RESPONSES TO THE DIGITAL DIVIDE: OPPORTUNITIES AND CONSTRAINTS FOR SALT LAKE CITY

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EXECUTIVE SUMMARY

The digital divide is a topic that has been explored for about two decades to determine who does not have the resources and knowledge or reasons to why someone is not connected to the Internet. Exploring the digital divide for cities has been extremely important, especially because many cities have mainstreamed their applications for permitting, licensing, or jobs online. Also, the internet has been the main medium to communicate and access information globally.

With the digital divide, cities have found it important to respond by creating a digital inclusion strategy, plan, or program. Digital inclusion focuses on social equity, while the digital divide is the gap between the have and the have not's. The challenge to create equity between the two demographic is to determine why people are not connected to the Internet and to find funding to bridge the digital divide. The digital divide demographic is commonly underserved communities, which includes elders, minorities, female residents, and person with disabilities learning to utilize the Internet.

Salt Lake City, like many other cities in the United States, are interested in building an equitable community by making sure everyone have access to information and equal opportunities for jobs and education. In 2015, Salt Lake City partnered with a fiber-optic broadband network provider to bring extremely fast internet to their residents, but typically a specific demography would subscribe to the service. The paper is to help cities like Salt Lake City who does not already have a digital inclusion program but is interested in responding to the digital divide by gleaning best practices from existing digital inclusion programs.

The research includes four case studies cities: Washington, D.C.; Seattle, Washington; Austin, Texas; and Chicago, Illinois. Based on these case studies, findings were discovered to help move Salt Lake City towards a more equitable community. The findings included: corporate and foundation partnership; digital inclusion staff and fund; entrepreneur and small businesses; and civic engagement.

INTRODUCTION

Having internet access is common for many Americans in the 21st century. With job posting, classes, bills, and other applications moving online, Salt Lake City wants to make sure residents and business owners are equipped to capture that shift. However, there is a concern for the lack of access to high-speed broadband, equipment, and even knowledge to navigating online for specific neighborhoods; especially ones located West of Interstate-15, which predominantly is made up of low-income households. Historically, low-income communities are least likely to adopt new technology and practices because the lack of knowledge or resources, which results in the digital divide.

Salt Lake City's geographical landscape attracts people who are outdoor enthusiasts, anyone seeking a high-quality, and affordable lifestyle in a strong economy. Forbes ranked Salt Lake City third as the "Best Cities for Jobs" and fourth for "Best Tech Jobs" in 2012. Also, Advocate.com ranked Salt Lake City number one as the most gay-friendly cities in the country. To identify neighborhoods that are currently underserved in Salt Lake City, Community and Economic Development (CED) department collaborates with Housing and Neighborhood Development (HAND) department. HAND's demographic studies identified areas of the City where ethnic concentrated areas of poverty (ECAP), racially concentrated areas of poverty (RCAP) and other demographic indicators where low income residents may be negatively affected by the installation of fiber-optic. The goal is to see if there are opportunities for partnerships, subsidies, education offerings or other opportunities for these targeted population to ensure they will not missed out on high-speed broadband or resources that is becoming the standard for communication for many households. By 2050, Salt Lake City expects to increase by approximately 650,000 residents. This projected growth in thirty-five years will impact Salt Lake City's city form. It is recommended for Salt Lake City to take initiative to continue the high-quality lifestyle by addressing digital inclusion for social equity.

Digital inclusion initiative's focus is to bring access and digital literacy to cities that do not already have a digital inclusion program, like Salt Lake City, with the vision of making sure residents' lifestyle is enhanced and competitive for a technological global economy. The targeted population will range from renters, disabled, seniors, non-English speakers in underserved community. The other intention is to recommend strategies for cities to adopt as part of the digital inclusion and determine funding and grants, application, and partnership on a

local and national level. By initiating a digital inclusion program, Salt Lake City can bridge the gap between communities and provide opportunities for a stronger citizenship and economy. By forming partnership with the existing community, it keeps the integrity of the current culture and forms a diverse and dynamic economy. Digital inclusion should be sought out with the intention of having longevity and productivity.

The paper will analyze opportunities and constraints for Salt Lake City to glean best practices from case studies of existing digital inclusion programs in the United States. The research starts with background information of the relevancy of broadband connection to the United States. It defines digital divide and digital inclusion, Salt Lake City's demography, explanation of methodology for the research, case studies, and best practices from the case studies and recommendations of policies for Salt Lake City. In conclusion, the Digital Inclusion initiative is a compilation of research, interviews, and case studies from cities that have digital inclusion program - Washington, D.C., Seattle, Austin, and Chicago. Sources for qualitative analysis include PEW Research Institute, US Census Data, nonprofit organization data, many digital inclusion related research publications.

BACKGROUND

The tale of a technologically inclined society can be illustrated through what life looks like in California, more specifically in Silicon Valley. Waking up involves checking emails and reading current news event for many people through their digital device. As for someone who grew up in California, from an early age, my father started experimenting with our homes by creating an internet network, because of his work and interest in internet networking. Every computer in our house was connected to a DSL cable to later a wireless router since 1995. There were a total of six computers, one for every sibling, including one for my father. Today, my father sits in front of two computers and a laptop, and my brothers each have a desktop, individual laptop, tablet, and a smart phone. No one is short of devices to connect online. However, this is not the norm for all Americans. Even in 2015, not everyone has equal access (quality and price) to the Internet. According to Pew Internet Project's research, 70 percent of Americans have internet connections at home (Pew Internet, 2013). Although the majority of Americans have access to the internet, the number of people who have affordable high-speed connection is still a concern. Having a reliable high-speed internet is costly and typically adopted by businesses and people who rely on high speed internet as a basic and competitive tool for everyday life.

Fiber optics is currently one of the fastest forms of internet connection, reaching speeds of 500 million bits per second (mbps) to one giga bits per second (gbps). Whereas, DSL and cable reaches between ten to thirty mbps, which is generally what many residents are using today. With fiber optics, the amount of data streaming to someone's device is essentially instantaneous. Fiber optic cable is made out of glass or plastic, which uses light to transmit data without any interruption (Anderson, 2015). However, fiber optic network is costly to implement and DSL remains to be the main form of broadband subscriptions.
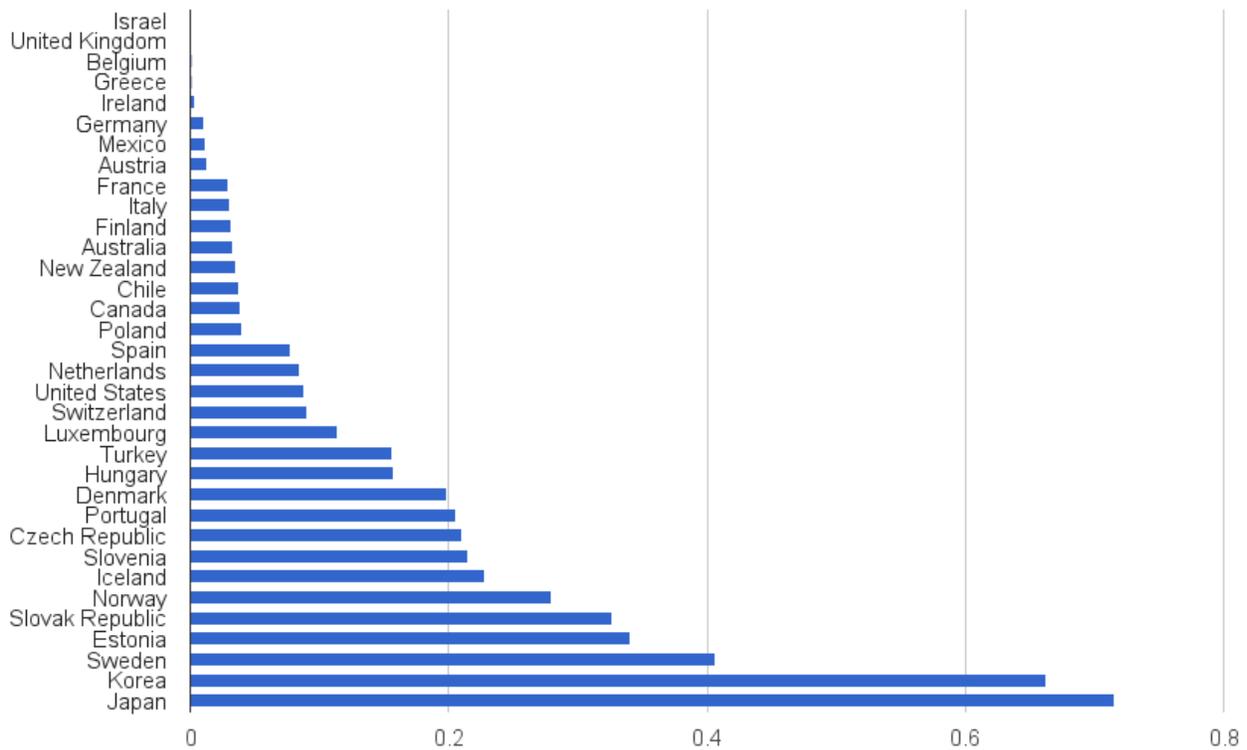
Figure 1. Bar graph showing the percentage of fiber optic connections in the total broadband subscriptions in 34 countries. From "Percentage of Fiber Optic Connections in Total Broadband Subscriptions," by OECD Broadband Portal, 2014

Figure 1 shows the percentage of broadband subscriptions in each countries, a total of 34 countries. For the three countries with the highest fiber-optic subscription, Japan has 71.5 percent, Korea has 66.3 percent, and Sweden has 40.7 percent in 2014 (OECD, 2015). United States only has 8.8 percent in comparison to the top three countries and the United States has over one thousand fiber optic broadband providers (Anderson, 2015). In comparison to the 34 countries, the United States is 16th on the list for the percentage of fiber optic connections in the total broadband subscriptions.

The topic of a 'digital divide' is not a new concern. When the Commerce Department's National Telecommunications and Information Administration (NTIA) first surveyed Americans in the early 1990s to determine who does not have access to a telephone, modem, and a personal computer, they were initiating the study of the "digital divide" by using the term "have not's." The study focused on determining what are the variables for the "have not's" and where they are

geographically located in the United States (NTIA, 1995). The study found there were a disproportion of "have not's" found in the rural areas and central cities, specifically for lower socioeconomic individuals, Native Americans (including American Indians, Aleuts, and Eskimos) in rural area, Hispanics, Blacks, seniors, householders under 25 years old, and low level education attainment (NTIA, 1995).

However, the digital divide is not unique to United Sates; United Kingdom and France established an inclusive society before United States (Selwyn, 2004). The conversation stemmed from the dichotomy between developed and non-developed countries having access to the Internet and how it will affect these countries economically and politically. More specifically, how will the Internet reshape countries, cities, neighborhoods, and individuals.

Although technology has changed since the early 1990s, the issue remains the same. The word, 'digital divide' is a term to simply describe the "have" and "have not's" population who has access to the device, connection, and ability to use the technology. In fact, since the adoption of landline, the United States telecommunication policy's main goal is to have universal access to affordable telephone service for all Americans (NTIA, 1995). Since the form of communication has shifted towards accessing the Internet through mobile device and computers, the concern for addressing the digital divide has been a popular conversation. A few cities have taken initiatives to address the digital divide and gap since the digital shift, but many cities are returning to the topic to mainstream online applications, to create government transparency, and to increase economic development online. Today, many broadband providers are looking to expanding broadband width by installing fiber optics, but the infrastructure requires commitment from online subscribers and the city to uproot streets for the layout infrastructure. Once the infrastructure is in place, the challenge continues with making sure everyone has access and knowledge to utilizing the high-speed Internet service.

DIGITAL INCLUSION VERSUS DIGITAL DIVIDE

When talking about digital inclusion, the term digital divide must also be addressed. In fact, digital inclusion stems from acknowledging the fact that there is a digital divide or gap between someone who is currently connected or disconnected to the Internet world. Digital inclusion focuses on social equity and the digital divide defines the gap of the have and have not's. For this study, social equity is about fairness, right and justice (Guy, 2012). The term "social equity"

developed in the 1960s to "emphasize the human factor in governance, and the word 'social' inserts group consideration into otherwise liberal notion of individual equity" (Guy, 2012). Typically equity is confused with equality, and the difference in the meaning is miniscule. When using the word "equality", there is a mathematical component to denote the same. Whereas, "equity" is more than a mathematical sign, it typically includes the legal justice system of fairness.

In Japan, the City of Okinawa believes, "Everyone should be able to enjoy access to information and communications networks" (Ministry of Foreign Affairs of Japan, 2000). In the past, city planning has a history of mortgage and labor redlining, especially after World War II. The act of redlining resulted in a racial and spatial discrimination (Zenou & Boccard, 2000). Since then, redlining is considered illegal, but the consequences of redlining are still apparent by the concentration of lower-income communities in different neighborhoods.

Defining "Digital Divide" Politically

Since 1995, The National Telecommunications and Information Administration (NTIA) have been publishing reports to show what "digital divide" is based on, and over the years, the list has expanded to include mental and physical disabilities, dual and single parent households, socioeconomic, and low education level attainment (NTIA, 2014). In the 2014 NTIA report, "Exploring the Digital Nation Embracing the Mobile Internet" focuses on the increase in the mobile phone adoption, which shows how Americans are approaching the Internet. Therefore, when discussing the issue of connectivity to address the digital divide, the type of hardware or software used for connected should have the flexibility to current technology adoption. From a policy standpoint, it is a process of social inclusion, which is defined as "individuals, families, and communities are able to fully participate in society and control their own destinies, taking into account a variety of factors related to economic resources, employment, health, education, housing, recreation, culture, and civic engagement" — concept of socioeconomic equality (Warschauer, 2003). The goal is creating sustainable economic growth, enhancing public welfare and fostering social cohesion (Sassi, 2005). Since social equity is the concern of the digital divide, coming up with ways to define the term politically will be beneficial for implementing future programs.

Defining "Digital Divide" Academically

In many studies, the question of what is "digital divide" has evolved over the year. In fact, it is no longer about the question of whether people have access to the Internet, but whether people have the skills to be competent, retrieve and produce content online. Arguments have been made about how "digital divide" is defined by many sources. The debate centers on the issue of access to technology alone or are there other unaddressed issues. What is apparent and key to the term "digital divide" is the social equity component, creating equal opportunities for every individual. Karen Mossberger suggests redefining the "digital divide" to add the lack of skills (technical competence and information literacy) to use technology for the benefit of "public goods" (Mossberger, 2003). Digital divide is also "the capacity of digital media to effect change" (Brooks et al., 2005). The term "digital divide" when used academically is to express the stratification of social classes, race, gender and age who are lack the skills to use the Internet as a tool to improve their livelihood.

Accessibility vs. Content

Since defining digital inclusion is a matter of accessibility to the Internet via software and hardware, then the next concern would be, "How is the Internet used once there is universal access to the software and hardware?" The Internet can be utilized in different ways and has been broken into two simplified categories, as a social tool or as a technological opportunity tool.

First, the Internet is used as a social tool for work and leisure. It has become something more like a lifestyle for staying in touch, accessing information, participating in the global world (Sassi, 2005). Over the years, the Internet is used to stream music and movies, a "medium of democratic life," and a mechanism for community access (Sassi, 2005). Overall, the Internet is a communication tool for anyone who has the knowledge to access them.

Secondly, technological opportunities such as access, competence and content — emails, banking, job application, e-commerce (small & medium-sized enterprises, micro-enterprises and individuals participating in the global market) is another platform for performing daily activities through the Internet (Sassi, 2005). Content is defined as the technical skills to utilize the Internet as a medium to build capacity for everyday uses, rather than the skills to operate the software and hardware for consumption. Essentially, the Internet has created another way to run

businesses, apply for jobs, or work from home or anywhere, because the Internet is accessible through mobile devices.

Value of the Internet — Social Benefit

The Internet is used differently by age, gender, culture, and socioeconomic classes. However, the Internet has been an integral part of government agency, businesses, schools, and health. For years, general discussion is about how the Internet will affect the everyday life. The answer to the question is still evolving, especially with new technologies that are constantly being developed. However, the Internet has the potential to create social segregation and marginalization through the employment market, democratic activities, social welfare system and family and social relationships (Sassi, 2005). Today, the Internet has been a way to find and apply for work, book flights, access news in multiple languages, share music, stream films, communicate with people from the other side of the world, and essentially used in any way an individual would like. The Internet has allowed women to build businesses from home to earn an income. The Internet has created a way for conveniences for accessing information or shopping for groceries online.

Pippa Norris has broken down the value of the Internet and how it has social benefit to today's world into these categories:

- **Productivity**: The Internet has the "capacity to boost productivity" (Norris, 2001). Ways of building capacity to enhance productivity are in the form of online banking, online job/house searching, or other tools that help bring efficiency to everyday life from anywhere.

- **Economic Catalyst**: The Internet can be used as an "engine of economic growth" and create "multiple opportunities for socioeconomic and democratic development" (Norris, 2001). A few years ago when online stores were hitting the market, there was fear that it would wipe out the mom and pop shops. However, it has done the opposite; more businesses have been formed due to the low overhead cost to start a business online.

- **Access to information/communication and Democratic**: The Internet has the "potential to broaden and enhance access to information and communications for remote rural areas and poorer neighborhoods, to strengthen the process of democratization under transitional regimes, and to ameliorate the endemic problems of poverty in the developing world" (Norris,

2001). With studies by the NTIA, showing rural areas were less likely to have access to the Internet since 1995, over the years; it has created a bridge between metropolitan and rural areas for small business owners.

- **Education/Health**: The Internet provides basic social services such as education and health information across the globe through distance learning (Norris, 2001). Stanford has been researching the affect on students' development with technology integrated into school. Many schools are looking at ways to enhance student's learning through computers and the Internet. Coding and programming has been a central focus for some schools, but with limited funding not every school has equal access to these resources. The medical industry has been working with web developers to mainstream personal medical information to clients online to monitor their health. Also, health related information is now found on sites like WebMD. The advantage of bringing education and health online is to provide accessibility to everyone at any location.

- **Government**: The Internet is used as a tool for political activism (worldwide civic society) (Norris, 2001). On a governmental level, Internet can be used to disperse information for public and civic engagement, job openings, and informed on events and policies. Many cities over the years have moved to online system to streamline application processes for permitting.

The Internet is useful and benefits people differently. In a study by Avi Goldfarb and Jeff Prince, they surveyed 18,439 Americans in the early 2000s to show the patterns of Internet adoption and usage difference by demographics (Goldfarb and Prince, 2006). The result yielded more Internet adoption by younger people, married people, city dwellers, and whites, but "no significant difference in adoption rates by language spoken, gender, or number of children in their household" (Goldfarb and Prince, 2006). However, the study shows that people with higher income and education tend to spend less time online. They found that low-income Americans are more likely to use the Internet to chat, play online games, and access health information (Goldfarb and Prince, 2006). High-income Americans uses the Internet for online shopping and researching prices (Goldfarb and Prince, 2006). Therefore, "we interpret the fact that low-income people are likely to do time-consuming, inexpensive activities online as support for the role of the opportunity cost of leisure time" (Goldfarb and Prince, 2006).
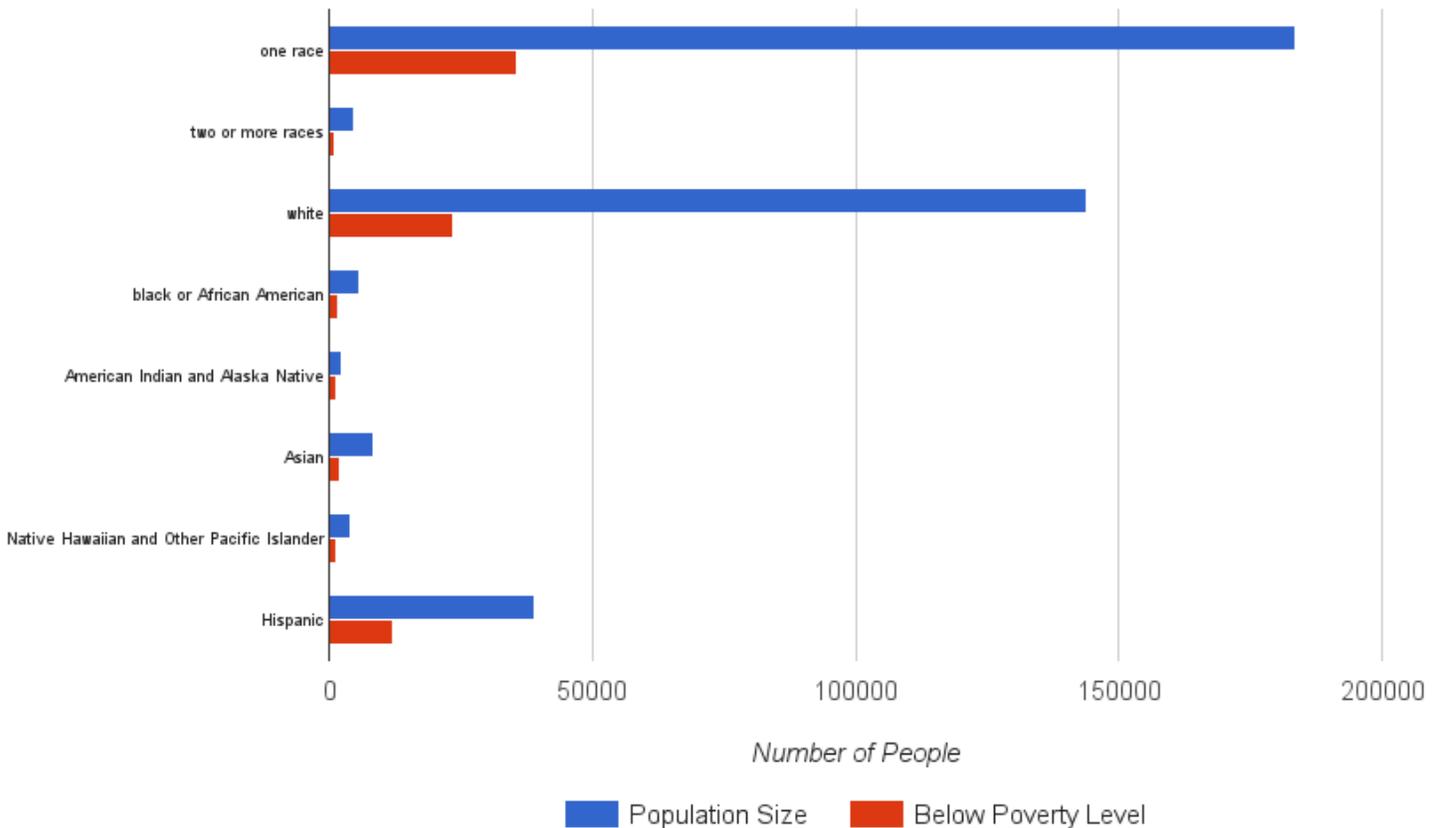
SALT LAKE CITY

During the summer of 2014, I interned with Salt Lake City's Mayor's Office with Eric Shaw, the former director of Community and Economic Development Department. Salt Lake City had just begun the conversation about digital inclusion because the possibility that the City might be qualified for fiber optic network services by Google Fiber. Bringing fiber optic network to a city means construction disruption in neighborhoods, however it would provide extremely high speed Internet to residents and businesses. It is an opportunity that should to be missed, because it potentially yields to economic development and opportunities for cities that invest in it. However, the extremely high cost and disruptive process has been prevented low-income households from accessing the new infrastructure in other cities. Therefore, researching existing digital inclusion programs will (hopefully) provide a cost effective guide for comparison and recommended best practices for digital inclusion for the city of Salt Lake. Prior to last summer's internship, I did not know what digital inclusion meant. However, it is a means by which to move towards an equitable city. It was also a great opportunity for Salt Lake City to prevent social inequality for the future as the population grows.
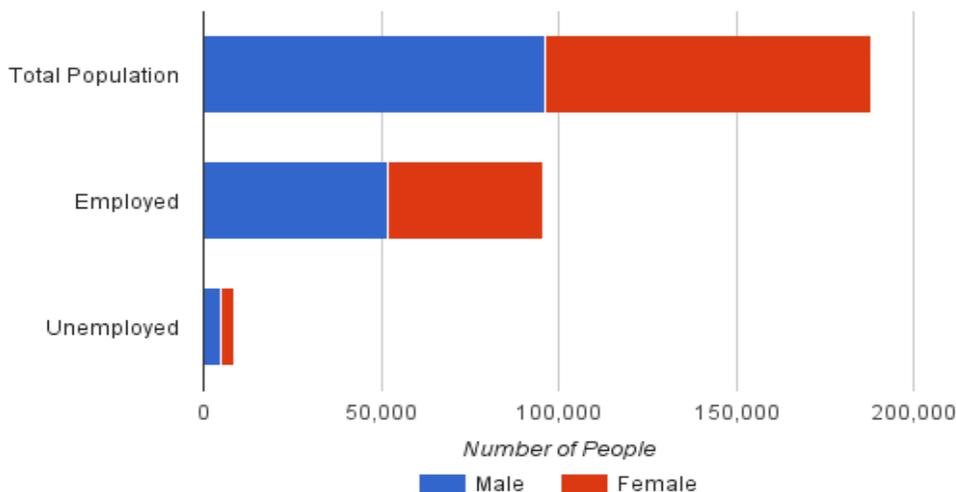
Figure 2. Bar graph showing Salt Lake City 2013 Total Population. From "Demographic and Housing Estimates" and "Employment Status," by American Community Survey, 2013, *American Fact Finder*.

Population

Historically, Salt Lake City's population experienced a loss of 15.6 percent between 1960 and 1990, however, recently has shown a population growth between 1990 and 2010. The loss was a result of federal investment towards suburban development and federal highways during the 1960s. In recent years, there have been investments toward revitalizing city center and the cultural shift to living downtown has brought many residents back to Salt Lake City. According to the U.S. Census Data for 2010, the population size is 186,440 and has increased to 188,141 in 2013 through American Fact Finder (U.S. Census, 2010; American Fact Finder, 2013). According to the Governor's Office of Management and Budget, Salt Lake City expects a population growth of 13 percent by 2020 and 22 percent by 2030.

Figure 3. Bar graph showing Salt Lake City's population size by race based on race in comparison to the number of people falling below poverty level in 2013. From "ACS Demographic and Housing Estimates" and "Poverty Status in the Past 12 Months," by American Community Survey, 2013, *American Fact Finder.*

The majority of Salt Lake City identified as white Americans of 143,696, but the City also has a large Hispanic population of 39,098 in 2013 (American Fact Finder, 2013). *See Figure* 3 for breakdown of population by race. The bar graph also shows the number of people who are below poverty level within each race.
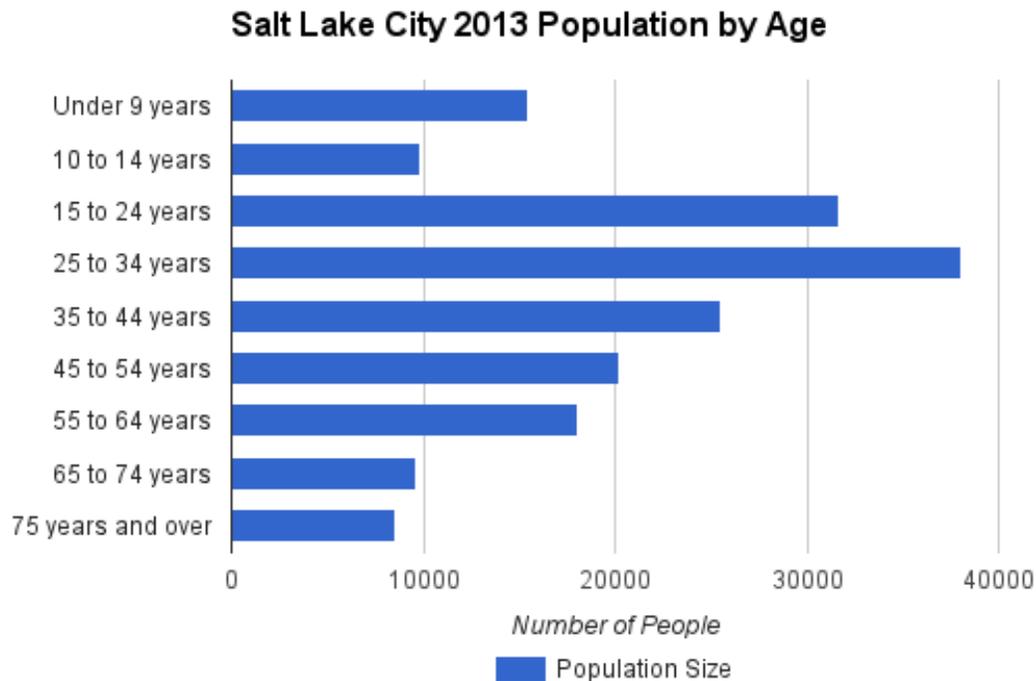
Figure 4. Bar graph showing the Salt Lake City's population size of each age group in 2013. From "Age and Sex," by American Community Survey, 2013. *American Fact Finder.*

The median age is 31.4 years old. Population that is 18 years and younger is 42,507 and population that is 65 years and older is 18,304 (American Fact Finder, 2013). Salt Lake City has a fairly young demography, which accounts for the number of growing businesses in the area. See *Figure 4* for the breakdown of population by age.

Salt Lake City has a population of 11,528 who are with disability status, but the extent of what this term mean is unclear. The American Fact Finder does not break down what type of disability this implies, such as mental or physical disability.

Geographical Landscape
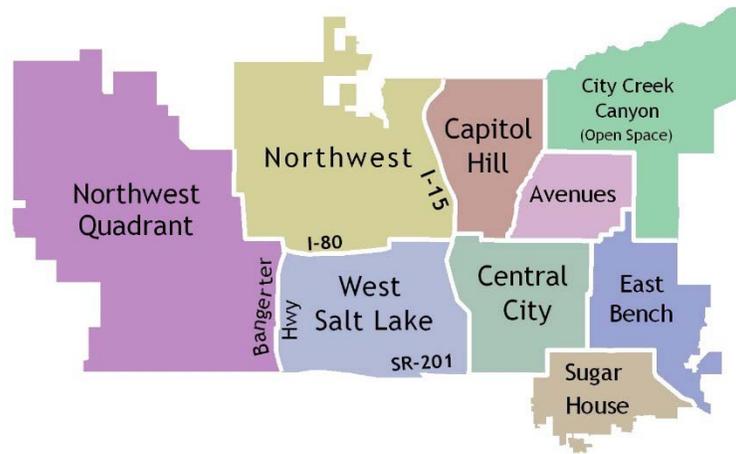
Figure 5. Image showing how Salt Lake City is broken down into nine different neighborhoods. From "Master Plan Boundaries," by Salt Lake City Planning Department, date unknown, *Salt Lake City Corporation*.

Salt Lake City is broken into nine different neighborhoods for the purpose of planning and creating a master plan for these neighborhoods. The most current updated master plan is the Westside Master Plan, which concentrates on West Salt Lake.

The average household for owner-occupied is 2.71 and the average household for renter-occupied is 2.27, which is comparable to the national average (Salt Lake City Corporation, 2014). About 31.4 percent (25,153 units) of the existing housing stock were built before the 1940s. Then in 1950s and 1970s, Salt Lake City experienced two housing development growth, adding 28 percent (22,444 units).

Utah's Silicon Valley: "Silicon Slopes"

Tech companies have been moving into Utah, between Salt Lake City and Provo, what is known as the "Silicon Slopes" with companies like Microsoft, Adobe, and the NSA. Provo, however has already have the groundwork for an extremely high speed Internet since 2013. The governor of Utah has been forming policies to remove red tape to encourage more tech companies and businesses to move into Utah. In 2013, the 24/7 Wall Street's analysis of data from the Bureau of Economic Analysis shows Utah's diverse industries is stable and strong (CNBC, 2013). Despite the economic downturn in 2008, Utah managed to create 63,600 jobs since 2011 and

the unemployment rate of 4.6 percent is below the national average (CNBC, 2013). More than the majority of the population between the ages of 25 to 64 years old are college educated, making up 70,656 people out of a total of 101,875 people in 2013 (American Fact Finder, 2013). Salt Lake City is a very educated city. In *Figure 6*, the bar graph shows the number of people between the ages of 25 to 64 years old with the different level of education attainment.
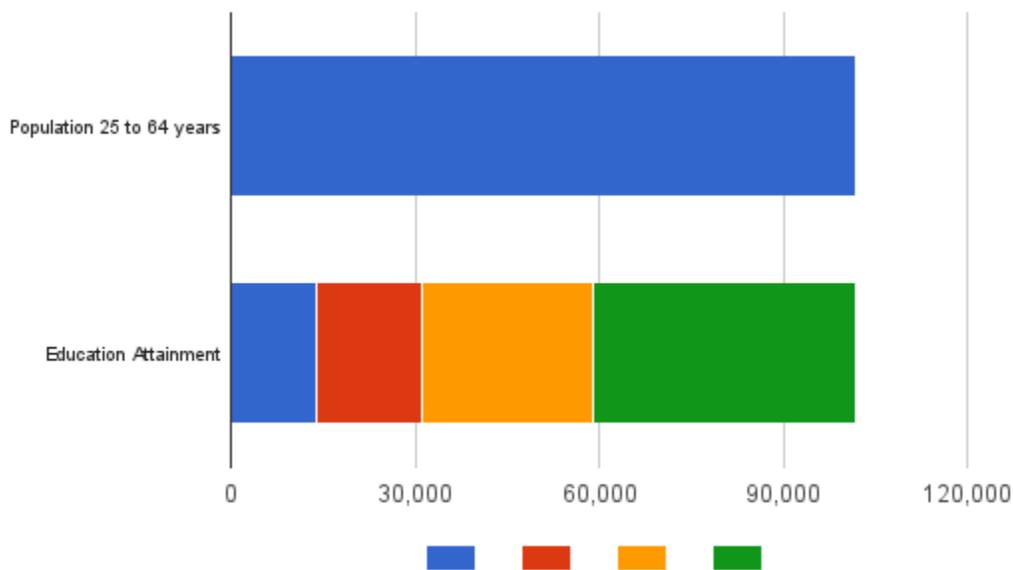
Figure 6. Bar graph showing the number Salt Lake City residents with different education level between the ages of 25 to 64 years old. From "Education Attainment," by American Community Survey, 2013, *American Fact Finder.*

Salt Lake City has been a draw for independent movie makers from the annual Sundance Film Festival in January, professional snowboarders and skiers for their well-known snow, and outdoor enthusiast because of the natural landscape and numerous of nearby national parks. The affordable cost of living also is a draw for many people from outside of Utah to move into the state. Salt Lake City has been working to expand their public transportation system and experimenting with different methods to reduce homelessness. Mayor Ralph Becker of Salt Lake City announced at the beginning of 2015 to create 5,000 affordable housing for renters and homebuyers, through the 5,000 Doors Initiative (Stephens, 2015). Also, it is a city that has a large percentage of immigrants and refugee. Furthermore, the size of Salt Lake City makes this a great example to use as a case study, because it has been experiencing growth and has been developing into a global city. Also, Salt Lake City has been working towards adopting Plan Salt Lake City, a general plan that lays the foundation of the citywide vision the next 25 years. Salt

Lake City's effort has been working towards transforming into a compact, resilient, and livable city, with the concern for social equity.

Salt Lake City was among the 34 cities to be eligible for Google Fiber network. However Salt Lake City has no policies on social equity to make sure everyone have equal chances to access this high-speed broadband. Kansas City is the first to have access to Google Fiber and has been challenged with not providing Google Fiber access for everyone since the first installation in 2011 (Morris, 2015). The cost for the super-fast Internet with one gigabit-per-second is $70 a month (Morris, 2015). However, since the installation, the digital gap between low-income communities having access to the service surfaced. The process for receiving the service was controversial because it was done online with a credit card. Unfortunately, there is a percentage of people who does not have equal access to the Internet. Therefore, people who already had access to Internet prior to fiber optic Internet can apply online. So the question of social equity for Kansas City became the product of accessibility to the high speed Internet service through procedure.

So what is digital inclusion and divide in relation to the research? It has been made very clear that access to the Internet is an integral part of our globalized lifestyle, especially with cities moving towards online processing. In fact, digital inclusion has a social and economic impact on the existing community and its future. Salt Lake City, Utah provides a case study for a city with a strong economic growth that does not have a digital inclusion program or initiatives.

METHODOLOGY

Key Question

The research goal is to define digital inclusion and digital divide that best fits the context of 2015 for a mid-size city in the United States. Secondarily, why is digital inclusion important to implement which includes digital literacy and social equity. What is the advantage and disadvantage for addressing digital inclusion and digital divide today for cities like Salt Lake City?

Rational

The methodology comes from the assistance of the former Salt Lake City Community and Economic Director (CED), Eric Shaw, Manager of Institutional Engagement, Nole Walkingshaw, and California Polytechnic State University of California, San Luis Obispo, City and Regional Planning department, academic advisor, William Riggs, Ph.D. The research explores the potential outcome of a digital inclusion initiative and will not be limited to social equity and economic catalyst to formulate a holistic and comprehensive product.

Research started in June 2014 to help Salt Lake City initiate a digital inclusion component after being selected as one of the 34 Google Fiber candidate cities to bring in a fiber-optic network. Salt Lake City council members have digital inclusion in their radar, especially after all of the issues that spurred since Google Fiber launched in Kansas City metropolitan area. The Salt Lake City Housing and Neighborhood Development also provided data on demographic studies, which was a product collaborated with the University of Utah. Though Google Fiber is the drive for the discussion of digital inclusion, the research will find case studies that are not limited to just Google Fiber cities that being cities that have been selected by Google Fiber for a fiber-optic network. In fact, the research will explore cities that are already participating in a digital inclusion program and are succeeding. The research includes looking at best practices for policy and implementation.

Methodological Approach

The overall methodology for the research is using qualitative analysis with the intent of seeking patterns from the findings to make a set of recommendation for best practices. Qualitative analysis is used to answer the question: to what extent does a city need to implement a digital

inclusion program, it will allow a comprehensive look at the advantage and disadvantages of a digital inclusion program. Since the main theme for the program is social equity, numerical data is used to survey the percentage of accessibility to broadband or digital literacy and to make comparison between the overall population, which is used to track and analyze trend and pattern.

Qualify metrics: increased connectivity to homes, expanding programming, digital inclusion asset mapping, formation of public private partnerships, STEM programs, outreach to elderly populations, opportunity to purchase equipment.

Data Collection

The research relied on qualitative data to analyze current digital inclusion programs in cities other than Salt Lake City. Also, qualitative data was collected through phone interviews of cities with a digital inclusion program, emails, online news articles and academic research web pages, cities' websites, and textbooks. The selected cities were based on recommendations made by Eric Shaw and from cities that were interviewed. The cities that were interviewed made recommendations about other cities with a digital program. Since those cities were used as case studies for their digital inclusion program and resulted in cases of best practices. Phone interviews were made with Washington, D.C., Austin, Texas, and Seattle, Washington. From these sources, they recommended contacting Chicago and Portland, because of the programs are currently being modeled after. Furthermore, cities were selected from literature review of white paper produced by the Institute of Museum and books published on the topic of digital inclusion. Additionally, online publications provided the names of the 34 cities that are candidates for the fiber optic service through Google Fiber. Kansas City metropolitan area was the first to access Google Fiber and has been working through the issue of digital divide. Data collected from this area will be also used to address potential challenges of high-speed broadband coming into a city. Literature was also collected to address the questions in the study.

Analysis

The U.S. Census Data and American Fact Finder are both a source of demographic studies for Salt Lake City. The data will be used to illustrate the existing demographic make-up and to make discoveries of opportunities and constraints for cities interested in implementing a digital inclusion. Exploration of statistical analysis and finding specific theoretical perspectives to

analyze will be part of the process of the research paper to draw recommendation towards the end of the paper.

Results will be placed in a matrix, tables, and graphs. A matrix is a tool to make comparison of many cities with different types of programs. Tables and graphs are also a tool to visualize quantitative data and to prevent skewed representation of data. Pictures are included to create context for the reader.

Justification for Selection and Procedure

Phone interviews were conducted with cities that currently had a digital inclusion program, organizations that worked with communities to bridge the digital divide, and universities. By holding phone interview, they were primary source for the research. Text came from peer review articles, online peer review articles, city websites, and other sources pertaining to digital inclusion, digital divide, and social equity. Published text from peer review articles, public and private institution was also used as primary source to the subject. Newspaper articles were used, but only as a secondary source.

Since the U.S. Census data is collected and published by the United States Census Bureau every decade, data will be used for demographic studies and trend. However the American Fact Finder data will be used in tangent with the United States Census data, because it is published more frequently. PEW Research Center's Internet and American Life project is a nonprofit, nonpartisan research organization that has been researching on the digital divide and provides a great source for quantitative and qualitative data. Media Alliance is a nonprofit organization that focuses on social justice through policy. They work on holding big media accountable to community needs, access to broadband Internet for everyone, and digital literacy.

Potential Limitations

The potential limitation to the study is the constant flux of information from to the study of demography.

CASE STUDIES

The following case studies cover the population size and then the cities' effort towards digital inclusion.

Washington, D.C

Washington, D.C. has 619,371 people. The majority of the population identifies as Black or African American (American Fact Finder, 2013). Population of 25 years and over are educated with a Bachelor's degree or higher. However, Washington, D.C. has about 18.6 percent of the 585,525, whom are accounted poverty status are below poverty level (American Fact Finder, 2013).

To take the digital divide, Washington, D.C. has a Digital Citizenship guide to identify twelve ways to define how being online can improve life through training. The City had set aside $25,000 to subsidize cost of routers, computers, and other devices. They also collaborated with EveryoneOn, a nonprofit organization, to pinpoint affordable Internet and refurbished devices. They also have a Mobile Tech Lab, which partners with nonprofit organizations or community leaders working in the community. Then there is a DC Community Access network, a federally funded, to bring Internet to health care, education, public safety, and community anchor institutions in broadband underserved areas.

An interview with Christina Harper from Connect D.C. on June 23, 2014, resulted in the following information:
Connect D.C., a digital inclusion program, started in 2010 through grant funding. The program was supervised by the Office of the Chief of Technology. They had six staff persons, two of which were full-time employee and four contractors. Their main clientele were residents, in-home adoption; however, it evolved to including nonprofit organizations and small businesses. Their strategy model covers public awareness, public access, training, affordability, and program partnership and tool.

Elaborating on public awareness, Connect D.C.'s slogan is, "Get connected is easier than you think." They have raised public awareness through building relationship with nonprofit organizations, community leaders, participants of the bi-annual summit, and local celebrities that support digital inclusion. They also had a media campaign, placing ads on buses, newspapers,

billboards, and anywhere that was visible to the public. This advertising campaign provided information to the public to contact Connect D.C. office directly, where six staffs answered their questions and concerns. The other option is to text (#connect 8224). The staff also wrote the memorandum of understanding (MOU) with D.C. Office of Unified Communications and created the hotline #311 for anyone who is interested in receiving more information on free Internet. Between December and January 2014, Connect D.C. sent out a smiling blast to over 200,000 residents in D.C. as a way of direct marketing. They noticed this was very effective because it immediately created an increase in participants. In the future, they hope to conduct a door-to-door outreach to target 90,000 to 100,000 residents, specifically minorities, less educated, low-income disable, seniors, and non-English speakers. When asked why senior citizens were included in the focus, Christina Harper said all of government-related or social services were only accessible online. The senior population was the least likely to be connected online. This concern was also related to the other targeted population. Government applications are also only available online.

Small Businesses Success Project is another program aimed to help small businesses with digital access and literacy. They have been successful especially with the collaboration of Latino Economic Development Center (LADC), a D.C. nonprofit organization that works with all low-income community. The program provides classes, a 120 hours commitment, to build an online presence to market, to network with Square, and mainly to develop digital literacy. After the 120 hours commitment, individuals receive a new laptop, tablet, and are invited to an award ceremony after their accomplishment.

Connect D.C. has had a push and pull relationship with nonprofit organizations. There is a promotion value to forming a partnership with nonprofits. They help Connect D.C. determine where the targeted population are located. Nonprofits have a symbiotic relationship with their target population; they want their constituents have access to the Internet, to stay informed.

Part of Connect D.C.'s success comes from a 48-foot truck that was converted to having different stations to bring technology to where it was needed. Year-Up is a great organization that consistently collaborates with Connect D.C to help their constituents with job search and to develop marketable skills online. Since the 48-foot truck consistently booked, Connect D.C. looked into acquire a second truck.

Recently Connect D.C. launched "Connect the Community," a program modeled after Chicago's community empowerment, to give neighborhood the power to create a technology plan. Connect D.C. contracts with the community leader(s) to connect with different neighborhoods and to create technology survey and focus groups.

Connect D.C. holds a bi-annual summit, which is one of the requirement for one of their funding source. They hold the summit in the spring and fall. In Spring 2014, they had a nonprofit tech summit to build capacity with these organizations and talk about how to be efficient and robust in their community. They also talked about digital citizenship, ways to engage, design thinking, how to develop a faster and leaner nonprofit organization, and network with board authorities (school representatives; AARP—senior; and human rights — language barrier). However, the main focus remains on residents gaining access to Internet.

In September 2014, there was a Capstone summit where Connect D.C. presented a digital inclusion report and had a panel discussion about the current state and prediction for digital inclusion.

Gaining the support for the digital inclusion initiative was an easy process because it was a sexy topic to large established tech companies. They were able to reach out to cooperate sponsors; T-Mobile has been a huge sponsor to Connect D.C.

The main source of funding is State Broadband Initiative (SBI) grant through National Telecommunications and Information Administration (NTIA) within the Department of Commerce, which ended September 30, 2014 and BTOP Sustainable Broadband Adoption (SB) funding, a funding specifically for sustainable broadband adoption. The SBI grant has been the main source of funding for Washington D.C. digital inclusion program, but since the grant ended, they will be sourcing local funding.

The challenges they face are the capacity to fund staff and programs, to figure out the target population due to variety, but for the most part, they fall into similar challenges. The biggest lesson Connect D.C. learned was that the adoption of digital inclusion is greater than accessing technology hardware and software; it is a community effort. There were many constituents, each with a very different set of problems. Connect D.C. established a community roundtable where they have different sectors meet, like nonprofit organizations in D.C. and Office of the Deputy

Mayor for Health and Human Service. The purpose was to ask and answer the questions in order to address the needs of their D.C. residents. Digital Inclusion will be successful if it addressed the human service component.

Seattle

Seattle has 624,681 people. The majority of the population identifies as White (American Fact Finder, 2013). A total of 370,125 out of 452,665 are people from ages of 25 years and over have some college, associate degree or a Bachelor's degree or higher (American Fact Finder, 2013). There are13.6 percent of the 605,931 considered as below poverty level (American Fact Finder, 2013). Seattle has a lower percentage of individuals below poverty level than Salt Lake City of19.9 percent (American Fact Finder, 2013).

The conversation of initiating a digital inclusion program with the city started in 1995 with four staff dedicated to implementing digital inclusion. They were made up of a manager and community technology strategic planner, tech support specialist for public computers and technical assistance to community organizations providing public access computing, an outreach and education specialist, and a program manager for the Tech Matching Fund grants. They focus on three areas: access, technology literacy, and content with culture, education, and age. They established Citizen's Telecommunication and Technology Advisory Board. Seattle has a program called Seattle Community Technology Program for technology literacy and access program. They also have a technology matching fund for annual community grant, where the funding comes from Seattle's cable franchising agreement fee. They also have a Techmap, a directory of public computing sites. The City sponsors community computer fair. They also provide a monthly community technology newsletter called Brainstorm Ezine. The City partners with University of Washington to create Communities Connect network, a state-wide coalition. The digital inclusion program is tied to other city goals, including human services, youth violence prevention, and workforce training. Seattle also publishes their findings online of the focus groups that are typically under-represented, such as African American, Chinese, disabilities, Ethiopian, Latino, Somali, and Vietnamese. The reports are also available in different languages.

From the interview with David Keyes, the community technology program director, from the Community Technology Program on June 24, 2014. He shared the following information:

Seattle's digital inclusion started when the City wanted to close the link between the delivery of government services and citizen input. While they were developing their website in the early nineties they really wanted citizens to participate through the process. Seattle started to recognize the Internet would be a great tool for residents to have an effective way to communicate with each other, gain access to job training and other tools. Seattle decided it was important to provide public Internet, access to a computer, and build digital literacy in areas most accessible to the public, using the public library. Seattle decided to connect and train in neighborhoods and with community organizers.

Seattle has a Technology Matching Fund, a type of funding modeled after Neighborhood Matching Fund (NMF) program. The Neighborhood Matching Fund was created in 1988 for neighborhood groups to access funding for community-driven projects. Grant fund can be matched either through volunteer time, donated material, donated professional services or cash. For 2014, Seattle had a total of $1.4 million. About $630,000 is grants and contracts with community service organizations to provide digital literacy and access. The funds came mainly from the cable franchise revenue and the 2014 Technology Matching Fund grant program. The funds are required to be matched at least 1:1 by the community grant recipients, but the City actually leveraged city funds with more than that over the years. The Technology Matching Fund sets aside $20,000 through cable franchise revenue and negotiated side agreement for free Internet and technology access site, senior centers, refugee/immigration programs, youth programs, and public housing.

Seattle wanted to make sure their strategy was intended to reinvest and focus on digital equity and literacy. The City also partnered with local organizations and people who are interested in investing in the program. Through the franchise agreement with Comcast, the City negotiated free cable broadband for up to twenty new sites per year to provide public access or technology training for residents, and a one-time contribution of $500,000 for youth online civic engagement. The one-time contribution allowed Seattle to create the *PugetSoundOff.org* with the YMCA. Then $176,000 provided community computers, wifi and tech ed programs in the Parks and Tech Community Centers, and a part time staff person that organizes volunteers for a senior training computer education program. They received additional funding from other departments such as the Human Services Department and Arts and Culture Office to support technology education and digital inclusion. In the past, Cisco Systems has provided equipment and hardware to a senior high rise apartment. Seattle had three ways of building relationship:

Direct programs for giving; Budget for marketing to sponsor visibility; and employee contribution, either through talks, class, or neighborhood engagement.

Austin

Austin has a population of 790,390. Like Seattle, Austin has a very educated population with a total of 379,055 out of 537,564 individuals that are 25 years and over with some college, associate's degree or a Bachelor's degree or higher (American Fact Finder, 2013). However, 19.1 percent of the 818,179, whom are below poverty level (American Fact Finder, 2013). Austin has four Internet providers: AT&T, Google Fiber, Grande Communications, and Time Warner Cable (City of Austin, 2014). The most recent report shows that Austin has 55,000 adult residents who do not have Internet connection at home (City of Austin, 2013).

Austin has four programs that have been working towards bridging the digital divide: Austin Digital Assessment, Grant for Technology Opportunities, Google Fiber for Community Connections, and Digital Inclusion Strategy. As part of the Austin Digital Assessment program, in 2011, Global Citizens project was developed to focus on questions and answers to accessibility to the Internet both at home and at public locations, the barriers to access, and reasons for using the Internet. In 2013, Austin City Council approved a total of $250,000 for community technology and to conduct a residential survey. Grant for Technology Opportunities program, a matching grant program to support local organization: the City provides grants to Austin FreeNet since 1995. Austin FreeNet is a nonprofit that provides training to obtain jobs, improve lives, and participate as active citizens.

The Austin Digital Assessment project was collaboration with the Telecommunications and Regulatory Affairs Office of the City of Austin, the Telecommunications and Information Policy Institute at the University of Texas, and faculty and graduate students from the Department of Radio, Television, and a Film and the University of Texas. From the survey, about 92.5 percent of the people who answered the survey had access to the Internet at home. Of the individuals who did not have access to Internet at home, the three common reasons were costs, privacy concerns, and not interested in having access.

The 2014 Digital Inclusion Strategy was adopted in November 2014 to establish visions, purpose and goals. Austin has expressed that the role of a city in addressing the digital divide is to act as a convener, similarly to what David Keyes, the community technology program director

at City of Seattle stated. What makes Austin different from Seattle is the number of people making up the steering committee to tackle the digital divide. The steering committee composition is made up of individuals from public, private, and nonprofit organizations that are vested in formulating a digital inclusion strategy for the City of Austin, Texas.

A phone interview with John Speirs, the program coordinator for the City of Austin Grant for Technology Opportunities Program, during the summer of 2014, but the written report was lost.

Chicago

Chicago has 2,706,101 people (American Fact Finder, 2013). 331,759 people out of 1,775,400 are individuals ages 25 and over with less than a high school education (American Fact Finder, 2013). The percentage of individuals below poverty level is 22.6 percent of the 2,656,947


individuals (American Fact Finder, 2013). According to the City of Chicago's website, 30 percent of Chicagoans do not have access to the Internet. The demographics are low-income families, minorities, people with disabilities, and seniors (City of Chicago, 2015).

Figure 7. Image showing the cover page of Chicago's online digital inclusion plan. From "The City of Chicago Technology Plan," by City of Chicago, 2015, *City of Chicago.*

Mayor Rahm Emanuel has been on the forefront of building an equitable and smart city by integrating technology into the city government. Digital Excellence Initiative through the Innovation and Technology department has a digital inclusion plan called the Chicago Tech Plan, which is an interactive online document and available as a PDF file. The Plan outlines 28 initiatives to help guide Chicago towards a digital inclusive community through the collaboration of the public, private, and nonprofit organization partnership. The initiatives focus on building fast and affordable broadband infrastructure, smart communities, effective government, content

building literacy to attract a talented pool of workforce that have the skills to be civically engaged and innovative.

Connect Chicago helps residents identity areas in Chicago that offers free or affordable resources and skills through an online map. There are a total of 260 listed locations.
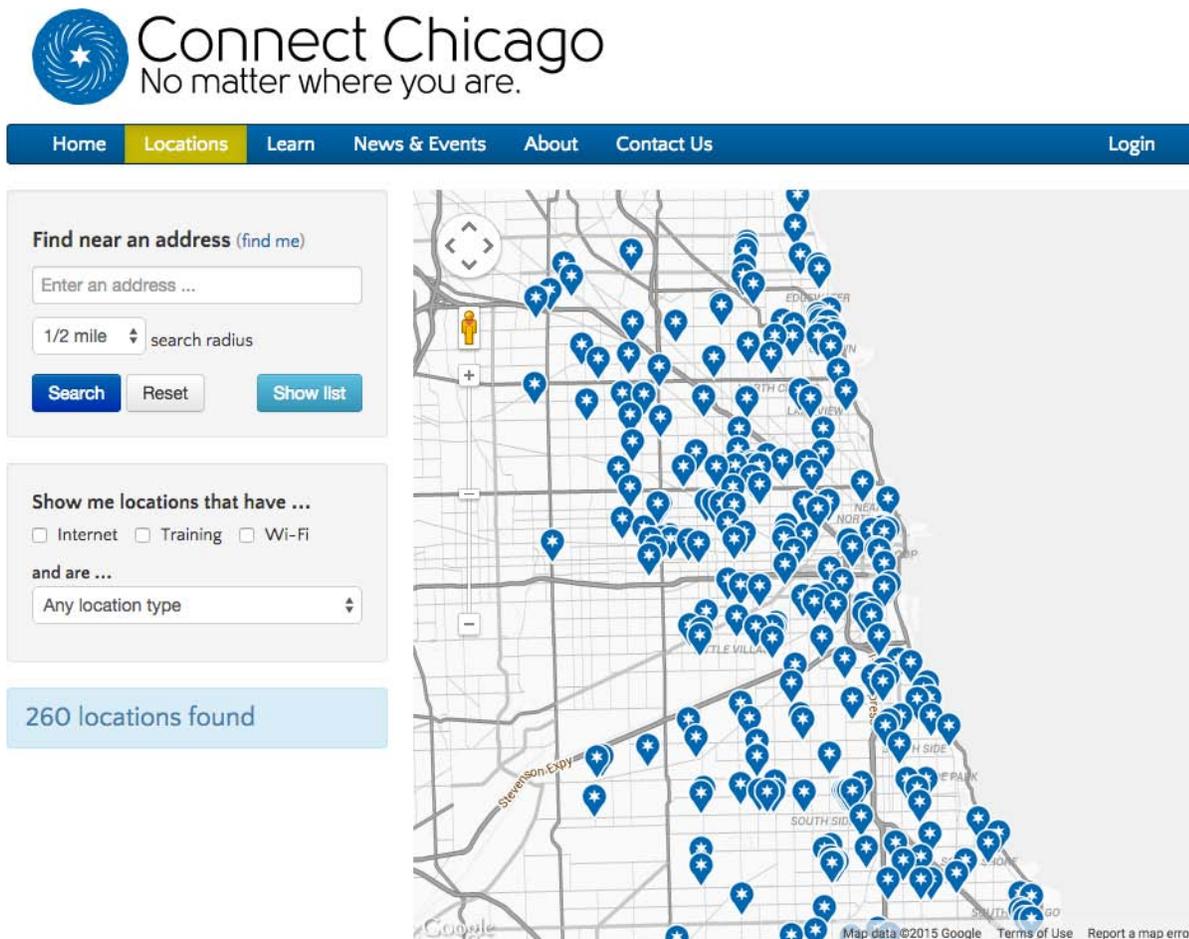
Figure 8. Image showing a map of Chicago of the 260 locations offering technology resources and skills. From "Connect Chicago no matter where you are," by Connect Chicago, 2015, *Connect Chicago.*

In 2013, City Council approved eight miles of fiber-optic infrastructure expansion, operated by ExteNet Systems, Inc. To fund and support the Mayor Emanuel Broadband Challenge initiatives, the City leveraged assets. The City already owns and/or operates fiber-optic through the Office of Emergency Management and Communications (OEMC) and the Chicago Transit

Authority (CTA), which is to help leverage the Mayor's effort to provide high-speed Internet to the Chicago residents.

No phone interview was made with the City of Chicago.

BEST PRACTICES

For the concern of the digital divide, policies will need to be created to "facilitate competition and provide arbitration among conflicting interest" (Stewart, 2006). In 2013, Congress introduced the Broadband Adoption Act to help bridge the digital divide by making in-home broadband services more affordable across the country under the Universal Service Fund Lifeline Assistance Program (Congress, 2013). The bill allows eligible Americans in rural and urban communities to use Lifeline program to extend to broadband Internet services, and not just voice services. The bill requires the FCC to implement a national eligibility database to ensure only one Lifeline per eligible household, to prevent fraud and abuse of the program. Therefore, cities with a digital inclusion inclusion program are applying different strategies to bring social equity to their residents. The following are best practice strategies from the case studies summarized in a matrix.

Best practice strategies	Washington, D.C.	Seattle, Washington	Austin, Texas	Chicago, Illinois
Corporation and Foundation Partnership	x	x	x	x
Digital Inclusion Staff and Fund	x	x	x	x
Entrepreneur and Small Businesses: Local to Global	x			x
Civic Engagement	x	x	x	x

Table 1. Matrix showing best practice strategies of the cities that are currently implementing.

Corporation and Foundation Partnership

Salt Lake City considers accessing funding and resources would be building corporate partnership. Seattle, Washington has built capacity with tech companies through three different approaches:

1. Direct program for giving;

2. Budget for marketing to sponsors; and

3. Employee contribution, like talks, neighborhood outreach, or collaboration.

Seattle and Washington, D.C. suggested holding a summit for nonprofits, tech companies, and foundations to be part of the conversation. The city acts as the convener and form a network of partnerships. Furthermore, it will put Salt Lake City on the map to attract a diverse and creative pool of entrepreneurs, artists, and companies.

Digital Inclusion Staff and Fund

Based on the conversation with Washington, D.C. and Seattle, Washington, funds for digital inclusion staffing and funding varied and was based on what was available on a national or local level. Washington, D.C is funded by the State Broadband Initiative (SBI), but that funding ended in September 2014. Seattle funded their staff and program through their cable franchise revenue. Seattle negotiated with Comcast to provide free cable broadband for up to 20 new sites per year that provided public access or technology training for residents. They also had additional funds from other departments to support technology education and digital inclusion. Currently, Salt Lake City sets up the revenue from the cable franchise to go towards the general fund. Cities may want to negotiate either seed money for digital inclusion and additional contribution for new housing sites to provide public access or technology training for residents. This is to ensure continued access, a long-term partnership with the fiber optic provider, and program longevity and affordability. The recommendation would include a plan for the fiber-optic provider to revisit each year, to ensure that newly added community sectors have the option to access the same resources.

Entrepreneur and Small Businesses: Local to Global

Over the years, there have been many stories of small businesses successfully building an online portfolio. As part of Washington, D.C. digital inclusion program and fund, Connect D.C. requires entrepreneur and small businesses to commit and accomplish a 120 hours training program to create a marketable online presence. After the training, these businesses receive a laptop and a tablet. Salt Lake City has a huge immigration and refugee population. Helping the non-native English speaking community to creatively build an online portfolio for their business ideas benefits their economic well being as well as enrich Salt Lake City's quality of life and diversity.

Civic Engagement

Grassroots movement is one of the most effective ways for community to take action and stay involved. Washington, D.C. has taken a model similar to Chicago's Connect the Community to

empower their neighborhood to participate in the technology planning process. This type of engagement starts from citizens dispersing the knowledge and collective wisdom to the local government. The intention is to build citizenship. By providing citizens the knowledge and tools, they can take control and create a two-way dialogue with city government. Seattle was very forward thinking about digital inclusion, because they wanted to make sure many people would have a way to engage with policy decisions, programs, and online application process. While they were building their website, they created a technology map for the public to identify nearby computers.

RECOMMENDED POLICY FOR SALT LAKE CITY

By recommending the following policies for Salt Lake City to implement digital inclusion program, it maintains a high-quality lifestyle and chances for underserved communities for a better social outcome, neighborhood renewal and social inclusion. Digital inclusion is a complex social issue to underserved communities to have access and utilize information and communication tools. By bridging the digital divide, it nurtures the organic formation of economic development in underserved communities. However, digital inclusion must be integrated into established social services through strong public, nonprofit and private partnerships. Furthermore, affordable access to technology, metrics for accountability, marketing, and targeted training for these underserved communities will need to be established for guiding policies and justifying funding. Gleaning from cities with a digital inclusion program, the following justification for digital inclusion for Salt Lake City are:

Benefits of digital inclusion
1. To build capacity
2. Provide tools to underserved communities first -- social justice
3. Remove redlining, especially in historically marginalized community

Strategies for achieving digital inclusion (The Institute of Museum and Library Services, 2011):
1. Internet connectivity: universal, affordable, reliable, and high-quality broadband
2. Hardware: affordable computer and gear
3. Training and tech support: network of reliable/trusted individual and community centers
4. Content, multilingual and local: community based leaders working as a liaison
5. Accountability / ownership: responsiveness and goals are met
6. Sustainability: financial health has longevity and vitality

The following principles are borrowed from *Proposed Framework for Digitally Inclusive Communities,* where three organizations, the Institute of Museum and Library Services, Technology and Social Change Group (TASCHA) at the University of Washington, and The International City/County Management Association, collaborated to form a toolbox for cities to implement a digital inclusion initiative.

Principle 1: Availability and affordability

Availability and affordability means that Salt Lake City would like an 100 percent of their residents to have access to high quality Internet, hardware, and education for computer literacy at a value that is attainable at a low cost. The solution would require support of local nonprofits, businesses, the City, and citizens' participation.

Based on the U.S. Census data analysis, there is an apparent disparity between the East and West of I-15, which is a natural geographical barrier for the two sides. From *Figure 5*, it is apparent that the freeway forms the different neighborhoods and divides Salt Lake City between the West and East side. This geographical barrier has also created a barrier to access of resources. The RCAP and the ECAP is the way the Salt Lake City Corporation Housing (HAND) access housing needs. The intention is to make sure different income bracket has the same opportunity as the others and expand city capacity to address digital inequality. The access to broadband, hardware, and even software is a challenge for some community. In order to make sure everyone is connected, it would be important to identify communities that do not have access to affordable and available resources.

Principle 2: Public Access

Providing public access is the means to ensure social equity and increase the opportunity for Internet access. Salt Lake City believes in bridging the digital divide gap and curating community building. Furthermore, having broadband in public places is a way to adopt a city-wide technology culture. Currently, Internet and computer literacy programs are offered by the libraries and schools. However, having connectivity in public areas, such as parks, is still not available. Having such an amenity would be important for small businesses or outdoor collaboration, such as the farmers' market held at Pioneer Park every Saturday during the summer season. It will be important to establish partnership with libraries, community based organization, and businesses to develop strategies, resources, and funding to provide adequate and secured broadband for specifically underserved community.

Public access to the Internet is recommended to be in safe facilities. The City has the opportunity to address safety and security when providing broadband in public areas. This can be in a form of education, like Internet etiquette to contribute towards security infrastructure or policies.

Principle 3: Accessibility for people with disabilities

Digital access and literacy are a rare resource for people with disabilities, and it would be important to include them into the picture for a diverse and sustainable economy.
By providing access for people with disabilities, Salt Lake City is addressing the barriers they may face. Disabilities, either temporarily or permanently, may be denied the opportunity to participate civically, socially, or economically, or by providing opportunities for people with disabilities may also enhance their lifestyle.

Sorenson Unity Center collaborates with Utah Association for Intellectual Disabilities (UAID). They recognize specific needs, attention, and care to access to the Internet by providing tools to utilize the computer, like different types of mouse.

Principle 4: Adoption and digital literacy

The success of digital inclusion should be broken up to different levels of digital literacy: basic computer skills to create emails, access online bank account, pay bills, tap into information; software literacy to build resume, find jobs, exposure to different software as a tool for daily life; and then coding to become competitive in a highly technological economy. The program should be set up as a closed-loop system so digital literacy trainees become trainers for future participants. During the Occupied Movement in 2010, information was dispersed in a horizontal manner, rather than the traditional trickled-down information dissemination. The horizontal information dissemination approach brought stronger coalition and helped spread the information in a non-judgmental and effective approach. It would be important to also adopt a culture that develops a highly technologically literate and employable residents, students, small businesses and workforce.

Principle 5: Consumer education and protection

Privacy is not just a luxury, but should be accessible to all. Many people who traditionally do not have access (in the digital divide) have concern with Internet security and it prevents them from seeing the value of using the Internet. This is a huge concern for many new or timid Internet users. To make Internet users feel more secure online, it should be a combination of teaching them basic skills for self protection online or building partnership with Google or other tech companies to provide the knowledge and funding broadband consumers need to address security concern.

Education

Investment in a quality public-education in the 21st century is by providing Internet in classroom and home to access materials online. Recently, there have been a lot of investment towards girls and people of color to learn how to code. There is a movement towards making sure computer science is integrated in elementary school, so they will have to tool to write programs and applications. In fact, Austin is moving away from subsidizing tablets to homes to encourage programmers. Salt Lake City has the capacity to move towards that direction, but it would be important to make sure everyone has the basic knowledge to utilize Internet as a mean of enhancing their lifestyle. Computer literacy needs to be address in different form of medium: tablet, phone, and computer.

Economic and workforce development

Through the investment of education, we are building a stronger workforce, which creates the platform for the possibility of a stronger economy. The efficiency of the Salt Lake City's workforce depends on the availability and affordability of broadband connection. The workforce can benefit by building capacity and partnership with community based organizations, banks, small businesses, public institutes, and tech companies. Economic and workforce development takes various forms, so it would be important for digital inclusion to allow the flexibility for creativity, start-up culture, and development of existing businesses and industries to enhance their infrastructure. This development also bridges the necessary gap between different groups of people who do not typically interact due to geographical, economical, or social barriers and encourages face-to-face interaction and collaboration.

Civic Society

One of the ways to strengthen a civic society is through public engagement and citizenship participation. Since many services are moving online, Salt Lake City residents will need access affordable and quality broadband services to participate civically. Local government may want create applications that have a user-friendly interface for easy public access to empower and build a dynamic relationship with Salt Lake City residents. Addressing the digital divide will create opportunities for underserved communities that might not typically have the time or resources to express civic engagement.

Public Safety and Emergency Services

Issues of public safety and emergency services can be tackled through digital inclusion. This has the potential to reduce response time and cost. The public becomes the "eyes and ears" of public safety accountability. Digital inclusion will allow residents information and knowledge to create platforms that will help make the city more efficient.

Health and Wellness

Currently health care institutes are moving towards having a stronger online presence. Salt Lake City may want to think about collaborating with these institutes to ensure the underserved communities have the knowledge and capability in monitoring their health, paying bills, and making preventive decisions towards their health. Due to cultural practices and mores of Salt Lake City's non-native English speaking population, it would be best to provide information in different languages to best represent the underserved population. The benefit of incorporating health and wellness in digital inclusion is to integrate the basic needs of its citizens through the medical institutions and achieve a universal approach towards health services. The City may want to encourage medical institutions to adopt a transparent medical menu for their services.

The University of Utah Health Care has tablet capability for finding doctors, exploring services and locations, and online appointments. Salt Lake Regional Medical Center uses online forms. Intermountain Healthcare has many options online and has a "My Health Patient Portal" for their clients to access their information. All three institutes are moving their services online. Therefore, digital literacy for communities that are typically last to adopt new practices needs to be a priority in the digital inclusion initiative program.

Quality of Life

Enhancing and improving the quality of life for Salt Lake City by providing the technological resources to underserved communities will not solve social issue of poverty, but it will remove one more barrier to the complex issue. Digital inclusion is aimed towards building an intelligent community. Digital inclusion is an attempt to close the gap of the digital divide by providing the necessary tools and resources for the underserved communities to become self-sustaining.

CONCLUSION

The digital divide in each city is unique in the type of programs and services serve their specific communities. Of the four case studies analyzed for this research, the common resource is the city government and its development of policies to collaborate with existing organizations that are working towards bridging the have and the have-nots by providing software, hardware, and knowledge to produce content via Internet or programs. Underserved communities includes elders, minorities, female residents, and person with disabilities learning to utilize the Internet. Tools such as these are intended to bring comfort and effectiveness to their everyday life and to be able to participate as key members of a community. Digital inclusion is not to differentiate and define social classification between the intersections of society, but to ensure that every individual has equal opportunity with today's technology. City governments and residents should philosophically talk about the value of the Internet and how it plays out in our life. Also, bring more people to the table from different walks of life to comprehensively talk about the affects of the Internet in the present and future for the next five years. E-commerce has been a growing part of the Internet, but where else can we grow our capacity from the direction of a city? In effort to bridge the digital divide, cities have a lot of opportunity to shape the development of the city's growth and to integrate social equity.

From the case studies, many cities found the best role for city government is to act as the convener. The following best practices are to move Salt Lake City towards an equitable direction based on the findings from the four case study cities:

1. Cooperation and foundation partnership
2. Digital inclusion staff and fund
3. Entrepreneur and small businesses: local to global
4. Civic Engagement

The digital inclusion initiative for every city will have different methods to approaching the common topic because of the make-up of the city's geography, demography, and resources. The cities that were picked as case studies were only a slice of what many other cities are initiating. However, it has been very beneficial for this study to analyze opportunities and constraints for the City of Salt Lake City.

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