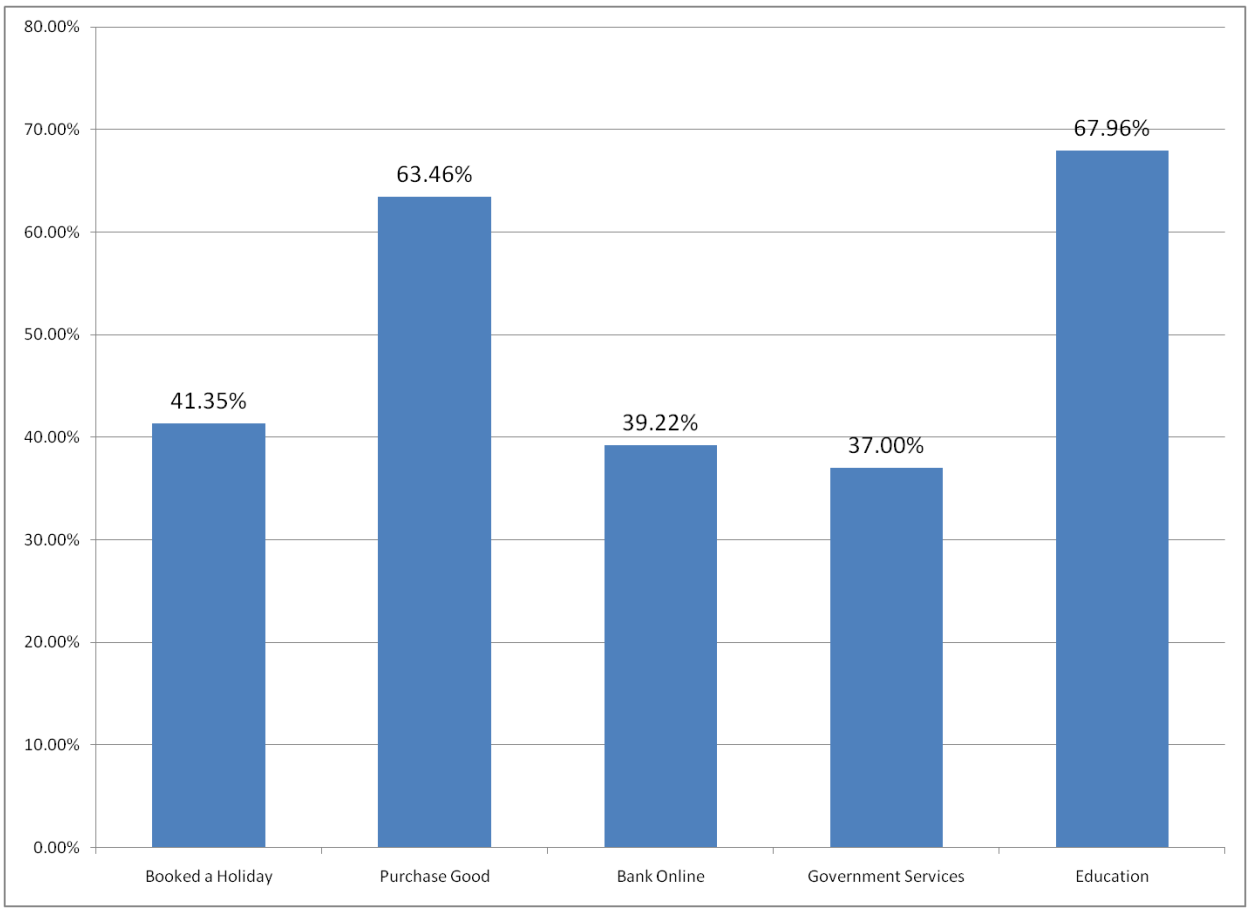


Figure 28: Residents' Internet Use Activities

Figure 28 shows what surveyed residents use the Internet for. It is clear to see that most people (68%) use the Internet for educational purposes, like research (although this is somewhat of an unspecific, broad topic) and to purchase goods (63%). With the ability to shop online and almost instantly search for a product anywhere in the world and compare prices, many people turn to online shopping to find the best price for a given product or for a product they could not find elsewhere in a store near them. We were surprised to find that 39% of respondents said they bank online, given the concern over security and technical competency that was expressed by many residents participating in the survey. While surveying in the Borough, it was brought to the group's attention that some people thought banking online was a time and life saver while others felt no trust in the system and preferred to do everything in a branch office. While all our respondents indicated they had used a Council service in the past, only 37% said they had used the Internet to access government services, whether it was national or local government.

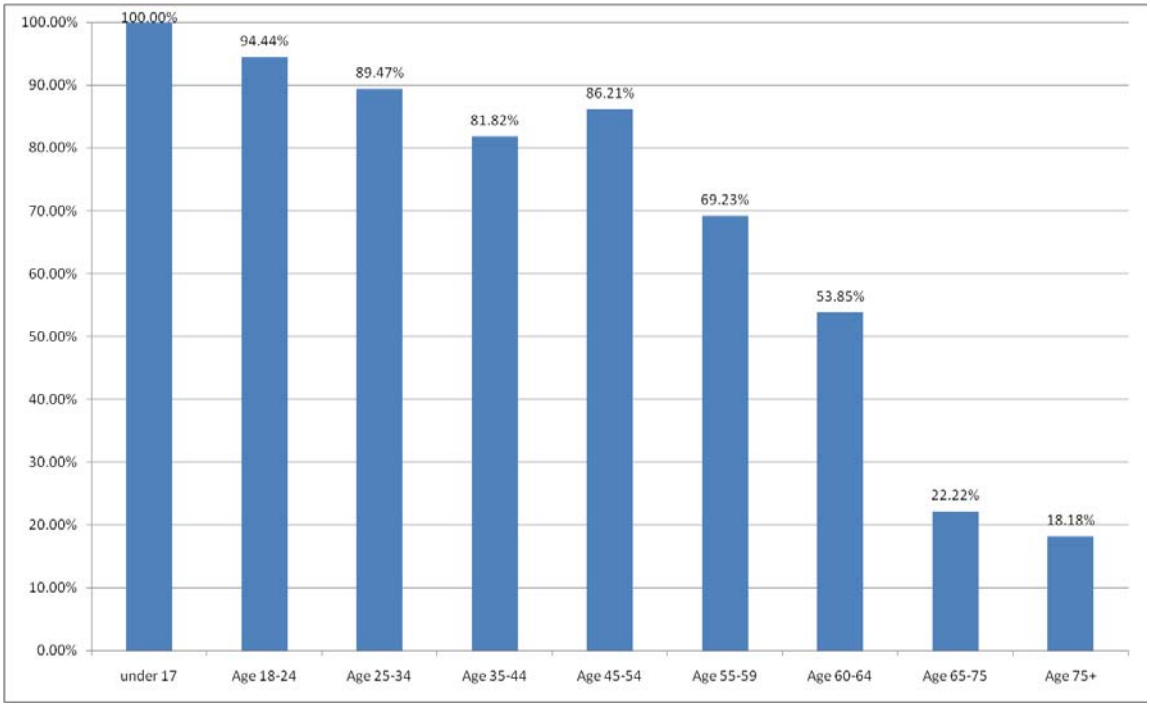


Figure 29: Internet Access at Home, Sorted by Age

An obvious correlation between age and Internet usage was apparent in our research, and our survey confirmed this connection. Figure 29 shows the proportion of our survey respondents that said they have home access to the Internet by age group. As can be seen, 100% of "under seventeen" year olds had Internet access at home. An almost identical graph was derived from the exit survey produces a similar age spread, where the only difference is the 35-44 age group and the actual percentage values. One explanation is that older people have a higher tendency to have disabilities due to old age that hinders their use of the Internet; the literature supports these findings and Figure 54 demonstrates how it applies to Greenwich. Also, older people have less motivation to use the Internet because they are less likely to have grown up with exposure to technology, and don't see the need for it. The findings of the survey follow what was to be expected. However, there is slightly less access in the 35-44 year old range than the 45-54 age group. This could be due to bias in the sample, although we did meet the quota to ± 5% of the age groups. This anomaly appears to indicate that some of the middle aged people in the wards are not connected to the Internet, also supported by Figure 36 and Figure 37. There is cause for concern over a "second divide" where there is a subgroup of people who have less access to the Internet, making the issue of digital inclusion more complex. This "second divide" is also mentioned by Gillian Palmer, and it is of growing concern.

There can be many factors that play into this second division; we first looked into age and children where having children in the household is telling of Internet access, but this led to no conclusions and led to further support of another division. Looking to find more connections, of those who we surveyed the 35-44 age group had the second highest percentage living in council housing which could also help explain this difference. This finding is an indicator of the complexity of the issue and shows that there is no cookie cutter answer for everyone and even categorical solutions, such as based on age, will still not include everyone.

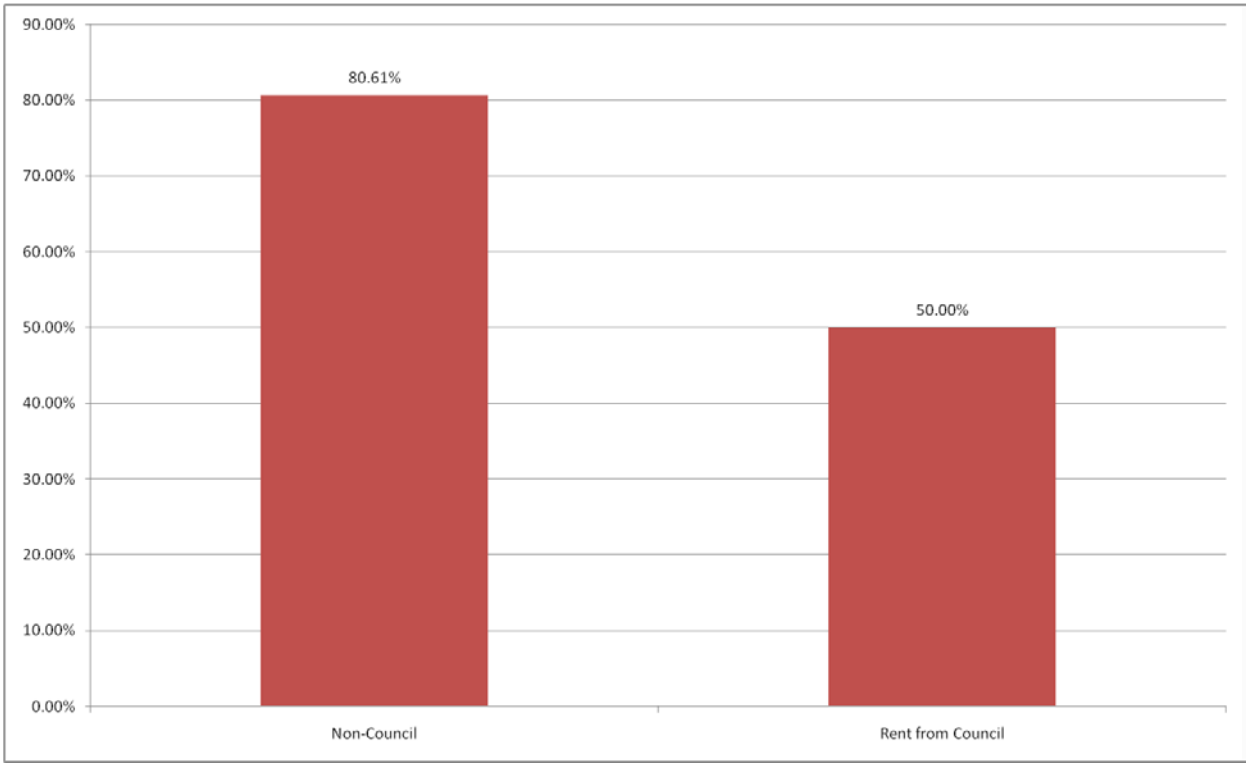


Figure 30: Housing Ownership and Home Internet Access

In an effort to connect social conditions, Internet access, and service use together, Figure 30 shows those who have home Internet access versus their current living conditions. There is a clear difference in that 81% of those who do not live in council housing had Internet access at home while only 50% of those in council housing had access. Living in council housing is unlikely to be the direct causal factor; rather it is likely a surrogate indicator for other key factors, such as financial status. One of the most common reasons cited in the literature for not having home Internet access was that it was either too expensive to buy a computer or the monthly

cost of broadband was too high. Given that most people in Council housing need social assistance, the lower penetration of the Internet holds true to the research and what is to be expected nationally. Figure 32 is to reinforce the social and monetary factor in accessing the Internet from home. The results show that those who are not working and are not students are 40% less likely to have Internet access than those who are working.

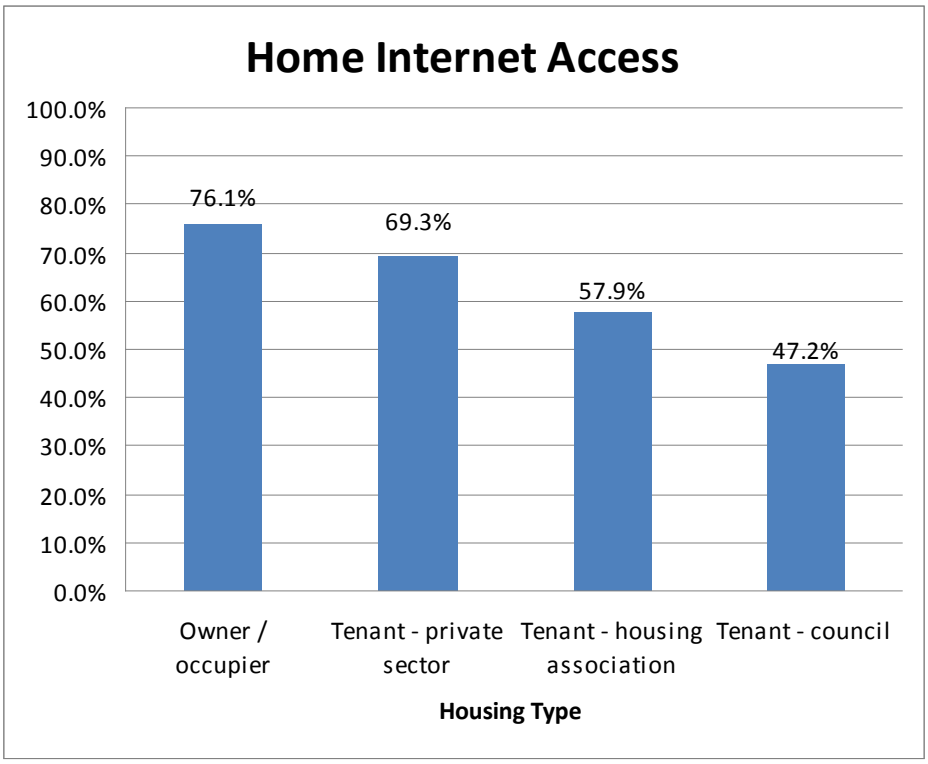


Figure 31: Exit Survey Home Internet Access vs. Housing Type

Figure 31 shows data from the supplemented exit survey, and relates strongly back to Figure 30, where housing type/ownership can be related to economic conditions. Those in council housing either have a higher amount of people who do not want the Internet, or their economic standing hinders it.

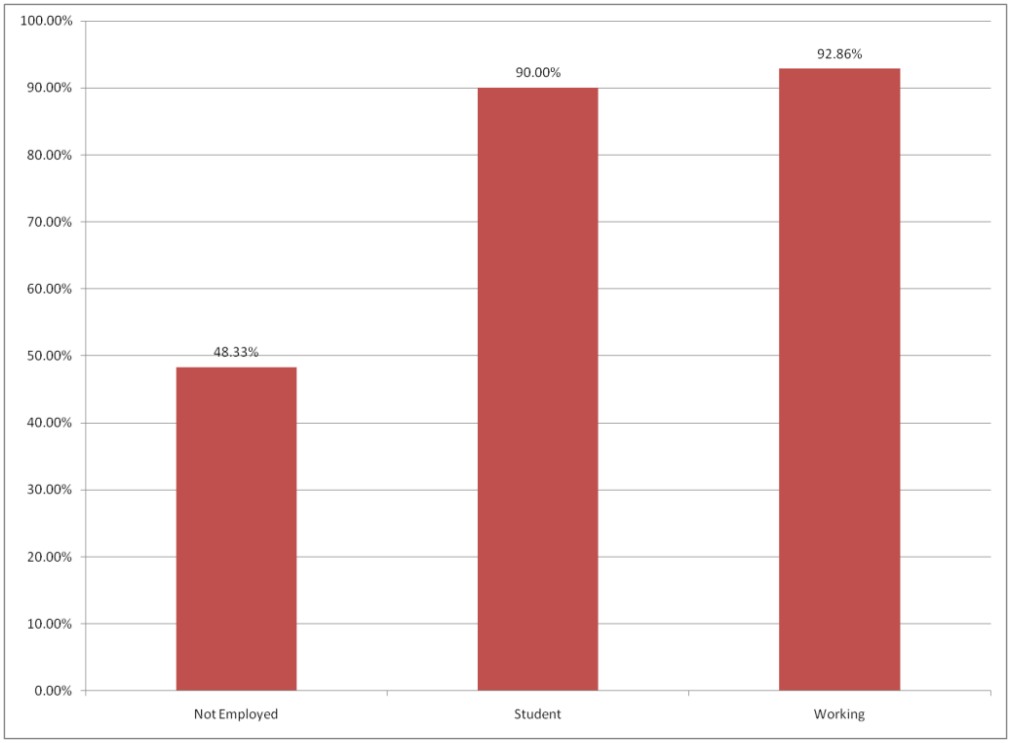


Figure 32: Internet Home Access Based On Employment

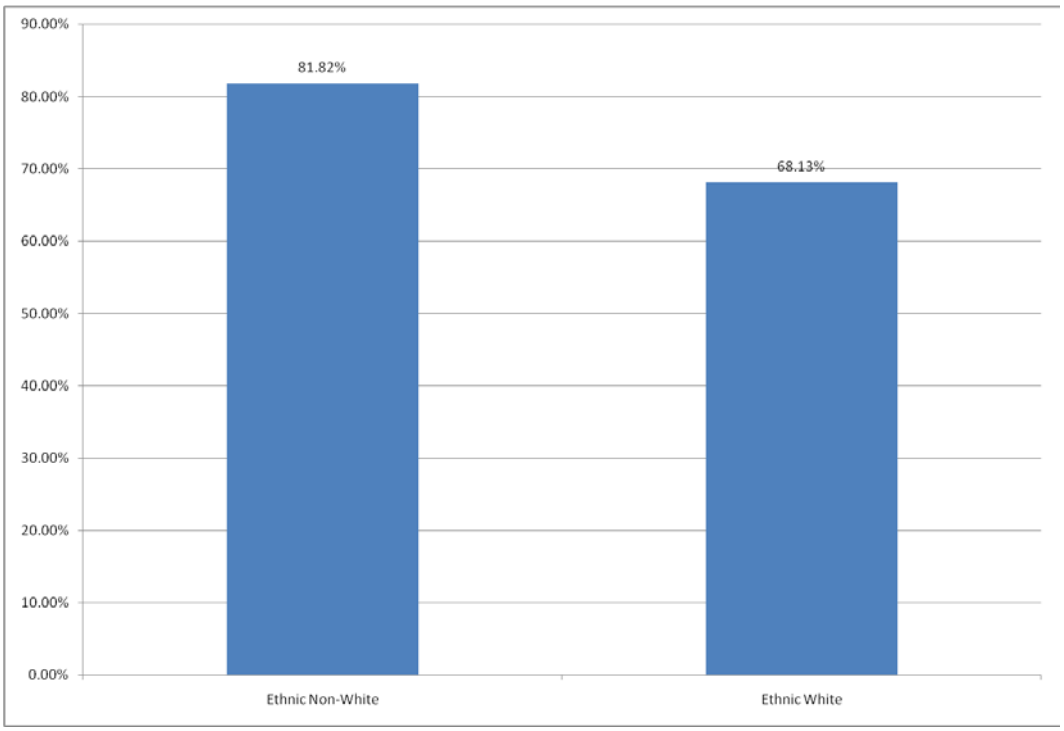


Figure 33: Home Access Penetration Based on Ethnicity

Figure 33 represents data that appears to contradict the literature where we found that home Internet access is more likely to be found in homes of ethnic non-whites (82%) than that of ethnic whites (68%). This information is also supported by

the exit survey data as well, Figure 57, where 8% more ethnic non-whites used the Internet. In an effort to explain this difference between the previous research and our survey, we explored the age composition of the ethnic categories. Having shown that older residents have lower Internet usage patterns and it being clear ethnic whites in the survey tend to be older, it is evident that there is a connection in our survey providing a possible bias representing this data.

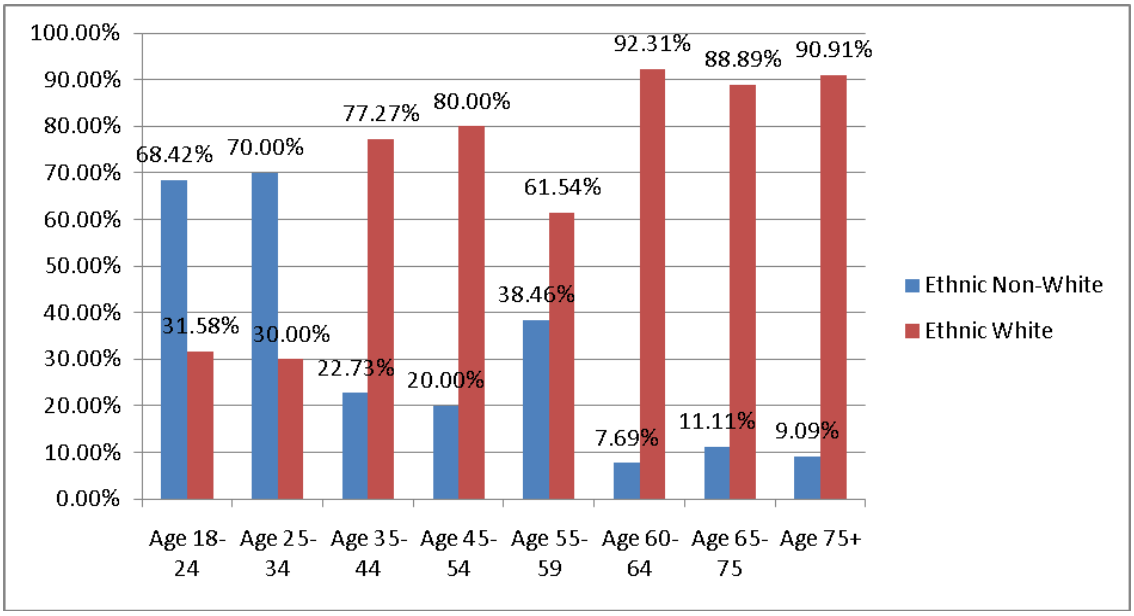


Figure 34: Ethnicity and Age Breakdown

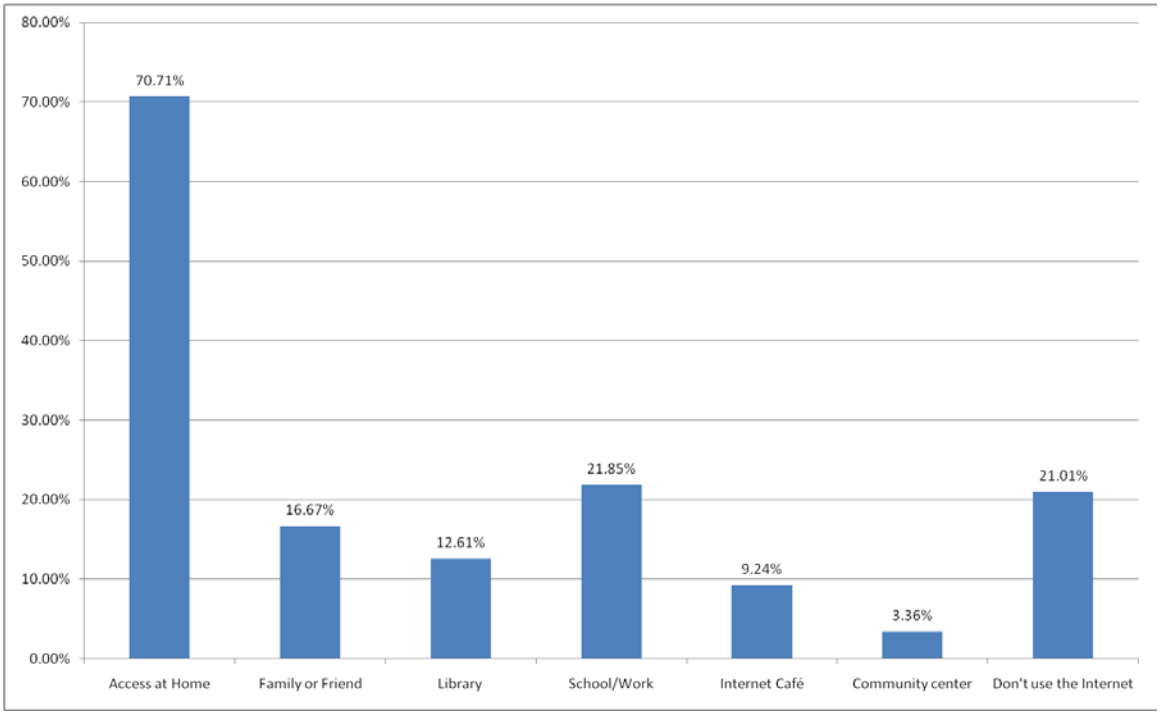


Figure 35: Locations in Which Residents Access the Internet

In an effort to better understand access to the Internet and discover where the most common access point is, Figure 35 shows access locations vs. use. This graph shows that just about 70% of all people surveyed have a home connection to the Internet. The second most common place to access the Internet was via a computer at work, or in the case of a student, at school. The least common place to access the Internet was community centers, at 3.4%. With dozens of community centers throughout the Borough that provide free Internet access, this is an important result showing that most of the online centers, including UK Online centers, do not constitute a large portion of access locations. Also shown in Figure 35 is that 21% of the three wards' residents do not use the Internet by any means of access. This also fits in with the research where non-use has been cited to be as high as 25%.

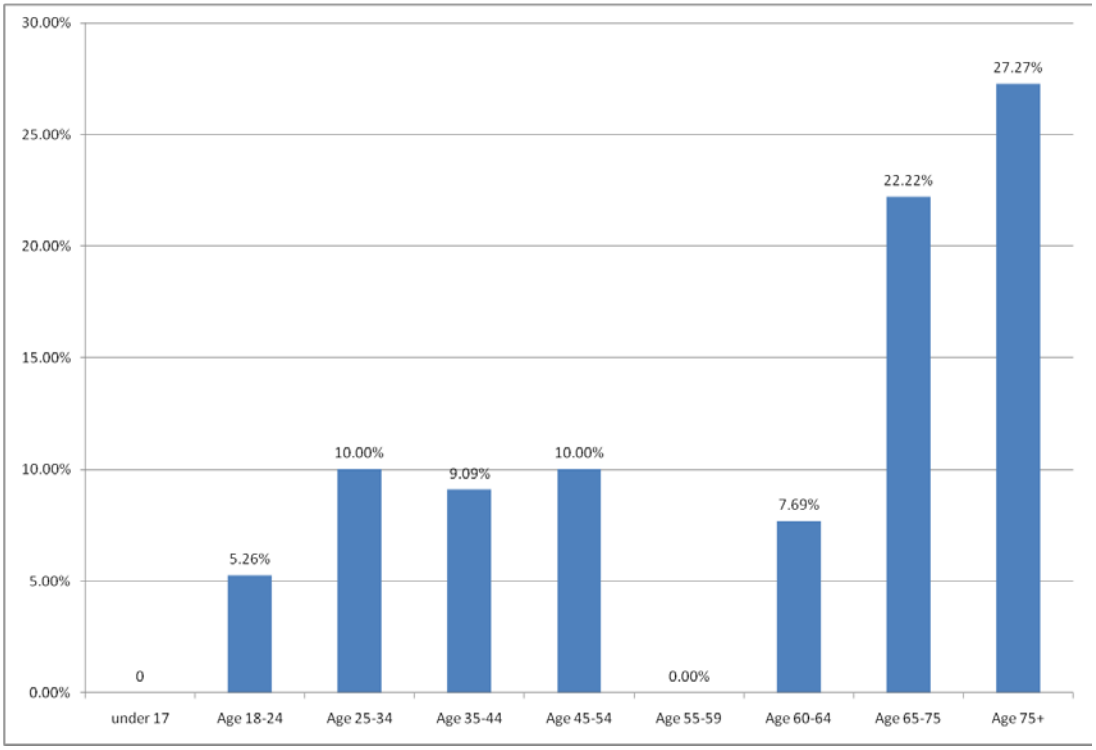


Figure 36: Non-use of the Internet Broken Down by Age

Figure 36 is based on the non-use of the Internet, where non-use is defined as anyone who identified they did not access the Internet via any medium. There is 100% Internet use by the under 17 and 55-59 age groups, but much lower Internet use in the 65-75 age group (22%) and the 75+ age group (27%).

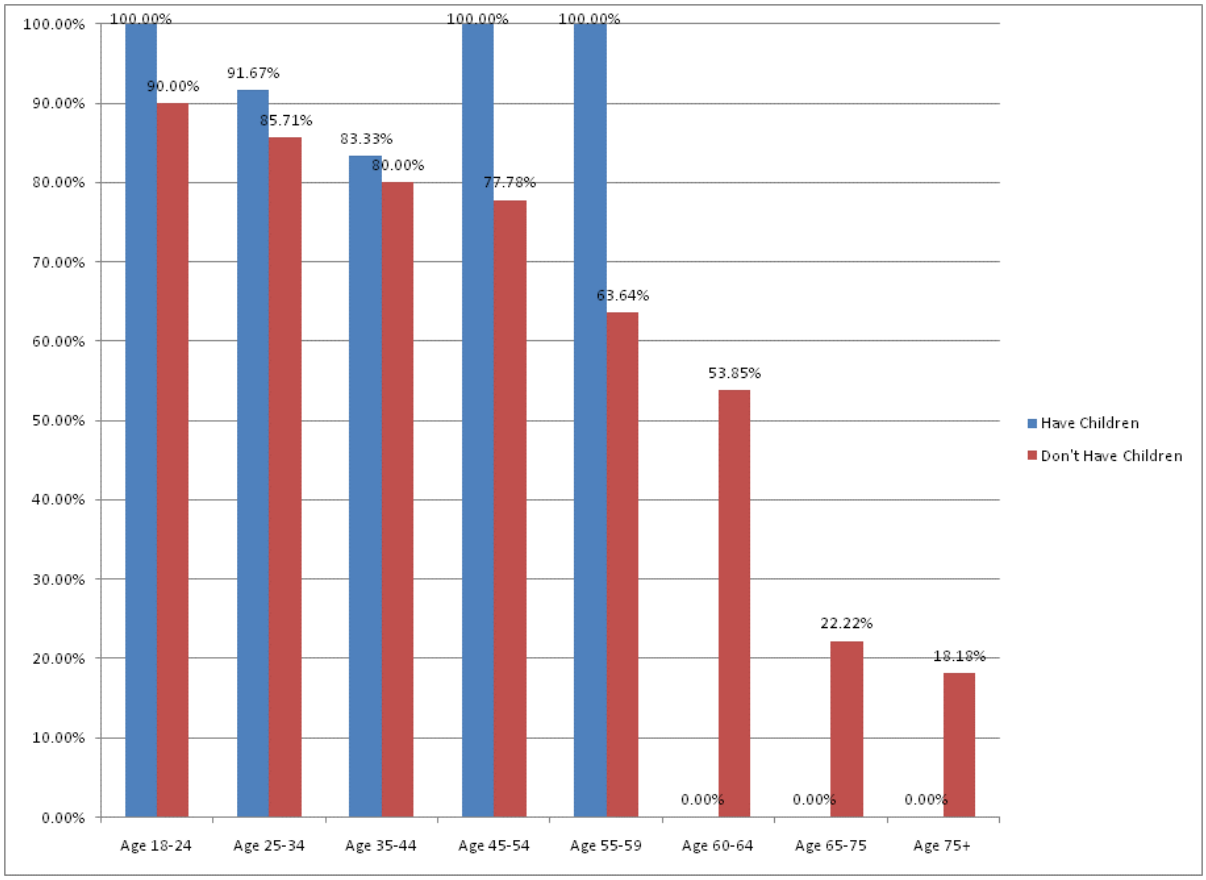


Figure 37: Connecting Children and their Family Internet Access

The idea that children help teach their parents to use the Internet, or parents learn to use the Internet so they can help their children is an idea that needs to be taken into consideration. Figure 37 shows that those people who have children at home are far more likely to have home Internet access. For those who do have children at home, Internet access at home reaches 100% in three out of five age groups with the lowest group having 83% home access. This lowest group is the 35-44 age group, which helps support the theory of a "second divide" referenced earlier. All age groups have a comparative difference in home Internet access with marked increases in use for those who have children at home.

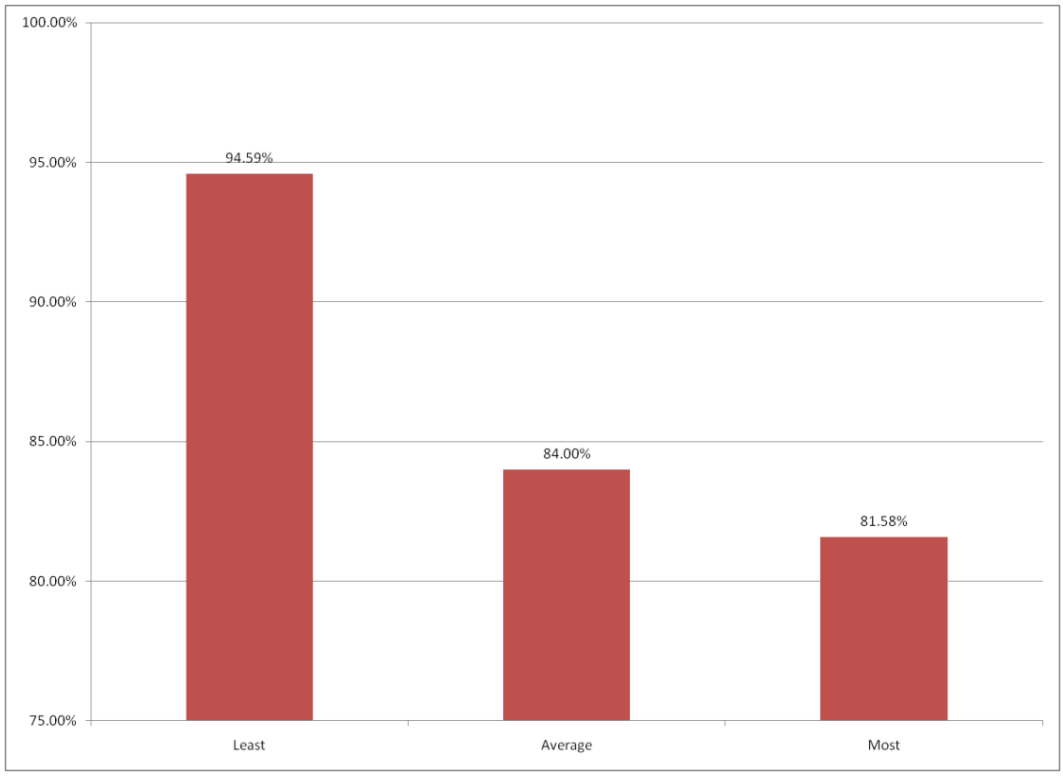


Figure 38: Use of the Internet Based on Level of Deprivation

Thamesmead Moorings, Abbey Wood and Plumstead contain some of the most deprived LSOA's in Britain. The least deprived LSOA's have almost full Internet use penetration while the most deprived do not, but still have a relatively high use rate. Figure 38 shows there is a substantial increase in Internet access at home in the least deprived areas (95%) compared to the most deprived areas (82%).

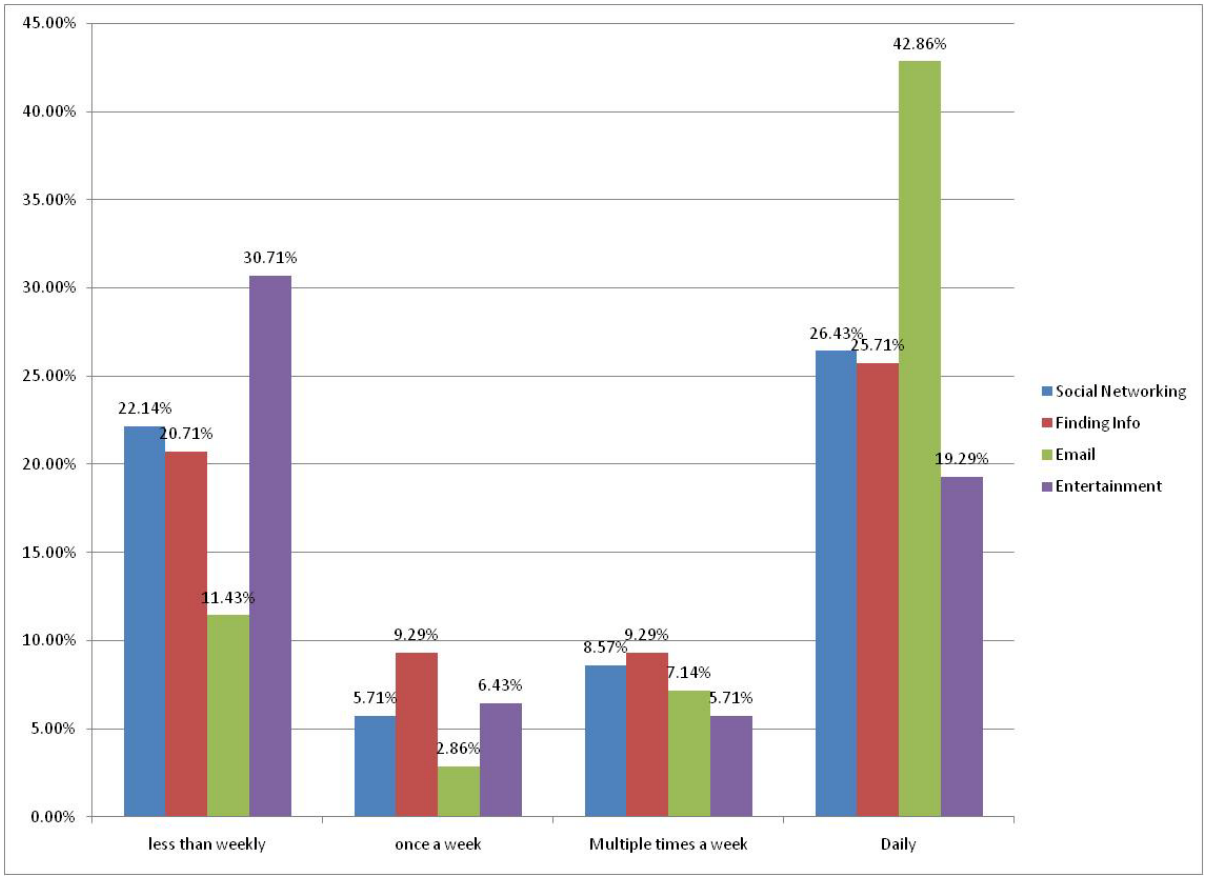


Figure 39: Internet Use vs. Frequency

Figure 39 is an attempt to gain insight into what people use the Internet for and gauge how easily they navigate the Internet. The theory is if someone is using online entertainment and is looking up information on a daily basis they are well versed in using the Internet while the opposite holds true. This survey is not a definitive result; it is more of a general idea of the makeup of the target wards. The majority of people either use the Internet on a daily basis or on a far less regular basis.

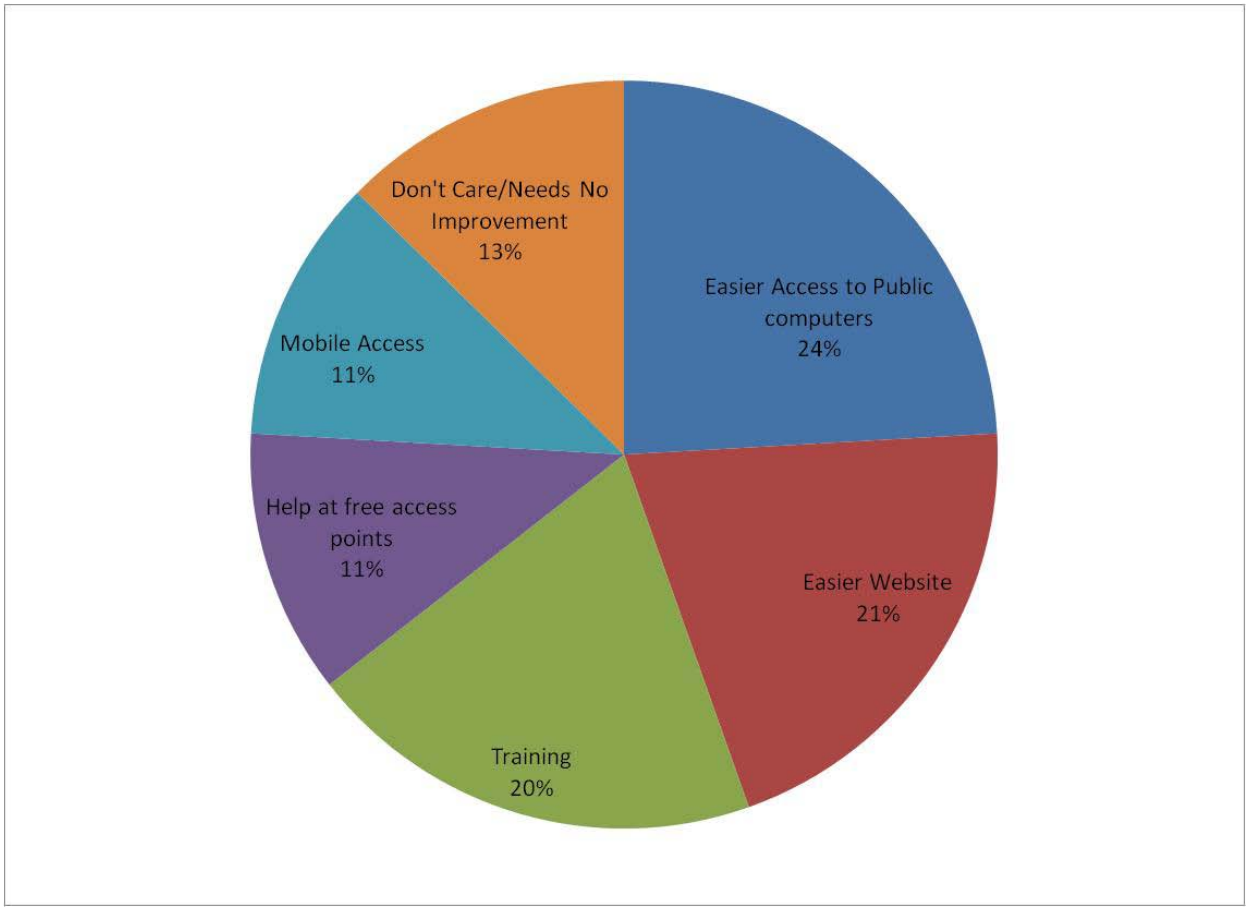


Figure 40: How to Increase Access to Online Services

Figure 40 shows the opinion of residents on how the Council can improve access to online services. Since the data says that 24% of people want more access to public computers, this appears to somewhat go against what Iris Lapinksi and Sue Brown alluded to: access can be found if someone truly desires it. A reason why people say they desire more access could be lack of awareness of all the access points throughout the Borough; this would explain the high access demand and still uphold what two experts in the field claim. This access issue may be referencing the person's ability to get on a public computer at an access point where there may be overcrowding. It is also clear that the Borough needs to make its website easier to use. A close third is that many people felt that training would be a benefit to them for many reasons from confidence to knowledge. With 11% of people saying they wanted a mobile access point, another conclusion can be drawn that the Borough is not advertising to the citizens about the bus they do have or that the Computer Bus does not reach into these areas of the Borough.

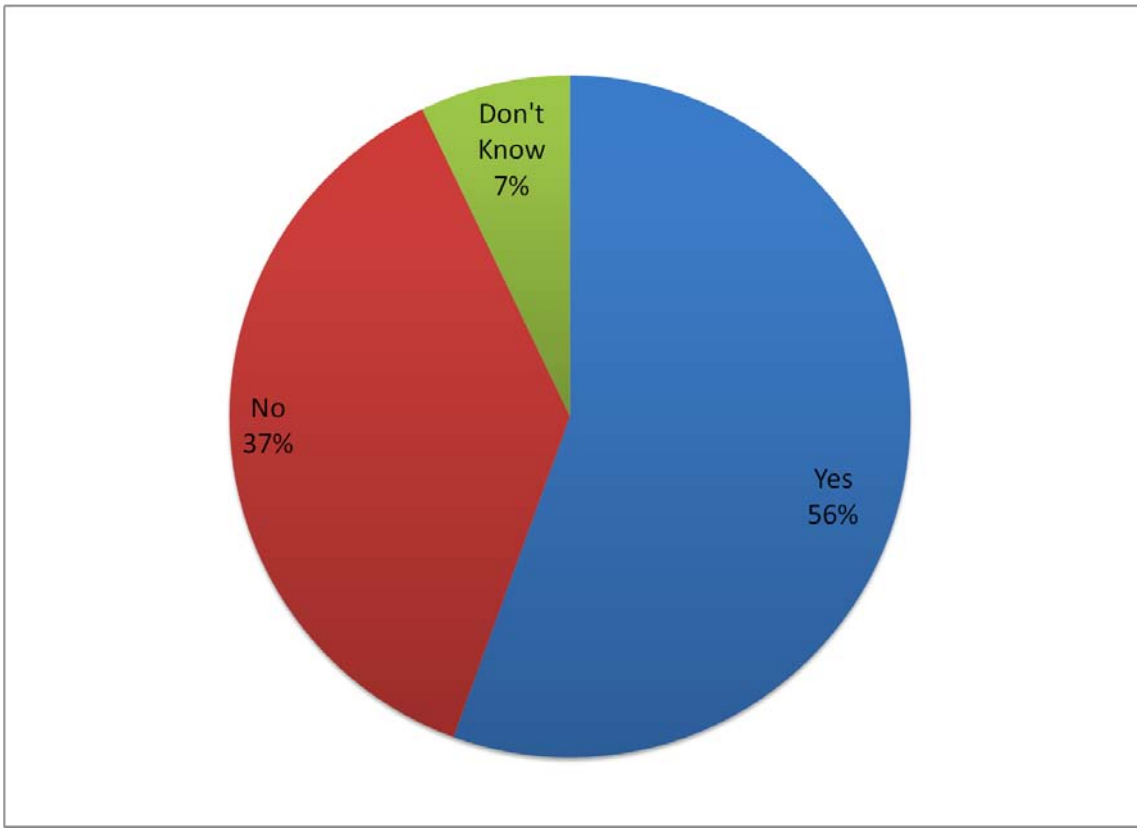


Figure 41: If Greenwich Council Put More Services on the Internet, Would they be Used?

Figure 41 shows that over half of the residents would use the web for council services if there were more services online. There are already many services online from the national government but Boroughs are not quite yet meeting that statistic. Based on the graph, Greenwich Council should look into putting more services on the Internet.

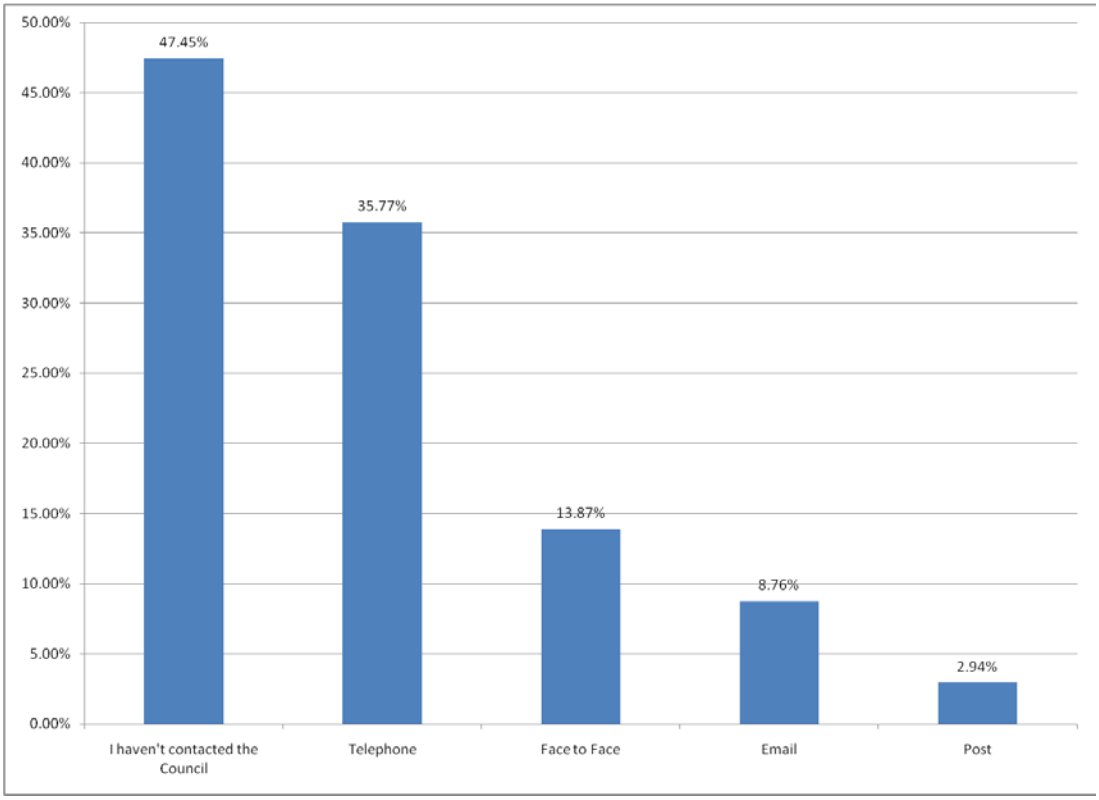


Figure 42: Council Contact vs. Type of Contact

Figure 42 shows that the most prominent mode of contact is telephone (36%) while almost half of the people surveyed hadn't contacted the Council in the last 6 months at the time of surveying. This adheres fairly well to the research where most prefer to call for various reasons; in some cases face to face is required in order to demonstrate proof, such as applying for a passport.

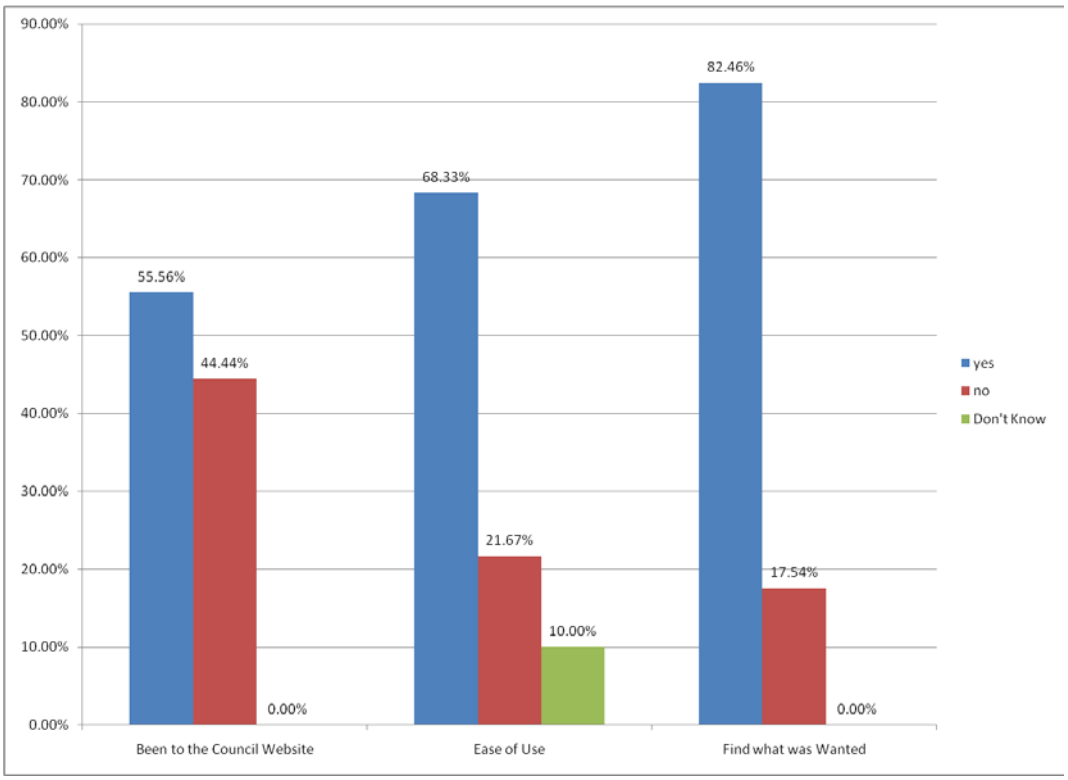


Figure 43: Council Website Access and Satisfaction

With a substantial portion (44%) of the residents not having been to the Council's website, it is clear that some see no value in it or don't know what they are able to accomplish with it. Making the website easier to use should be a big priority for Greenwich council, which is made apparent in Figure 40. Although many found what they were looking for, there is a 14% gap between ease of use and finding that they were looking for leaving room for much desired upgrades and changes. 68% of people found the website easy to use, although this result may be skewed by the fact that they were forced to choose a "yes or no" answer, and many people chose "yes" even though they were uncertain.

Survey Conclusions

With more people buying smart phones the ability to access the Internet can increase; along with this comes easier access to online Council services. A mobile phone also has many features from complex smart phone applications to SMS capability. The options to exploit mobile phones are almost endless; from a Council smart phone application to SMS communication with Greenwich residents. With 17% more people having a mobile phone and not home Internet access, it appears that services offered over the Internet would be well applied to mobile phones and not

solely based on access to the Internet via a computer. A potentially more simple solution with slightly higher access and ease may be an interactive television system as there are programs that support government movement in this direction. With government services being the least common Internet activity there is definite need to improve accessibility and visibility as to what is available from the national government and from the Council. It can be expected that as time goes on, the younger generation who have higher access to the Internet will eventually replace the older generations who do not. Thus, over time the problem may solve itself, but it will take decades; many people will still be excluded from all of the advantages of the Internet, such as easier access to Council services. Social and economic condition was a major factor in Internet use, and this is proven many times based on criteria such as housing ownership, employment, and overall community standing. There are many options for the Council to move forward and improve the Internet as an access channel and all are worth exploring, yet other social and economic issues could present themselves as a major roadblock. The digital divide is not simply a problem of young or old, affluent or not, access or no access, but more of who is getting caught in the middle of these problems and not counted in either extremity of having access or lack thereof.

Interviews

Interviewing experts in the private and public sector provided us with the opportunity to compare ideas with people who had years of experience studying and working with the digitally excluded. Several respondents repeated key ideas during our interviews. Some of these ideas fell perfectly in line with what we expected from the literature, namely that the digitally excluded are comprised of those of low income, education and of more advanced age, but some ideas were presented in a new way. Both Ms. Lapinski and Ms. Choli brought up the fact that many people in the Borough already have Internet available in their homes or at other readily accessible locations and thus access is not as large an issue as confidence in skills or motivation. They both also emphasized the importance of trust, both in technology and in the educational setting that would provide them with the skills to use that technology.

We gained an understanding of the digital divide as being a much more complex issue than three factors that must be addressed. It is more realistically thought of as the result of various possible backgrounds that people come from, and thus different mindsets when approaching the issue of accessing ICT. Some people have had a negative experience in school, perhaps dropping out at an early age, and now have a fear of repeating that experience when presented with the idea of taking a training course. Others see themselves as being too old to learn a new technology, thinking that there is no point in investing in something that would not benefit them for that long. All this affects people's confidence in their own skills, which prevents them from seeing Internet use as possible for, or even beneficial to them.

From Ms. Lapinski we learned that, in the short term, it is unlikely to include 100% of people in the Borough online. This is true for many reasons: some will need services that do not lend themselves well to online access, some people will require a level of explanation for their request that is not possible by filling out an online form, and some will simply not integrate modern ICT in to their lives. In order to account for this portion for the population it is evident that there is a need for the existing modes of communication with the Council to remain in use.

We also saw interesting solutions to provide knowledge of ICT from all of our interviewees. Ms. Palmer identified the possibility of allowing public access to the

ICT suites of schools. This does present issues, such as high firewalls to block non-school use, and the fact that parents might be apprehensive about the general populous being allowed around their children. However, schools generally lie unused for months out of the year when school is not in session, during which time their resources could be put to better use. Ms. Palmer also suggested the use of children's centers, which were built to be in close proximity of the most deprived families in the respective areas, thus making them an ideal point of access. The issue of the general public accessing a facility intended for small children must also be considered if the children's centers were to be used, but the location of the centers would allow for access to those who our research indicated would most need it.

Mr. MacDonald explained how useful a mobile access point could be. It has the benefit of not being as expensive as the construction of a new building, and being able to go to wherever it would get the most use. This seemed to be effective as he said that he saw quite a bit of use. Finally Ms. Choli explained, and was confirmed by Ms. Lapinski, that word of mouth was a useful tool in disseminating information. She found that after many years of traditional advertisement (such as leaflets and fliers,) that one of the more effective means was to have successful learners in her program stay on as volunteers. They then went back to their own communities and shared their own experiences, either encouraging more to participate in training or providing the training themselves to their friends and family.

These interviews helped us interpret the literature and our data more meaningfully and ultimately allowed us to focus our recommendations to the Council. It was gave weight to our ideas to have the opinion of someone with years of experience match our own suspicions.

Conclusions

After analyzing the data from Indices of Deprivation, the Customer Relationship Management (CRM) system, and surveys, we were able to come to conclusions on what the 'digital profile' of Greenwich looks like. Relating the nature of access to services and Internet access to geographic locations and their relative levels of deprivation allowed us to determine which groups of people, both by demographics and location, are most affected by the digital divide.

Relating Indices of Deprivation data to CRM analysis showed us certain patterns occurring in the most and least deprived Lower Super Output Areas (LSOA). Intuitively, those in the most deprived LSOAs had a lower level of Internet access. Although 71% of requests overall were by telephone, 20% face-to-face, and only 4% through email, it was still very apparent that more service requests in the most deprived areas were through the telephone or in person, rather than email, compared to the least deprived areas. Also, the general trend showed that people in more deprived areas have a higher level of interaction with the Council, judging by the number of service requests. Additionally we found that the most used services varied depending on the level of deprivation. In areas of low deprivation and nearly half of the requests were to do with waste and bin collection. In areas of high deprivation, the most requests were for housing benefits, disability services, and schools or children's services.

The survey data further confirmed connections between deprivation-related factors and access to Internet and Council services. Overall, there was a high percentage of Internet and communication technology penetration, with about 80% of people having access to at least a mobile phone. About 70% of residents have Internet access at home, but those who are older, disabled, or have a low income are far less likely to have access which was supported by our interview was Iris Lapinski. There was a clear relationship between increasing age and decreasing Internet usage. Those who lived in Council housing were much less likely to have Internet at home than those living in non-Council housing, which can indirectly tell us that low income households have a lower level of access.

Our survey results also show patterns that match our previous analysis of Indices of Deprivation. When grouping survey responses by categories of most, average, and least deprived LSOAs, we saw that Internet access decreased as the level of deprivation increased, with a 13% difference in the level of access between the most and least deprived areas.

In conclusion, all of our data analysis further emphasized and provided evidence for points made in the research literature. Those who live in more deprived areas, are older in age, have a lower income, or are disabled are known to be digitally excluded, and our data fully supports this claim. Therefore, special attention should be

paid to those areas with higher levels of deprivation. Because those in more deprived areas show a greater need for contacting the Council, they could greatly benefit from improved access to Council services and to online services.

Section 4: Recommendations

After compiling and analyzing all of the available data, we were able to devise four main courses of action we feel would benefit the Council's implementation of the web. The most pressing issue is to update and maintain the current web site and web service system. The reasons for this are clear: one, when starting to bring people online you only get one chance at a first impression (to prove that the system is worth the user's time to use) so the website *must* function as advertised. Two, the people who have already been to the website are of the opinion that it needs updating, as shown by our survey: when asked what they would have the Council to do improve access to its online services, 24%, the second largest group, said that the website should be improved. Three, though lacking empirical data, we have observed that the current system of inputting web forms doesn't save much money, if any, due to the duplication of effort. The literature suggests that in an ideal situation telephone interactions cost £3.39, where web based interactions cost 8p. However, the current system at Greenwich Council sends and unformatted email which an employee has to interpret and enter in the system, as opposed to the form automatically being entered in. Running a rough simulation we calculated that the Council could save £111,000 a year if they were to automate their web form data entry and increase the number of customers using the website. In summary, an improved website is needed to provide a good first impression, building trust with the users, because the public has made apparent they want it, and finally it will allow the Council to save thousands of pounds.

From our research we found that many people desire online services, and have the opportunity to access them, but do not do so due to a lack of awareness. We would recommend utilizing existing Council assets to better inform the people of the benefits of Internet technology. First we would like to stress the importance of commitment to the projects. Lack of trust in Council programs was an issue raised by several respondents in our surveys and also in our professional interviews. We feel this to stem from the lack of longevity of such programs, which generally only last about 3 years. That being said, we feel the Council should continue its support of its Internet and communication technology (ICT) training centers, such as the Greenwich Online program, as it provides a good bank of access points as well as direly needed training.

This will appeal to two key groups of people: those who are middle aged, and generally have a low income and education level that may have had negative experiences with formal education, and the elderly who already understand and thrive in a one-on-one training environment. From our interviews we found the former group generally doesn't see the benefit of Internet use, or of ICT training. However, Greenwich Online has made headway with these types of people and found them to be quite receptive if shown an aspect of the technology that specifically benefits them. In addition to the Greenwich Online centers, we could recommend that children's centers around the Borough also be used as a point of access and advice centers. They were built to be located within the proximity of more deprived families, and thus would allow means to access and training for those who are in the most need of it. The final recommendation we have of this nature would be to set up computers in the existing service centers to demonstrate the value of completing service requests online. We feel that the direct comparison to a large queue and someone sitting at a terminal and accomplishing the same goal in 15 minutes would be dramatic enough to get the point across effectively. In addition to making a point, this might just provide another means of access to services aside from speaking to someone in the center, which is obviously more costly and time consuming for all parties involved. All and all, the point of creating these programs is to provide a "hook," with which one can attract a potential user's interest. We feel that once people are able to clearly see how the Internet can be an asset to their lives rather than a hindrance, they will be much more receptive to the idea of e-government.

Even when people want the services, and understand their availability, they still will sometimes not want to use the Internet in the way that it was "intended" to be accessed. In order to address this we would advise the Council to look into alternative means of disseminating information throughout the public. The goal of this would not be to provide more access but rather to allow people to access the Council in a means that they are comfortable and familiar with, but most importantly, already have. Our research has shown that even when people lack Internet access, they generally use some form of ICT. According to our survey, the two most prevalent forms of ICT were mobile phones and cable or satellite TV, which 87% and 72% of people have, respectively (as opposed to the 70% with home Internet access.) The use of SMS has already been implemented by National Health Services, as well as other programs

such as frontline SMS, and would provide a fast and accurate means of service requests. Further anecdotal evidence was found while surveying as several people said that they would “love to” be able to simply send the Council and SMS message rather than calling and waiting for a return call, which according to them was easily missed, causing the entire process to start anew. Similarly, other Boroughs have implemented Digital TV as another existing means to access services. Although the permeation is not as high as mobile phones, if this resource could be tapped reasonably cheaply it would be another way for those without Internet access the same services.

Lastly, we have come to the understanding that it would be highly difficult to include all of the population in the use of Internet technologies on the short term. The reality of the matter is that some services will not lend themselves well to online access, some people will need the added clarity of speaking to a person, and some will simply not encorporate modern technology into their lives, and as such trusted modes of contact with the Council will be necessary to account for those groups. Our survey results suggest, and Customer Relationship Management data further confirms, that telephone interactions are the primary mode of interaction with the Council and is accordingly essential.

The inclusion of the digitally disadvantaged is a complicated task, and requires finesse to address. The overall message we have for the Council is to make the most of their existing assets. There is generally an adequate amount of public access to computers, so the problem lies specifically with user awareness, confidence, skill and motivation. Much good work has already been done to build user confidence, both in their own skills and in the system the Council wants them to use, and should be continued. Alternate means of ICT based service requests can also improve the chances of including all in a digital way, such as SMS and Digital TV. Finally, reality dictates that there will always be those who will not use modern technology for one reason or another and considerations must be made for them.

References

2007 indices of deprivation for greenwich(7th January 2007).

Abbey wood profile. Retrieved from http://www.greenwich.gov.uk/NR/rdonlyres/42616176-F28F-4577-A8A1-F3930C8B6902/0/_5_AbbeyWoodProfile.pdf

Alldritt, C., Masters, J., Gerritsen, S., & Kippin, H., Dr. (2009). *A brief history of public service reform*. London: 2020 Public Services Trust.

Arthur, C., & Wintour, P. (2010, Monday 22 March 2010 12.05 GMT). Gordon brown: Superfast broadband vital to prevent 'digital divide'. *Gaurdian,* pp. 1. Retrieved from http://www.guardian.co.uk/technology/2010/mar/22/gordon-brown-superfast-broadband

BBC, T. (2010). *Four in five regard Internet access as a fundamental right: Global poll* (Poll No. 1)BBC. (BBC poll on Internet use world wide) Retrieved from http://news.bbc.co.uk/1/hi/technology/8548190.stm

Berg, B. L. (2009). *Qualitative research methods for the social sciences* (7th ed.). United States: Pearson.

Beveridge, W. (1942). *Social insurance and allied services*. London: His Majestys Stationary Office.

Boeltzig, H., & Pilling, D. (2007). *Bridging the digital divide for hard-to-reach groups* (ResearchIBM Center for The Business of Government.

Brown, T. (2008). Local e-government and social inclusion: Moving from a digital divide to social inclusion in 2003 and 2004. *Communities and Local Government*

CIA, T. (2010). *The world fact book.* Retrieved 30/03/2010, 2010, from https://www.cia.gov/library/publications/the-world-factbook/geos/uk.html

Cole, M., & Fenwick, J. (2003). UK local government: The impact of modernization on departmentalism. *International Review of Administrative Sciences, 69*(2), 259.

Compulsory competitive tendering (CCT). (2010). Retrieved 2/2, 2010, from http://www.serco.com/instituteresource/subjects/UKmkt/cct/index.asp

Data Management and Analysis Group. (May 2008). *Indices of deprivation 2007: A london perspective*. London: Greater London Authority.

Digital Britain team. (2009). *Digital britain factsheet.* Retrieved 16 April, 2010, from http://interactive.bis.gov.uk/digitalbritain/2009/11/digital-britain-factsheet/

Digital exclusion profiling of vulnerable groups: Adults with learning disabilities: A profile(2008). . London: Citizens Online and National Centre for Social Research, Department for Communities and Local Government.

Digital inclusion - communities and local government. Retrieved 2/18/2010, 2010, from http://www.communities.gov.uk/communities/digitalinclusion/

Digital inclusion research. Retrieved 2/18/2010, 2010, from http://www.communities.gov.uk/communities/digitalinclusion/research/

Digital nation(2010). (Research. U.S.A.: US Department of Commerce. Retrieved from http://www.ntia.doc.gov/reports/2010/NTIA_Internet_use_report_Feb2010.pdf

Doyle, J. K. Chapter 10: Introduction to survey methodology and design. *Handbook for IQP advisors and students* ()

The english indices of deprivation 2007: Summary(December 2007). Department for Communities and Local Government.

Evans, E. J. (1997). *Thatcher and thatcherism*. London ; New York: Routledge.

Excellence and fairness: Achieving world class public services (2008). Cabinet Office.

FCC. (2010). *Strategies to increase broadband adoption & use gain support*Federal Communications Commission.

Gray, J. (2004). Blair's project in retrospect. *International Affairs (Royal Institute of International Affairs 1944-), 80*(1), 39-48. Retrieved from http://www.jstor.org/stable/3569292

Greenwich council - greenwich profile - 2001 census. Retrieved 2/19/2010, 2010, from http://www.greenwich.gov.uk/Greenwich/YourCouncil/TheBorough/GreenwichProfile/2001Census.htm

Greenwich council accounts(2008). Greenwich Council. Retrieved from http://www.greenwich.gov.uk/Greenwich/FinancialStatementsArchive/SummaryOfStatementOfAccounts2007to2008.htm

Greenwich customer centered and integrated approach(2009). Improvement & Development Agency.

Greenwich modernisation programme (summary and purpose). (2005). Unpublished manuscript.

Greenwich service centres satisfaction study (2009). (Research. London, UK: mruk.

Hadaway. (1998). Did you really go to church this week? behind the poll data. *The Christian Century, 6*

Individual learning accounts(2002). National Audit Office.

Integrated front offices. (2009). Retrieved 2/1, 2010, from http://www.beacons.idea.gov.uk/idk/core/page.do?pageId=9433339

Internet access households and individuals(2009). UK: Office of National Statistics.

Jaxa-Chamiec, M., & Fuller, R. (2007). *Understanding digital inclusion - A research summary* (Reseach Summary) Ufi Ltd. Retrieved from www.ukonlinecentres.co.uk

King, S. S. F. (2007). Citizens as customers: Exploring the future of CRM in UK local government. *Government Information Quarterly*, *24*(1), 47-63.

Kobie, N. (2010). *Labour drops broadband tax.* Retrieved 16 April, 2010, from http://www.itpro.co.uk/622147/labour-drops-broadband-tax

Lager, M. (2008). CRM: In the public interest. *CRM Magazine*, *12*(6), 18-18. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=32526349&site=ehost-live

McNish, J. (2008). *ESD-toolkit and customer profiling.* Retrieved 04/23, 2010, from http://www.esd.org.uk/esdtoolkit/Documents.ashx?doc=61149&agency=527

Morris, A., Goodman, J., & Brading, H. (2006). *Internet use and non-use: Views of older users* (Research(Older people views of Internet)

Office for National Statistics. (2009). *Internet access households and individuals.* Retrieved 2/18/2010, 2010, from http://www.statistics.gov.uk/pdfdir/iahi0809.pdf

Plumstead profile. Retrieved from http://www.greenwich.gov.uk/NR/rdonlyres/9BCAAB60-6AB3-4ABE-9E34-67C8B36DF34C/0/17_PlumsteadProfile.pdf

Silcock, R. (2001). What is e-government? *Parliamentary Affairs*, , 88.

Sipior, J. C., & Ward, B. T. (2005). Bridging the digital divide for e-government inclusion: A united states case study. [Bridging the Digital Divide for e-Government inclusion: A United States Case Study] *Electronic Journal of e-Government*, *3*(3), 20/03/2010.

Social Inclusion & Justice Division, Chief Executive Dept. (2007). *New communities in greenwich*Greenwich Council.

Thamesmead moorings profile. Retrieved from http://www.greenwich.gov.uk/NR/rdonlyres/0C42759B-22D6-4C91-8231-0DDDEAC882CD/0/19_ThamesmeadMooringsProfile.pdf

Understanding digital exclusion research report. Retrieved 2/18/2010, 2010, from http://www.communities.gov.uk/documents/communities/pdf/1000404.pdf

West, D. M. (2007a). *Global E-government, 2007* Brown University.

West, D. M. (2007b). *State and federal E-government in the united states, 2007*Brown University.

Wilson, D., & Game, C. (2006). *Local government in the united kingdom* (Fourth ed.). New York, NY: Palgrave Macmillan.

Appendix A: The London Borough of Greenwich

Since 1965, Greater London has been organized into thirty-two Boroughs (Figure 44) with each one governed by its own council. The London Borough of Greenwich Council governs Greenwich which currently has a population of 222,600 spread out over an area of 5,000 hectares (19 miles^2). The population includes 33% non-white ethnic and racial groups, especially Black British, Asian, and Black African (Figure 45) (Social Inclusion & Justice Division, Chief Executive Dept, 2007). This minority population is expected to rise 137% between 2001 and 2026. The highest minority populations are located in the northern area of the Borough. The Borough is home to approximately 5,000 businesses, most of which consist of less than 25 employees and the public sector in Greenwich provides about one third of the jobs in the Borough. The overall purpose of Council is to provide a wide variety of services including education and public housing.

Greenwich Council is funded through a variety of revenue sources which include Council tax, government grants, business rates and other income, fees for council services (e.g. planning permissions) and other charges (e.g. parking). Revenue is used for the daily operating expenses of the Council to provide its services and is also used to help fund capital expenses (e.g. construction of offices, schools, roads and council housing). The pie chart below (Figure 46) depicts the revenue funding for the Council. The total spending on providing services in 2007 and 2008 was £947,741,000 and the division of the spending is shown in the other pie chart (Figure 47), with a large portion of that money going to children's services and education. As of 2008, the Council has a net worth of over £2 billion (*Greenwich council accounts* 2008).

The Borough of Greenwich comprises 17 wards (Figure 48). Each ward elects three councilors every four years. This means a total of 51 councilors make up the full council. Councilors serve on a variety of committees and panels (Figure 49) where they develop council policies and programs, and oversee the many council services. Some of these councilors serve in senior positions, such as mayor, deputy mayor, council leader, opposition leader, and Liberal Democrat group leader. These positions

are currently held by Cllr Allan MacCarthy, Cllr Barbara Barwick, Cllr Chris Roberts, Cllr Spencer Drury, and Cllr Brian Woodcraft, respectively.

The Cabinet is an executive group of ten councilors that makes major policy decisions and ensures that council services are being delivered properly. Each cabinet member has different areas of responsibility which currently are: leader; deputy leader; health, adults, and older people; culture and Olympics; economy and skills; modernization; performance review and value for money; neighborhood services; greener Greenwich; and children's services.

Most recently the Council has been focusing on its "Modernization Programme," an £800M venture which they hope will help make their services more accessible to the population. In 2005 they started the development of an "integrated front office," which would offer fewer, more broad, services with a more consistent corporate image and feel (*Integrated front offices.*2009). The Council also opened several new centers around the Borough, Riverside and Eltham Centers in 2007, and plan to open two more, Woolwich and Greenwich centers in 2010 and 2011 respectively. The next step in this program will be to utilize the Internet to continue the modernization of the way services are provided.

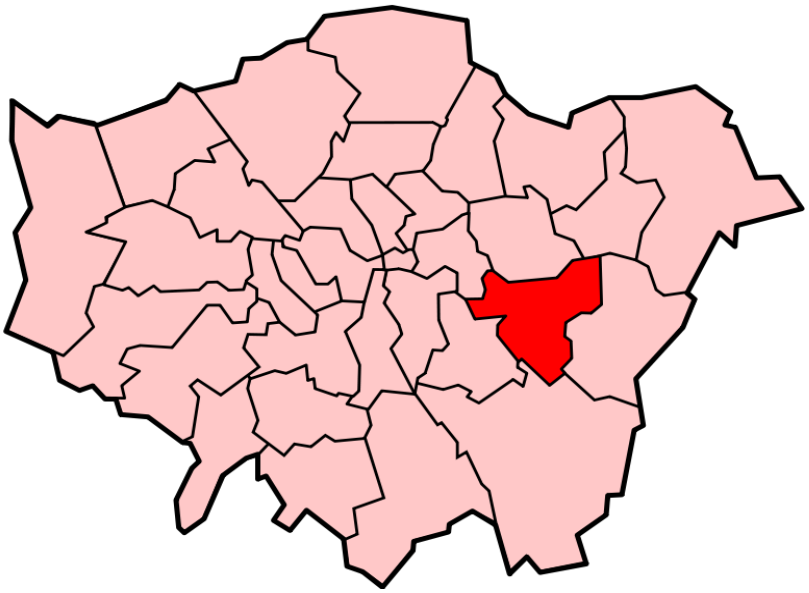


Figure 44 - Map of London

(http://www.greenwich.gov.uk/Greenwich/FinancialStatementsArchive/SummaryOfStatementOfAccounts2007to2008.htm)

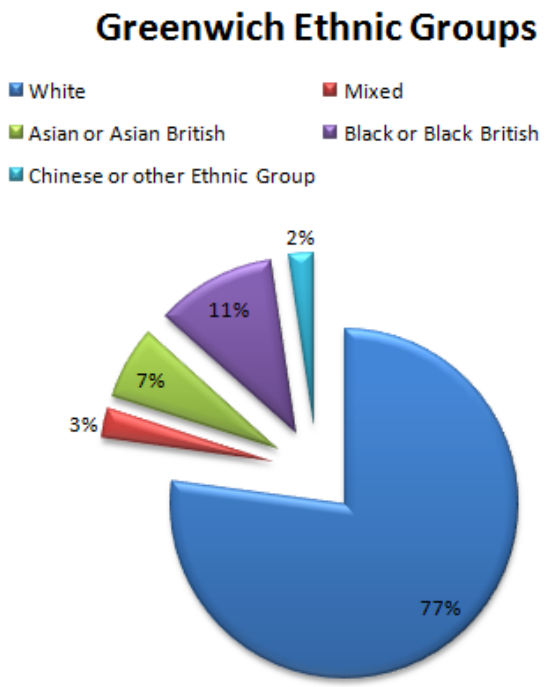


Figure 45 - The Ethnic Composition of Greenwich, 2001

(*Greenwich council - greenwich profile - 2001 census.*)

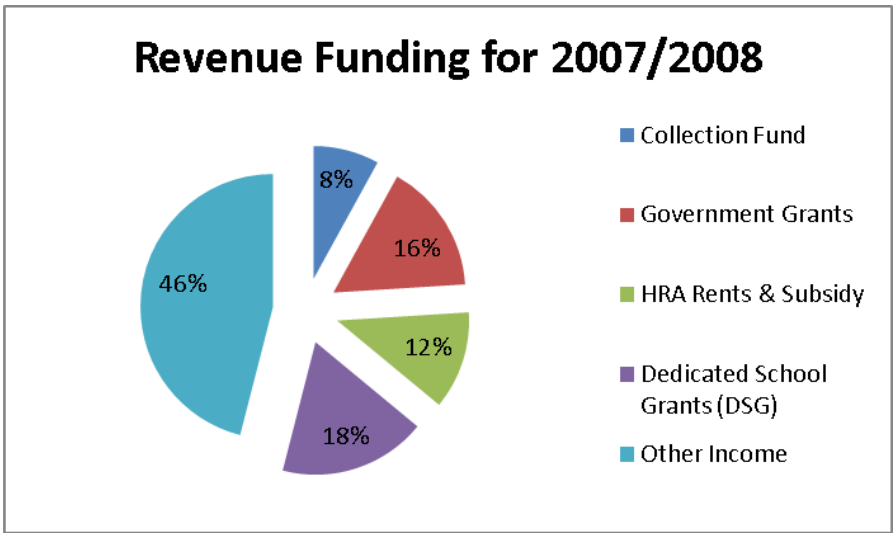


Figure 46 - Revenue Funding

(*Greenwich council accounts* 2008)

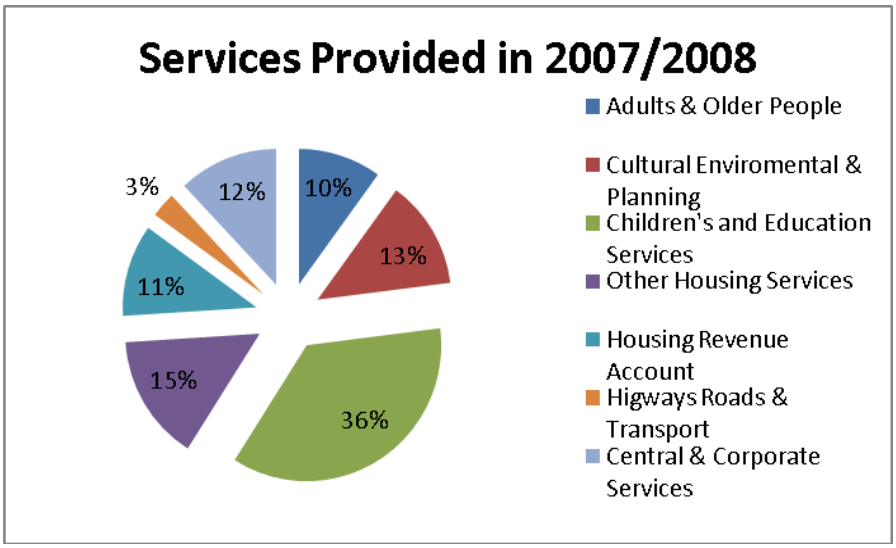


Figure 47 - Greenwich Council Expenditure by Service, 2007-2008

(*Greenwich council accounts* 2008)

Figure 48 - The Seventeen Wards of Greenwich

(http://upload.wikimedia.org/wikipedia/en/d/d6/Greenwich-Ward-Map.PNG)

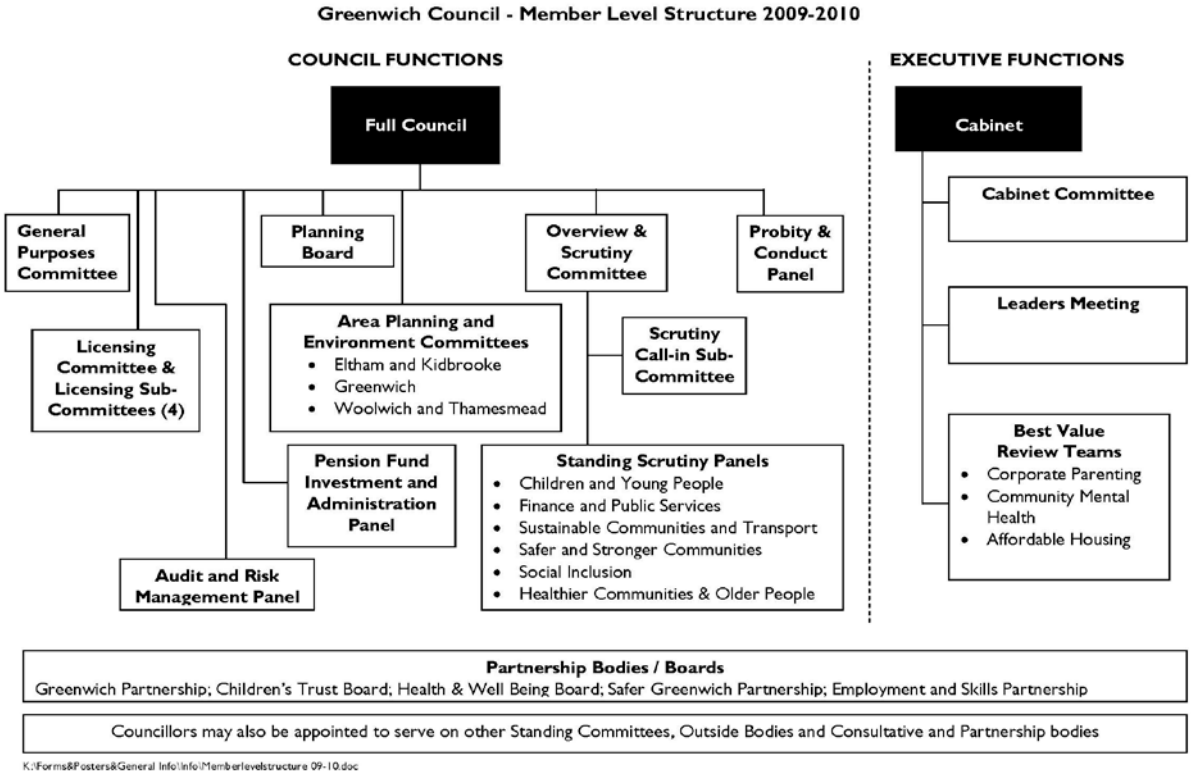


Figure 49 - Greenwich Council - Member Level Structure

(http://www.greenwich.gov.uk/NR/rdonlyres/D4A6DD39-EA3B-4012-9C77-352FC90A31F3/0/memberlevelstructure0910.pdf)

Appendix B: Additional Survey Results

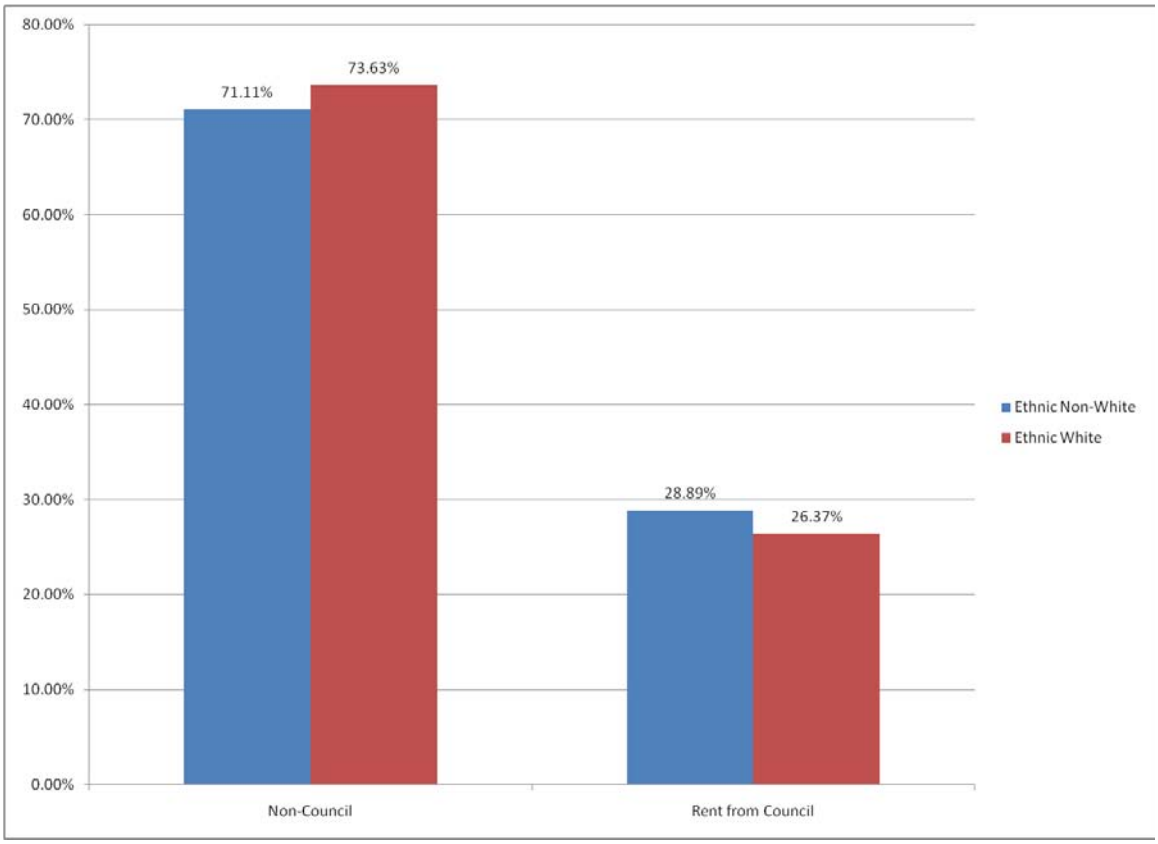


Figure 50: Housing vs. Ethnicity

Figure 50 is meant to give some more validity and support to the conclusion that those in council housing have less home access to the Internet than those who own their household another way. This is to show that there is no ethnicity bias as well as to support claims based on ethnicity.

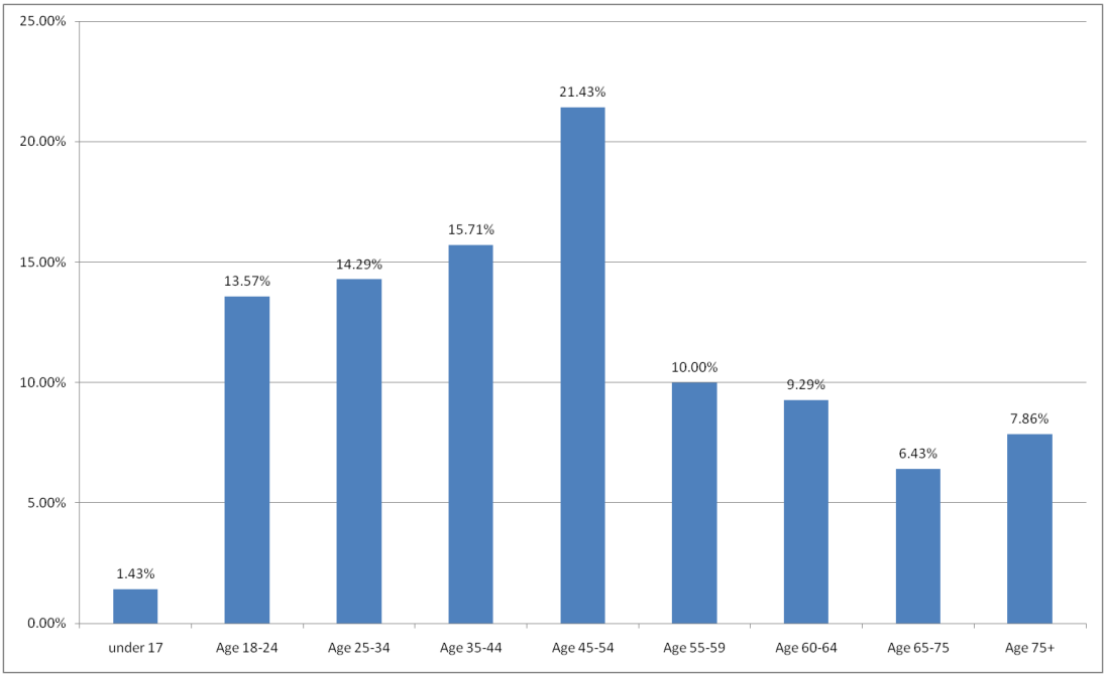


Figure 51: Age vs. Overall Surveyed

Figure 51 shows that out of all the people surveyed the group that constitutes the largest portion of our survey was the 45-54 group. The group with the least amount of people surveyed was the under 17 category at just 1.43% of the total 140 people. Even though some of these percentages are low the quota was met almost exactly (±0.8%) lending support to the validity of the survey.

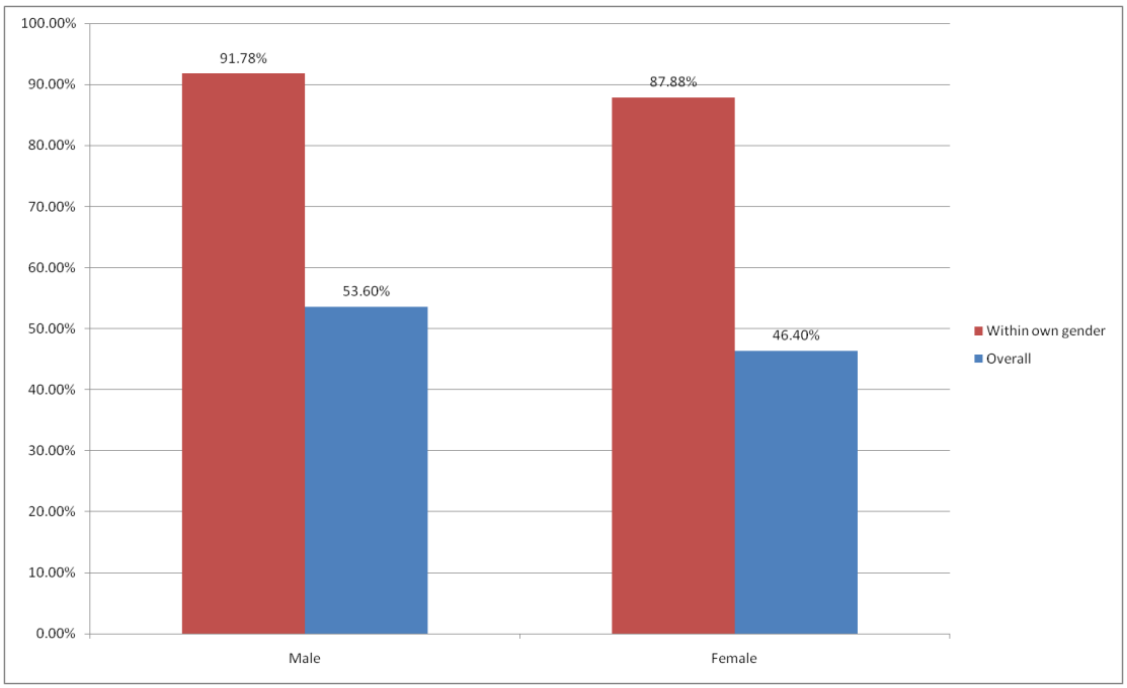


Figure 52: Gender vs. Internet Use

Figure 52 demonstrates that 54% of the Internet users we surveyed were men while the women consist of the complement. Within their own gender, 92% of men used the Internet while 88% of women used the Internet, a mere 4% difference. This holds to the research findings, but it is also stated in the literature that women are increasing their use of the Internet at a faster pace than that of men closing the gap. While there is a small gap between genders it is not large enough to draw any conclusions and with the researching pointing towards the women closing that there are no real benchmarks that can be placed on this data. The exit survey data in Figure 55 shows the opposite to be true, where slightly more females use the Internet.

Appendix C: Exit Survey

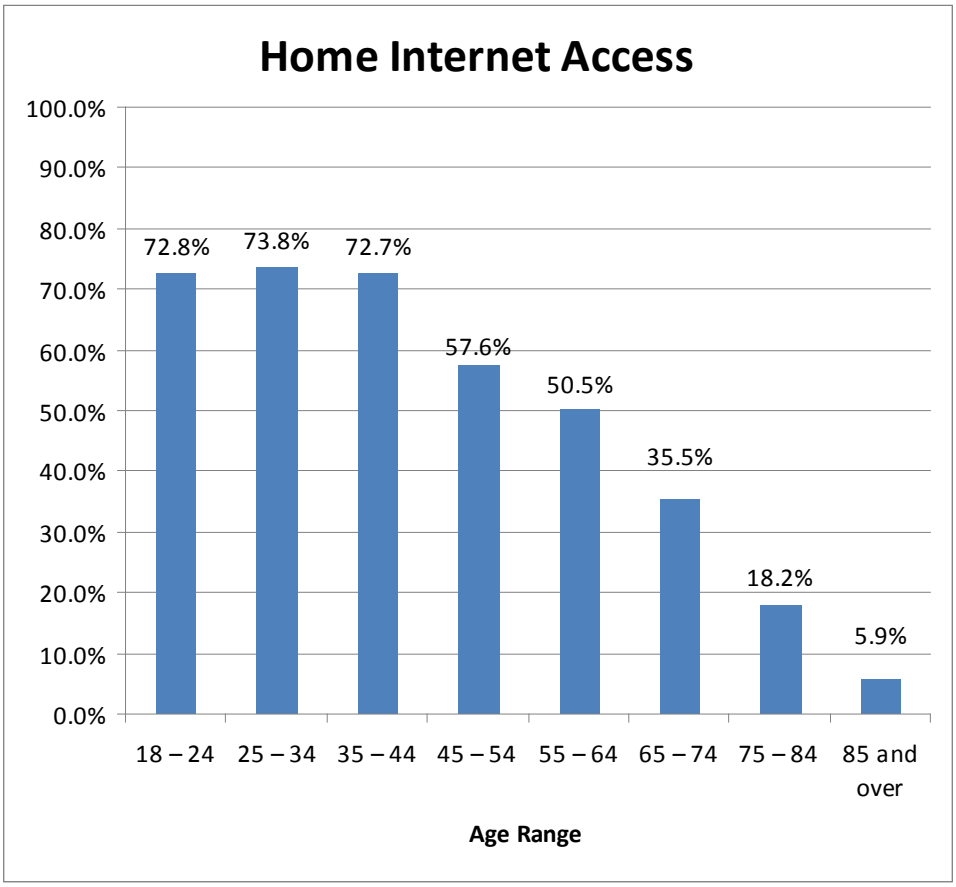


Figure 53: Exit Survey Age vs. Home Access

Figure 53 is almost identical to Figure 29 earlier on where there is a clear difference between the young and the elderly in terms of Internet use. This survey extend the age range further than Figure 29 does, but still shows a pattern that is unmistakable.

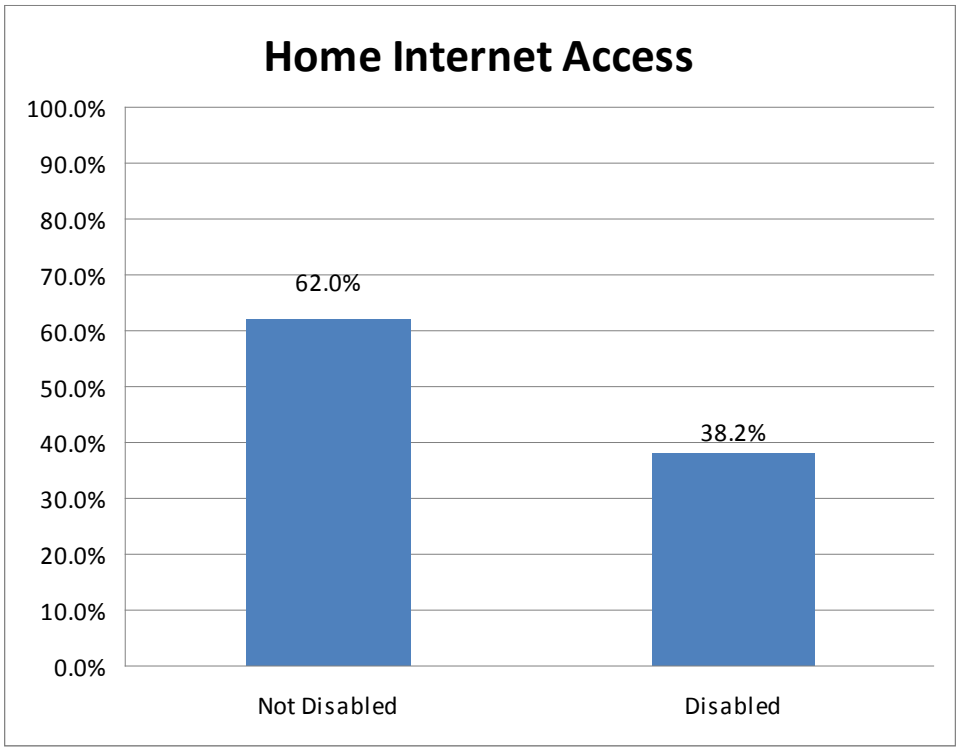


Figure 54: Exit Survey Disability vs. Home Internet Access

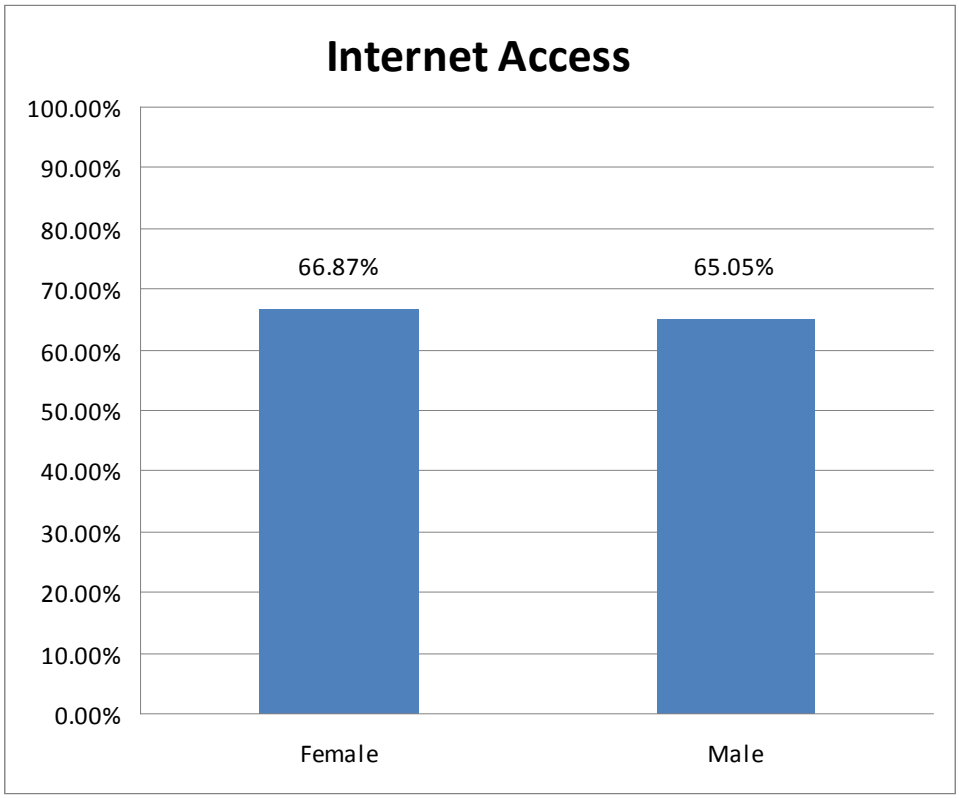


Figure 55: Exit Survey Gender vs. Internet Access

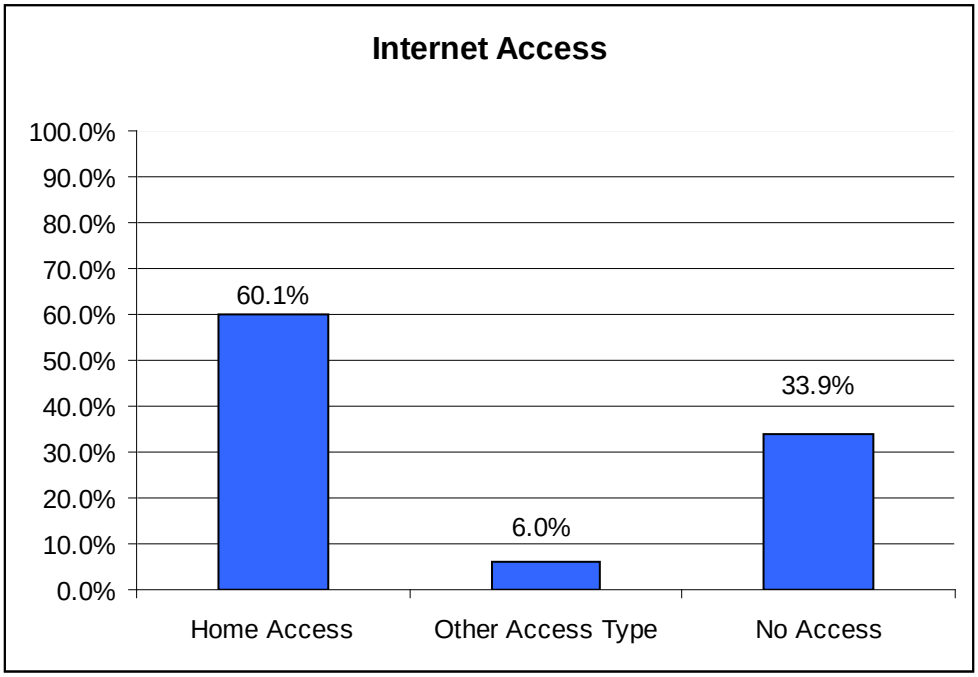


Figure 56: Internet Access Type

Home access is roughly 10% less in this exit survey figure than that of Figure 35 where about 70% of residents have access to the Internet at home, this difference may be caused by the exit survey being conducted at a council center where people may go if they do not have Internet at home.

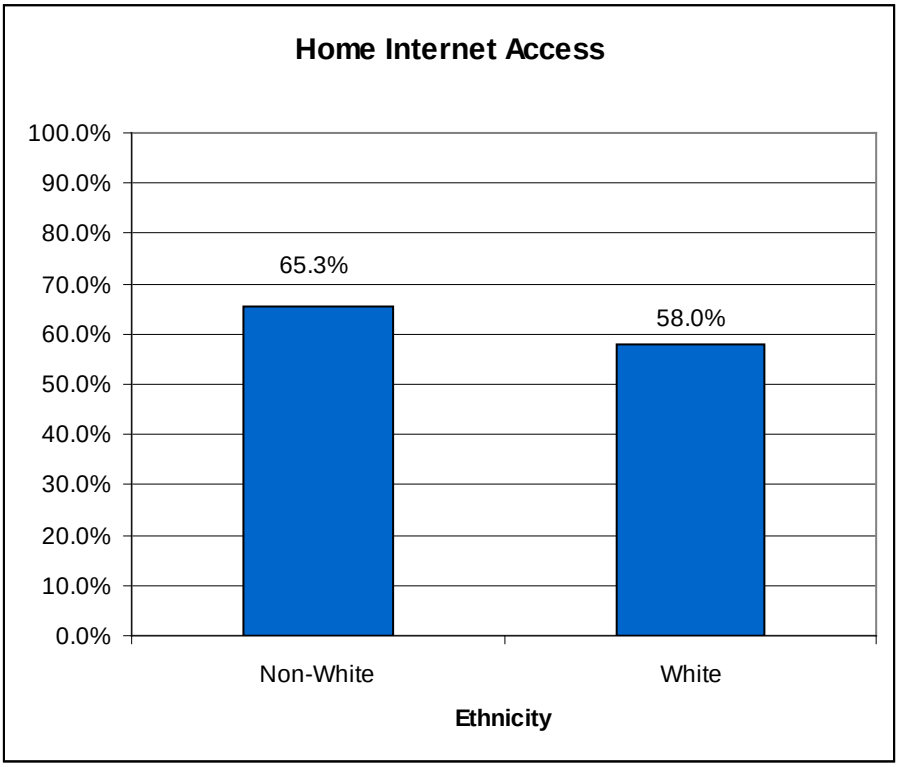


Figure 57: Exit Survey Ethnicity vs. Home Internet Access

As mentioned earlier, it is shown that ethnic non-white people have more home access to the Internet and relates well back to Figure 33 where similar conclusions were drawn. These two figures defy the literature regarding how ethnic non-white residents have more home access. This extra support for the conclusion may mean there is a different demographic makeup in Greenwich which is atypical, according to the research.

Appendix D: Survey

Improving Customer Access to Council Services

Mark down the ward where the survey is being taken:

Abbey Wood	1
Plumstead	2
Thamesmead Moorings	3
Other (write in) _____	4

Mark down the date (Day / Month)

__ __ / __ __ / 2010

Mark down gender

Male	1
Female	2

SECTION 1

Q1. Do you currently reside in Greenwich? (If no, do not continue survey)

Yes	1
No	2

Q2. Have you been a resident of Greenwich for at least a year?

Yes	1
No	2

Q3. What is your post code? (code post code) _____

(if post code is not known, what street do you live on/what area?)

_____

Q4. What is your age?

Under 17 years	1
18-24 years	2
25-34 years	3
35-44 years	4
45-54 years	5
55-59 years	6
60-64 years	7
65-75 years	8
75+ years	9
Prefer not to answer	10

Q5. What is your ethnicity? (Show card and ask for the corresponding letter)

White	
British	1
Irish	2
Any other White background (Write in and Code “3”) _____	3
Mixed	
White and Black Caribbean	4
White and Black African	5
White and Asian	6
Any other Mixed background (Write in and Code “7”) _____	7
Asian or Asian British	
Indian	8
Pakistani	9
Bangladeshi	10
Any other Asian background (Write in and Code “11”) _____	11
Black or Black British	
Caribbean	12
African	13
Any other Black background (Write in and Code “14”) _____	14
Chinese or other ethnic group	
Chinese	15
Any other background (Write in and Code “16”) _____	16

Q6. What is your current occupation? (Select multiple if needed)

Working full time	1
Working part time	2
Full time student	3
Part time student	4
Retired	5
Prefer not to answer	6
Unemployed	7

Q7. If you don't mind me asking, do you have any disabilities that could hinder your use of the Internet or a computer?

Physical impairment	1
Visual impairment	2
Hearing impairment	3
Mental health condition	4
Learning disability	5
Long-standing illness or other condition	6
No disabilities	7
Prefer not to answer	8

Q8. In which of these ways does your household occupy your current accommodation?

Owned outright	1
Buying on mortgage	2
Rent from Council	3
Rent from Housing Association/Trust	4
Rented from private landlord	5
Other (write in) _____	6

Q9. How many people live at your residence?

1 2 3 4 5 6 7 (If more than 7, code 7 and write in …) _____

Q10. How many children aged 17 or under currently live in your household?

One	1
Two	2
Three	3
Four	4
More than Four (write in) _____	5

None	6

Q11. Do you or someone in your household own a car?

Yes	1
No	2

Q12. Where do you shop most often for food/groceries?|

Abbey Wood	1
Woolwich Town Centre	2
Plumstead High Street	3
Thamesmead Town Centre	4
Somewhere else (write in) _____	5
Don't know	6

Q13. Do you use the public libraries in the Borough? (if no, skip to Q15.)

Yes	1
No	2
Don't know	3

Q14. Which libraries do you go to?

Abbey Wood	1
Thamesmead	2
Plumstead	3
Woolwich	4
Somewhere else (write in) _____	5
Don't know	6

Q15. Do you ever use public leisure centres in the Borough? (if no, skip to Q17.)

Yes	1
No	2
Don't know	3

Q16. Which leisure centres do you go to?

Eltham Centre	1
Thamesmead	2
Plumstead	3
Woolwich	4
Somewhere else (write in) _____	5
Don't know	6

Q17. How often do you visit NHS premises such as health centres, GP surgeries or hospitals in this area?

Once per week	1
Once per month	2
Once every two to three months	3
Once or twice per year	4
Never	5
Don't know	6

Q18. Do you use a mobile phone?

Yes	1
No	2

Q19. Do you have cable or satellite television?

Yes	1
No	2
Don't Know	3

Q20. If you don't mind me asking, could you tell me if you have a bank account?

Yes, I do have a bank account	1
No, I do not have a bank account	2
Prefer not to answer	3

Q21. How have you contacted the Council in the last six months? (Select all that apply.)

Face-to-face at Council Building	1
Telephone	2
Email/Website	3
Post	4
Have not contacted the Council in the last six months	5
Don't Know	6

Q22. In which way would you prefer the Council to contact you?

Email	1
Post	2
SMS (text message)	3
Telephone	4
Home visit	5
Don't Know	6

Q23. Do you currently have Internet access at your residence via a computer?

Yes	1
No	2

SECTION 2

If NO to Q23:

Q24. For which reason(s) do you not have Internet access in your household? (Select all that apply)

No computer	1
No interest/not useful	2
Too expensive	3
Don't know how to use/confused by technology	4
No time/too busy	5
Other (write in) _____	6

Q25. Are you or your household planning to get access to the Internet in the next year?

Yes	1
No	2
Don't Know	3

If YES to Q23:

Q26. Do you have broadband Internet access in your household?

Yes	1
No	2
Don't know	3

CONTINUE HERE EITHER WAY

Q27. In which other ways do you access the Internet? (Select all that apply)

Friend or family member	1
Library	2
School	3
Internet café	4
Local community center	5
Mobile phone	6
None of these other ways	7
I don't access the Internet in any way (skip to Q39)	8

Q28. Have you booked a holiday online?

Yes	1
No	2
Don't know	3

Q29. Do you ever make purchases (goods, products, services) online?

Yes	1
No	2
Don't know	3

Q30. Do you Bank online? (do not ask if they don't have a bank account – Q20)

Yes	1
No	2
Don't know	3

Q31. Have you used online national government services (direct.gov)?

Yes	1
No	2
Don't know	3

Q32. Do you ever use the Internet for educational purposes (research)?

Yes	1
No	2
Don't know	3

Q33. How often do you do these things?

(1 - Less than weekly, 2 - once a week, 3 - multiple times a week, 4 - daily, 5 - DK)

Use social networking sites	
Finding info online like news, weather, and restaurant hours	
Sending/receiving email	
Online entertainment (music, watching videos, games)	

Q34. If you have ever needed help accessing the Internet, what did you do?

Work things out yourself without any help	1
Get help from family or friends	2
Ask people at work/school to help you	3
Take training courses	4
Public library	5
Pay someone to help you	6
I haven't needed help	7
Other (write in) _____	8

Q35. Have you been to the Council Website in the past year? (if no, skip to Q39)

Yes	1
No	2

Q36. Was it easy to use the Council's website?

Yes	1
No	2
Don't know	3

Q37. In general, were you able to find what you were looking for? (If yes, skip next question)

Yes	1
No	2

Q38. If you couldn't find the information you wanted on the Council's website, how did you find the information you were looking for?

Called the Council	1
Asked a friend	2
Went to a Council Centre	3
I didn't find the information	4
Other (write in) _____	5

Q39. How do you prefer to pay debts to the Council, such as council tax?

Telephone	1
Council Centre	2
Internet	3
Post	4
Direct from salary or pension	5
Other: _____	6

Q40. Regardless of how you contact the Council, which types of services do you use often? (Select all that apply)

Bins and waste collection	1
Street cleaning and environment	2
Roads and highway	3
Council tax	4
Housing benefit or other benefits	5
Schools	6
Children's Centres	7
Housing and housing needs	8
Register a birth, death, or marriage	9
Other _____	10

Q41. If the Council were to offer more services through the Internet, would you use them?

Yes	1
No	2
Don't know	3

Q42. Which types of services would you like to obtain information about or get access to through the Internet?
(Select all that apply)

Apply for Council services online	1
Notify local problems to the Council	2
Apply for jobs with the Council	3
Give your views to the Council on important matters (like planning applications and changes to the way the Council runs things)	4
Receive housing services online (like repairs ordering, applications for Council housing or other housing support)	5
Receive education services online (like applications for schools places, or other educational opportunities or support)	6
Find out what's on and where to go in an area	7
Pay a Council bill (like rents, Council tax or a parking fine)	8
Get information and advice about care services (such as equipment and adaptations)	9
Apply for benefits	10
Register a birth, death, or marriage	11
Use a library service (like reserve, renew, and find books and other lending items)	12
Other _____	13

Q43. What would the Council need to do to make its online services easier to access?

Make it easier to get access to public computers	1
Make the website easier to use	2
Facilitate training	3
Provide help at free access points	4
Provide mobile Internet access point	5

Thank you very much for your time!