

Language Minorities and the Digital Divide: A Study of State E-Government Accessibility

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This article examines the extent to which state government websites are accessible to ethnic minorities with limited English language proficiency. We argue that, in addition to moral and financial justifications, states may soon have a legal responsibility to make their web-based services accessible to non-English speakers, yet the great majority of states are doing very little to respond to the needs of language minorities. We use a two-pronged approach to evaluate the current level of language accessibility in the 50 states. In the first, our model explains almost one-half of the variation among states, with demographic and political variables demonstrating more explanatory capacity than fiscal or policy variables. Probing the issue of responsiveness further, we compiled evidence from the top four states in e-government language accessibility by examining the websites in five key areas of state service. We find that state websites generally are not responsive to the language diversity of their state populations and they tend to treat members of language minorities more as economic dependants than as economic consumers. We use our research findings to make recommendations for both research and practice.

The continuing expansion of digital-government is integrally linked to the growing concern for how diversity is recognized and valued by government organizations (Becker 2004; Chavan and Stein 2001; Sobie 2003). The expansion of e-government has the potential to enhance democratic processes by making government information and services more readily available (Edmiston 2003; Kraemer, Kim, Anderson and Perry 1994; Lee-Kelly and James 2003; Milward and Snyder 1996; Moon 2001; P. Norris 2001). It is also possible, however, that e-government may simply reinforce or even exacerbate existing inequities in access by increasing the amount of information and ease of access for those already engaged (Chadwick 2003; Davis 1999; Margolis and Resnick 2000; McNeal, Tolbert, Mossberger and Dotterweich 2003). The possibility that digital government creates a “democratic divide” by excluding specific social groups becomes more problematic as the volume of government information provided and amount of business conducted on the Internet expands and increases in complexity (Brown and Brudney 2004, 106; Carvin, Hill and Smothers 2004; Holden, Norris and Fletcher 2002; Lazarus, Lipper, Roberts, Fireman and Rose 2003; Mossberger, Tolbert and Stanley 2003).

Access to public servants and government services is increasingly achieved through the Internet but language facility is a significant barrier in the use of online government services

(Becker 2005; Carvin et al. 2004; Lee-Kelley and James 2003). In fact, numerous factors can limit an individual's ability to use computers and the Internet including difficulties with both hardware and software but our focus here is on members of ethnic language minorities who represent an important form of diversity in many states and communities. Exclusion of non-English speakers from government web sites is especially concerning as the share of the population that has difficulty communicating effectively in English has increased significantly (Dillon 2005). In a 2003 report on the barriers to online accessibility for a variety of underserved populations, The Children's Partnership emphasized the need for content to be available in a variety of languages (Lazarus et al. 2003). Moreover, attitudinal surveys in e-commerce and marketing provide evidence that members of ethnic minorities prefer websites in their own languages. The Connecticut-based marketing firm Yankelovich reported in their 2000 Hispanic Monitor study of consumer attitudes that 53 percent of Hispanics prefer to use Spanish at home, work and in their consumption of electronic media, up from 44 percent in 1997 (Llamas 2000).

State governments are critical providers of services that citizens access via the Internet (Steyaert 2004; U.S. Department of Commerce 2002) and thus are an appropriate focus for research on website accessibility. This article expands upon research on the exclusionary effects of the digital divide and contributes to the growing body of work on diversity-related hindrances. It extends current research on digital government by focusing on state government rather than the federal or local government sectors (Brudney and Selden 1995; Norris and Moon 2005), by contributing a needed empirical study (Norris and Moon 2005; West 2004a) of diversity-related effects of digital government, by providing a comparative study of all 50 states, and by examining a segment of the population that has not received much attention in the digital divide literature, specifically those who do not speak English proficiently.

Our focus in this article is on the extent to which state governments accommodate the needs of people with limited English language facility in the way they provide digital information and services. Our two-stage empirical study begins with a comparison of the 50 states. Here we look for factors that explain differences among the states in the extent to which they provide language translations of their websites. We supplement our quantitative analysis of the 50 states with more detailed descriptive case studies of the four states that provide the highest levels of language accessibility which provides substantial insight into state practices. In examining the practices of these states more closely, we pay particular attention to the range of language translation options they provide relative to the ethnic language diversity reflected in their state populations and with regard to different types of state agencies. We conclude by offering suggestions for improved state practice as well as avenues of future research based on our findings.

Making the Case for Bridging the Language Accessibility Divide in E-Government

Access to computers and the Internet is associated with different socio-economic characteristics. Researchers have examined links to income (McNeal et al. 2003; U.S. Department of Commerce 1997, 1999, 2000, 2002, 2004), education (McNeal et al. 2003; P. Norris 2001; U.S. Department of Commerce 1995, 2000, 2004), race (Lee-Kelley and James 2003; U.S. Department of Commerce 1997, 1999, 2000, 2002, 2004; Wooldridge 1994), gender (U.S. Department of Commerce 2000, 2002, 2004; Wooldridge 1994), age (Becker 2004; U.S. Department of Commerce 1995, 2000, 2002), and urbanization (Leigh and Atkinson 2001; U.S. Department of Commerce 1995, 1997, 1999, 2000, 2002, 2004). Solutions to the "digital divide" identified by these studies mainly focus on increasing the number of public access computers with Internet connections (Edmiston 2003; Norris, Fletcher and Holden 2001). Locating

computer kiosks in public libraries or other high traffic sites may address the needs of some populations affected by the digital divide. This solution would not, however, tackle the barrier for ethnic group members whose main language is not English. For non-English speakers, the issue is not merely one of access to computers and the Internet, but also access to web-based information and services in their own language.

Globally, the Internet is increasingly multilingual. Only a decade ago in 1996, 90 percent of Internet users were English speaking; by 1999 English speakers constituted only 50 percent of Internet users (Dunlap, 1999). By the United State government's own estimates, non-English speaking Internet users in 2005 outnumber English-speaking users three to one (Goble 1999). In e-commerce, language translation has become essential and, to remain competitive in the global world, corporations have responded by making their websites more multilingual (He 2001; Miles 2002). At the same time, although translation mechanisms still have difficulty with complicated syntax, the task of providing electronic translations has become easier and less expensive (Miles 2002). For example, a free webpage translation service is provided on the Google search engine homepage (<http://www.google.com>).

Many governments have been slow to respond to the demands for multilingual websites. For example, Han and Kim (2002) found that while the Canadian federal government provides its websites in two languages (English and French) to meet the needs of its official language groups, it has not been responsive to newcomers. The United States, which has traditionally made its electronic information available only in English, has recently responded to the rapid increase in the Hispanic population by making more federal government websites available in Spanish (Han and Kim 2002). In the post-September 11th environment, translation and multilingual text gained salience in many government agencies. For example, under the Patriot Act, the National Virtual Translation Center was established in 2003; the National Security Agency established a Language and Speech Exploitation Resources program which emphasizes reducing language barriers and integrating language translation into mission-related operations; the Army Research Laboratory facilitates the transfer of multilingual technology to other government organizations; and the Defense Advanced Research Project Agency established an office to develop technology for interpreting multiple languages (GovExec.com 2004).

A study of state government web portals reports that most did not include the capability for language translation despite the fact that constituents going online to access government information and services were increasingly diverse in many respects, including ethnic origin and language (Gant, Gant and Johnson 2002). The arguments or motives for state governments to make their websites more accessible to individuals with limited English proficiency are grounded in both values and law. The values of responsiveness, social equity, and cost-effectiveness alone provide a compelling argument for greater accessibility. In addition, states that do not provide language accessibility to their web-based information and services may find themselves in an untenable legal position, as we discuss ahead.

A Values-Based Rationale

The first argument for making state government websites more accessible to non-English speakers is to be responsive to the needs of these residents who represent a sizeable and increasing share of the population. The U.S. Census Bureau (2003) reports that in 2000, 47 million people (18 percent of the population) spoke a language other than English at home, compared to 23.1 million (11 percent) in 1980, and characterized 4.4 million households as "linguistically isolated" (U.S. Census Bureau 2003, 10). Neither the population of non-English

speakers nor the rates of growth among this population is distributed equally across the states. The share of a state's population not speaking English at home ranges from less than three percent in West Virginia to almost 40 percent in California, with a mean of 13 percent (U.S. Census Bureau 2004). The number of non-English language speakers more than doubled in six states between 1990 and 2000; the largest increases occurred in Nevada (193 percent) and Georgia (164 percent).

Two commercial enterprises track data on Internet usage by language and they provide useful information to illustrate the need for an e-government response to this growing population. Internet World Stats (see <http://www.internetworldstats.com>) ranks English as the top Internet language around the world, but these users account for only 32 percent of all Internet users in 2005. Similarly, they report that the number of English language users has grown by more than 126 percent between 2000 and 2005, but this rate of growth is less than the mean rate of growth for the top ten Internet languages (138 percent), and substantially less than the growth rates experienced by Internet users speaking Chinese (285 percent growth), Spanish (160 percent), French (229 percent), Portuguese (280 percent), and Dutch (171 percent). According to data reported by Global Reach (<http://www.global-reach.biz/globstats/>), many people who access the Internet in languages other than English reside within the United States. In the year 2000, this included nearly 27 million people who speak Spanish, two million who speak Chinese, more than one million each who speak Czech, French, and German, nearly one million each who speak Vietnamese, Korean, and Italian, roughly one-half million who speak Russian, Polish, Arabic, Portuguese, and Japanese, and several hundred thousand each who speak Greek and Farsi. Drawing upon data from the U.S. Census Bureau regarding the sizable percentage of non-English speakers who are linguistically isolated, Global Reach emphasizes the need for these people to obtain information from newspapers and the Internet in their own language.

A second values-based motive for attention to the matter of website language accessibility involves demands for greater social equity. The National Academy of Public Administration cautions that the United States "faces critical issues in the fair, just and equitable formation and implementation of public policy, distribution of public services, and management of the organizations that do the work of the public," represented in part by racial and ethnic disparities in "access" (NAPA 2005, 1). Language is a powerful social divider that impacts perceptions of political efficacy and social inclusion (Okume 2005; Warschauer 2000). Van Dyke (1990, 87) has characterized issues of political inequality as "inevitable" where minority language groups exist. Language minorities stand as isolated pillars in many communities and may be faced with organized opposition in their quest for access to public services. Several studies document the importance of government agencies providing translation services to facilitate communication with clients across language and cultural barriers (ACORN 2004; Coalition for Asian American Children and Families, 2001; Link, Mokdad, Stackhouse and Flowers 2006; Okume 2005; Perkins 2003).

In the context of digital government, language proficiency has broad implications for social inclusion because it is related to other forms of social division such as nationality and ethnicity, socio-economic standing, and literacy (Warschauer 2003, 92). Linguistic populations who do not have their languages represented adequately or officially are often marginalized and placed at a socio-economic disadvantage and "e-government that does not acknowledge the need for services and resources in alternative languages further marginalizes these non-native language speakers" (Carvin et al. 2004, 5). For example, Spanish-only speakers who have a distinctly different pattern of Internet use than other Hispanic groups can also be distinguished by lower incomes and levels of educational attainment (U.S. Department of Commerce 2002,

22). According to a report issued by the U.S. Office for Management and Budget (2002), language assistance services have the ability to improve substantially both the health and the quality of life for many individuals with limited English proficiency.

Along with the responsiveness and social equity arguments for increased language accessibility of state websites, there may be financial justifications. Many states are not only facing rapid increases in the number of non-English speakers among their populations, but also an increasing diversity of languages represented within those populations. In that context, states that place a high value on cost-effectiveness may find that providing translations of websites is a more economical way to respond to language diversity than hiring multilingual staff or contracting with numerous translators to provide services. Translation software is becoming available for more languages and increasingly sophisticated in its accuracy and application; it is also becoming more readily affordable (Campanelli 2005; Gautschi 2005).

A Legal Rationale

In addition to the values-based arguments for greater website language accessibility, states should be concerned about the questionable legality of failure to provide language access to web-based government information and services. We find evidence to suggest that state governments may soon be required to make the information and services provided on their websites accessible to non-English speaking populations. This expectation is based on our review of the body of statutory, regulatory and case law that has developed over time beginning with passage of the Civil Rights Act (CRA) of 1964. Title VI of the CRA states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Federal protections against discrimination on the basis of national origin have been interpreted to include discrimination on the basis of language and these standards have been codified in executive order, agency regulations, and court rulings.

A number of state and federal Supreme Court decisions have demonstrated that states may be required to provide equal protection for language minorities in access to the political process as well as other socio-economic spheres including housing, health services, and education (Van Dyke 1990, 47). The need to provide services to non-English speaking students in public schools is particularly well established. The U.S. Department of Education has promulgated regulations and the Supreme Court has ruled that state and local governments must provide services to non-English speakers in the realm of education (*Lau v. Nichols*, 1974). Failure to do so constitutes unlawful discrimination on the basis of national origin.

In August 2000, President Clinton signed Executive Order 13166 with the stated purpose of improving "access to federally conducted and federal assisted programs and activities for persons, who as a result of national origin, are limited in their English proficiency." Under this Order, federal agencies and recipients of federal funds must provide language translations when failure to do so would "restrict an individual in any way in the enjoyment of any advantage or privilege enjoyed by others receiving the service, financial aid, or other benefit under the program." EO 13166 directs each agency that provides federal financial assistance to develop agency-specific guidance for recipients of funds and the individuals served by the recipients, and to submit such guidance to the Department of Justice.

The Civil Rights Division of the U.S. Department of Justice (2000) issued guidelines that explicitly state that "laws prohibiting national origin discrimination make it illegal to

discriminate because of a person's birthplace, ancestry, culture or *language*" [emphasis added]. Similarly, the U.S. Department of Health and Human Services (2004) has promulgated regulations articulating that those who receive federal aid must not discriminate on the basis of language in the services they provide. During their review of national election reform initiatives following the 2000 elections, the U.S. Commission on Civil Rights identified language assistance as a crucial issue. Specifically, they stated that the federal government must set minimum requirements to accommodate the language needs of voters and should require states to submit regular reports to the Justice Department regarding their implementation of language accommodations (U.S. Commission on Civil Rights, n.d.).

This is not to say that the federal government has been fully consistent in promoting the legal rights of non-English speakers. The Supreme Court's 2001 decisions in *Alexander v. Sandoval* (532 U.S. 275) suggests that the ability of non-English speakers to secure enforcement of their rights under Title VI is somewhat limited. The case involved a challenge to a decision by the State of Alabama to discontinue offering driving tests in any language other than English. Prior to 1991, the State of Alabama offered driving tests in 14 languages. That practice was stopped following adoption of an official English policy by the state legislature. The District Court ruled that the State's actions were a form of unfair discrimination in violation of Title VI, and the 11th Circuit Court of Appeals affirmed. In a 5-4 decision, the Supreme Court overturned the lower courts' decisions but did so without addressing the issue of national origin discrimination and language access explicitly. Instead the majority focused solely on the matter of whether Title VI provides a private right of action for individuals to sue states in federal court for enforcement of the law. The ruling retains the power of the federal government to pursue action against the states for language-based national origin discrimination.

Thus, while the *Alexander v. Sandoval* decision restricts the ability of individuals to bring suit against a state agency that discriminates, their rights may still be protected by conscientious federal agencies. Additionally, individuals may be able to sue for enforcement of national origin nondiscrimination laws at the state level (National Employment Law Project 2004). Most states have broad non-discrimination laws that roughly parallel the provisions of the federal Civil Rights Act. According to the National Employment Law Project (NELP) (2003), some states specifically provide for a private right of action (e.g., Connecticut and Kansas), while several others do not specify whether private enforcement is permissible (e.g., Minnesota, Missouri, North Dakota, and Virginia).

Some states have additional laws that specifically address the rights of non-English speakers, either on a broad scale or with respect to particular types of services. In 1973, California enacted the Dymally-Alatorre Bilingual Services Act (Cal. Gov. Code 7290-7299) requiring all state agencies to provide translations in all languages spoken by five percent or more of the people they serve. The law is "intended to ensure that individuals who do not speak or write English are not prevented from using public services because of language barriers." A 1999 report from the California Bureau of State Audits indicated that state and local agencies are not doing enough to make their services known to non-English speakers or to provide translations in all necessary languages.

In 2002, the State of Maryland enacted a comprehensive language access law that the Center for Policy Alternatives now promotes as model legislation for all states. The Maryland law articulates a principle of equal access to all public services and requires that states agencies provide services to individuals with limited English

proficiency and to translate all vital documents into any language spoken by three percent of the population within any geographic service area (S.B. 265 MD 2002). The law presents a plan for gradual implementation over a four-year period from 2003 through 2006. The law does not explicitly address e-government, but it defines vital documents as “applications or informational materials, notices and complaint forms offered by state departments, agencies and programs.” The increased reliance on web-based information and services would suggest that these materials are or will soon be considered as vital documents and covered by the law.

In addition to the two comprehensive state laws in California and Maryland, numerous states have more narrowly focused policies regarding the rights of non-English speakers. These laws apply to materials and services related to unemployment compensation (Massachusetts), information and instructional materials related to services and benefits of state agencies (Florida), administrative hearing rights and procedures (Arkansas, Indiana, Maine, Minnesota, New York, Oregon, Rhode Island, Texas, and Washington), health and human services (Minnesota) and employment (California, Connecticut, Iowa, Maryland, Massachusetts, Nebraska, and Connecticut). Most of these state laws stipulate that rights exist whenever the language population reaches a threshold level (as little as 0.5 percent to as much as five percent of the population, depending on the state). Texas and New Jersey limit bilingual service rights to Spanish-speaking claimants only (NELP 2003).

While the laws and regulations identified above have not yet been interpreted to apply to information and services provided electronically by states through their websites, such applications can be seen as a logical extension. This standard is most likely to apply if the information or services provided on state websites pertains to programs funded in part by the federal government, when they include vital documents, when the diversity of minority language groups correspond to differences in national origin, or when inability to effectively access online information and services disadvantages minority language populations. In sum, states that do not make their websites accessible to language minorities may find themselves reacting to legal challenges on the basis of national origin discrimination.

Assessing and Explaining State Performance on E-Government Language Accessibility

So, how well are states doing in making their websites accessible to non-English speakers and what factors might help us understand the variation in state performance? This study does not examine how much or how well a state provides e-services, but rather examines the extent to which web-based information and services are equally accessible to English speaking and non-English speaking populations in each state. Our main research question is why are some states more proactive than others in accommodating the needs of non-English speaking populations? We draw on multiple data sources to examine conventional state socio-political variables as a means of explaining variation in state e-government language accessibility. We reviewed statutes and state constitutions to code state official English language policies and drew on multiple existing sources to obtain the percent of state government websites with language translation available and to secure socio-economic and political data for our explanatory variables. The variables in our study and data sources are given in Table 1.

Table 1: Variables Used in Statistical Analysis

Variable	Measure (Values)	Source
Dependent Variables: E-Government Accessibility		
Foreign Language Access	Percent of state government websites that have language translation available in 2004	West, 2004b
Demographic Variables: Population Size		
State Population	State Population in 2000	U.S. Census Bureau
Non-English Speaking Population	Percent of the population that speaks a language other than English at home	U.S. Census Bureau, Census 2000, Tables P19, PCT13, PCT 14
Political Variables: Partisanship		
Partisanship of State Administrators	Mean political partisanship of state administrators in the 1990s (Scores range from 1.6 to 4.6) 1=Republican 5=Democrat	<i>The Book of the States 2002</i> , Council of State Governments, Table 8.1
Party ID of Governor	Party of the Governor in office in 2003 0=Republican Governor (n=26) 1= Democratic Governor (n=24)	<i>The Book of the States 2003</i> , Council of State Governments, Table C
Party Control of State Legislature	Average percent of seats held by Democrats in both chambers of the state legislature (Scores range from 21.5 to 84.5 percent)	<i>The Book of the States 2003</i> , Council of State Governments, Table 3.3
Policy Variables: Language Policies		
State Official English Policy	Whether and in what form a state declares English as the official state language 0=No Policy (n=26) or More than One Official Language (n=2) 1=Statutory Provision (n=17) 2=Constitutional Provision (n=5)	Authors' review of state statutes and constitutions
State Language Access Policy	Whether and how widely a state requires that documents and services be accessible to non-English speakers 0=No Policy (n=32) 1=Narrowly defined policy limited to certain services or one language (n=16) 2=Comprehensive Access Policy (n=2)	National Employment Law Project, 2003
Fiscal Variables: Wealth and Spending		
Per Capita Income	Per capita income, 2003, measured in constant (2000) dollars	Statistical Abstract of the United States, 2004-2005, Table 653
State Spending on Information Technology	State Expenditures on Technology (1=Less than \$100 million; 2=\$100-\$299 million; 3=\$300-\$499 million; 4=\$500 million or more)	Braddock, 2002

Measuring State E-Government Accessibility for Language Diversity

For the purposes of this study, accessibility of state government websites for individuals who do not speak English is based on data collected by West (2004b). He provides a measure of the percent of state Web pages providing language translations. This data is widely

used for studies of e-government, and is reported on a regular basis in *The Book of the States*. The data on e-government access are particularly informative because of the scope of the sites examined and the relatively broad standards applied to rate site accessibility. West (2004b) gauges language accessibility by evaluating all state websites, not simply home pages or select sites, and applies a lenient standard. Websites deemed accessible to non-English speakers provide a foreign language translation option, even if it was only to one other language (West 2004b). This measure does not examine how many different languages are available, or the extent to which the specific language needs of a state’s population are reflected in the available website translations.

Using this standard, seven states – Hawaii, Michigan, Montana, North Dakota, South Dakota, West Virginia, and Wyoming – do not provide language translations of any state government web pages. Less than ten percent of all states provide translation for more than half of their websites. Thirty-two states (64 percent) provide translations for fewer than one-quarter of their websites. The best performing state is Texas, with 64 percent of its web pages having translation options. The mean for all states is 20 percent, with states in the Western region averaging slightly higher (25 percent). Only eight percent or four states – California, Delaware, Indiana, and Texas – have foreign language translations available for more than half of their web pages. Table 2 provides summary data on state performance on this measure for 2004.

Table 2: Pooled Data on State Website Language Translations

Percent of State Websites with Available Language Translations	Number of States in Category	Percent of States in Category
None	7	14%
Fewer than 25%	25	50%
More than 25% and Fewer than 50%	14	28%
More than 50% and Fewer than 66%	4	8%
More than 66%	0	0%

Source: Darrell M. West, 2004b. *State and Federal E-government in the United States, 2004*. Providence, RI: Center for Public Policy.

Explaining Variations in State E-Government Language Accessibility

Drawing upon the vast literature of comparative state policy analysis, we identified several potential explanatory variables which we expect will help account for variations among the states in the extent of language translation provided on state websites. The explanatory variables can be grouped in categories representing demographic, political, policy, and fiscal factors. Our model includes two demographic variables, three political variables, two policy variables, and two fiscal variables. A list of each of the variables along with their source and way they are measured was presented earlier in Table 1. Below we justify the variable selection based on the existing literature.

The demographic explanation relies on two variables to test the extent to which the size and composition of the state population helps explain variation in website translation options. The size of a population has been repeatedly observed to help explain the extent of e-government services. Population size has been demonstrated to help explain overall e-government performance (West 2000) at the state level, as well as IT innovation (Brudney and Selden 1995), computer and website adoption (Norris and Demeter 1999; Norris and Moon,

2005), and the level of sophistication of websites (Holden et al. 2002) at the local level. In addition to expecting states with larger populations to provide more language accessibility on their websites, we expect that states with higher levels of language diversity will be more responsive to the needs of non-English speaking populations. The proportion of a state's population comprised of non-English speakers varies considerably and we expect that states with larger proportions of non-English speaking populations will provide foreign language translations for a greater percentage of their websites than those states with smaller proportions of non-English speaking populations.

The political explanation is based on the assumption that partisan politics affects policies and practices, as well as support for and commitment to access for certain populations. A number of researchers emphasize the importance of capturing multiple dimensions of partisanship (Smith 1997; Wiggins, Hamm and Bell 1992). Thus we include measures of party affiliation of the governor and partisan composition of the legislature. Additionally we include a measure of partisanship of state administrators because non-elected administrators influence policy (Maynard-Moody 1989, 137) and our analysis is concerned with administrative practices. Measures of partisan control are frequently used in comparative state analyses even though they often fail to produce statistically significant relationships with many state policies and spending patterns (Dye 1966; Winters 1976). Within the realm of e-government research, however, partisanship variables have shown greater explanatory capacity. Norris and Moon (2005) found that lack of support from elected officials is an impediment to e-government, in general, and McNeal et al. (2003) found that state partisanship was a critical factor in explaining digital government innovation in the states. Specifically, they found that states with Republican legislatures offered eight percent more online services than states with Democratic dominated legislatures (McNeal et al. 2003). Republicans were also more inclined to support e-government as a means of reducing the size of government, cutting costs, and making government more efficient (Mossberger et al. 2003). Similarly, West (2000) found conservative states more likely to have extensive e-government. However, Republican control of government may be associated with opposition to bilingual policies (Van Dyke 1990, 89).

We can speculate two possible relationships between state partisanship and the accommodation of ethnic language minorities. If state officials conceptualize the issue as largely a technological, e-government, or cost-savings matter, Republican control of state government is likely to help explain state performance on language access. If, on the other hand, states consider the issue of language accessibility as primarily one of valuing cultural diversity and welcoming immigrants, Democratic control may be more positively associated with language access.

The policy explanation is premised on the notion that practical decisions about how to provide access and on which web pages will typically fall to administrative and technical staff, rather than elected officials, and that administrators will look to established policies for guidance. In contrast to the legislative environment surrounding other marginalized populations, such as individuals with disabilities, there are no federal or state laws specifically requiring e-government access for individuals who do not speak English. There are, however, two types of policies to which administrators may look for guidance, namely official English policies and language access policies. Some states have official English policies which might preclude or at least discourage translation of websites. By our count, nearly half (24) of all states have some official English statement codified in statute or constitutional provision; this number is consistent with figures reported by groups such as English First and ProEnglish. Our review of state statutes and constitutions revealed that the strength of these statements varies from simple proclamations that, as an official language, English serves as a common thread among people in

the state, to explicit requirements that all documents, actions and functions of the state be conducted in English. Some state policies mention that the official language does not preclude the provision of services in any other language(s). Some states have more than one official language and, for our purposes, those states are classified as not having only English as the official language. Our analysis classifies states into three categories depending on whether and in what form they declare English as the official state language. As discussed earlier, some states have adopted language access policies. None of these policies explicitly identify web-based information and services within their scope, however, we expect that states with more comprehensive language access policies would be more likely to have accessible websites than those states with more narrowly tailored policies or lacking such policies altogether.

The policy implementation literature illustrates that the clarity, specificity and strength of public policies are crucial factors in explaining the effectiveness of their implementation (Ingram and Schneider 1990; Montjoy and O'Toole 1979; Van Horn and Van Meter 1976). Most official English policies are largely symbolic in nature; they do not include specific provisions regarding e-government, nor do they have strong enforcement provisions. We also recognize that "official English" policies may be found in violation of constitutional law, and that even those states that declare English as their official language must provide vital materials in the language of those receiving benefits and services subsidized by the Federal government. Similarly, the language access policies lack any specific reference to website accessibility and therefore have limited enforcement capacity. However, even in the absence of specific implementation and enforcement provisions of either type of policy and with the minimum access requirements imposed by the federal government as a condition of aid, such policies are important barometers of political climate and attitudes toward language minorities in a state. As such, we expect that these two policy variables will have some limited explanatory capacity in our model, albeit in opposing directions.

The fiscal explanation for understanding variations among the states is based on the notion that states with greater resources will invest more heavily in technology and those investments will be reflected in more websites with more "bells and whistles." Other studies have identified fiscal constraints as one factor that appears to inhibit the development of e-government (Brudney and Selden 1995; Norris and Moon 2005); thus the extent to which a state makes its website more accessible may be a function of the wealth of the state. Smith (1997) notes that per capita income is the most common measure of state wealth used in comparative state analyses. We also use a more direct measure of the level of state expenditures on information technology to test whether states that spend more on technology make their websites more accessible to more diverse segments of their population. Given that McNeal et al. (2003) found that per capita income was not a significant predictor of state e-government innovation, and the fact that translation of websites involves minimal expense (Campanelli 2005; Gautschi 2005; Miles 2002), we do not expect that either of these fiscal measures will be significant explanatory variables for e-government language accessibility. They serve as important control variables nonetheless.

Understanding Variations in State E-Government Language Access

Drawing on our review of previous research, we expect to find that state performance on providing websites accessible to non-English speakers will be positively associated with the percent of the population that does not speak English at home and the size of the state population, and will be affected by partisan control of state government, although we are not certain in what direction. Translation of state websites is expected to be negatively associated the

existence of a state official English policy, positively related to the existence of a state language access policy, and unrelated to per capita income and state spending on information technology. As with most comparative state analyses, we use data from the population of 50 states rather than a sample.

Preliminary analysis using bivariate correlations demonstrated that two of the explanatory variables were not only correlated with the variable of interest but also highly intercorrelated with each other. The variable representing a state’s language access policy was dropped from the model because it was highly correlated with the demographic variable representing the percent of the population not speaking English. Any relationship between the language access policy variable and website accessibility is likely to be spurious as both are highly correlated with the size of the non-English speaking population in the state. In deciding which variable should remain in the model, we chose to include the more robust measure (an interval rather than ordinal measure) and the variable that, on its face, contributes to both the policy adoption and the increased level of website accessibility.

Table 3 presents the results of the regression analysis using the percent of a state’s websites with available language translations as the dependent variable. Here the model containing the eight explanatory variables is statistically significant and is able to account for nearly one-half of the variation in state performance (as measured by an adjusted R² of .47). Three variables -- the percent of the state population that does not speak English, Democratic control of the governorship, and Democratic affiliation of state administrative positions – have positive coefficients and are statistically significant at the 0.05 level. The state population has a very small coefficient and is significant at the 0.10 level. Partisanship in the state legislature is not significant, nor is per capita income or spending on information technology. Additionally, the existence and strength of an official English policy does not help explain variation in website language accessibility.

Table 3: Regression Analysis for Language Accessibility

Explanatory Variable	Coefficient	Significance
State Population	9.56 E-007*	.09
Percent of Non-English Speaking Population	.698**	.03
Democratic Partisanship of State Administrators	7.08**	.02
Democratic Control of Governorship	8.74**	.05
Democratic Control of State Legislature	-0.21	.18
Strength of Official English Policy	1.36	.28
Per Capita Income	.001	.24
State Spending on Information Technology	-1.79	.51
(Constant)	-25.98	.19
R ² = .69 Adjusted R ² = .47		
Model Significance = .001***		
*p < .10. ** p < .05. ***p = .01.		

Taken as a whole, this research provides some interesting insights into state patterns of e-government accessibility. Access for non-English speakers is a function of both demographics and partisanship of the executive branch. The percent of the non-English speaking population, as well as Democratic control of elective and appointive executive office provides the best explanation for state variation in website translation. In providing e-government access to non-English speaking populations, states appear to be not only responding to their populations but also reflecting political partisanship. That is, states tend to provide foreign language translations for a greater percentage of their websites when they have large non-English speaking populations in addition to larger aggregate populations, and when state administrators and the chief executive are more Democratic. Including the partisan factors helps us explain close to one-half of the variation in language accessibility compared to roughly one-quarter of the variance using the demographic variables alone.

These findings support and build upon earlier work regarding population size and responsiveness (Brudney and Selden, 1995; Holden et al. 2002; Norris and Demeter 1999; West 2000). We are able to expand our understanding of the role of population factors by demonstrating the importance of demographic composition not merely population size. The findings would also suggest that, unlike earlier studies which have shown Republican support for digital government innovation (McNeal et al. 2003), e-government as a means of achieving cost-effectiveness (Mossberger et al. 2003), and disability access (Rubaii-Barrett and Wise, forthcoming), language access may be perceived by the state officials as a cultural diversity issue rather than a technology issue and thus may more closely reflect research associated with bilingual policies (Van Dyke 1990).

The lack of a statistically significant coefficient for the policy variable may be due to characteristics of most state official English policies. Official English policies tend to be in the form of sweeping statements which may be largely symbolic and they do not make references to technology or e-government. The clarity, specificity and strength of public policies are well-documented factors in explaining the effectiveness of their implementation (Ingram and Schneider 1990; Montjoy and O'Toole 1979; Van Horn and Van Meter 1976), and our findings support that idea. Our findings of the lack of significance of the measure of per capita income are consistent with earlier findings of McNeal et al. (2003) regarding the extent of state online services. Our findings that the demographic and political variables have the greatest explanatory capacity suggest that accessibility decisions for language minorities depend more on general responsiveness to the population and public officials than enforcement of any general policy.

When evaluating the explanatory capacity of the regression model, it is important to recall the range of scores on our dependent variable. Although the model suggests that states with larger non-English speaking populations and Democratic control of the executive branch provide more language translations of their websites, even the four best performing states provide language access on less than two-thirds of their web pages (see Table 2). This first-stage analysis also reveals little about the extent to which diverse language minorities are able to access state websites or which types of state information or services are accessible to language minorities.

A Closer Look at Four States

The regression analysis presented above provides some interesting insights into factors that are associated with different levels of language accessibility across the 50 states, but the operationalization of the dependent variable and the methodology itself limit our ability to appreciate the full range of variation in access within any state. Our dependent variable, which

relied on West's (2004b) aggregate measure of the percent of state government web pages with language translations available, masks some important and interesting details. Specifically, it does not include information on the number of non-English languages or the specific languages to which the websites are translated, nor does it specify which of the state government's websites have translation options and which are only available in English.

As mentioned earlier, only four states provided language translations for more than 50 percent of their websites in 2004, and we use those four states for some additional analysis. California, Delaware, Indiana and Texas differ noticeably in the proportion of their state populations that are foreign born, that speak a language other than English at home, and that are linguistically isolated. They also differ in terms of which ethnic languages are represented in their populations.

Across the United States and in each of the four states examined here, Spanish speakers represent the largest non-English language group, however, Spanish speakers range from three and five percent of the state populations in Indiana and Delaware respectively, to more than 25 percent in both California and Texas. Similarly, the percent of the state's non-English speaking population that is linguistically isolated, regardless of which language they speak, ranges from a low of 6.4 percent in Indiana to nearly 40 percent in California. The diversity of languages within each state also differs from each other and from the national aggregates. Key foreign language characteristics of each of the four states, as well as the United States as a whole, are presented in Table 4. Of the four states, California has the largest proportion of foreign born population. The share not speaking English at home is 38.6 percent in California and 30.9 percent in Texas, but much lower in Delaware (9.5%) and Indiana (6.4%). Of those not speaking English at home, between one-fifth and one-fourth in the four states are linguistically isolated (See Table 4).

Our evidence shows the four "high performing" states included in this section provide language translations for more than half of their state government web pages, however, the selection of websites and the range of languages differ considerably. Becker (2005) reports only a small portion of states provide Spanish language pages and that about 40 percent of Spanish language websites included English content within the body of the page that would impair effective use of the web portal. In some cases where a Spanish language page exists, the link to it is not readily apparent (Becker 2005). For this stage of the research, we compiled original data pertaining to language accessibility of state websites. Specifically, we examined the state homepage, as well as the websites for state agencies on Elections, Tourism, Social Services, Economic Development, and Agriculture. These websites were accessed multiple times during a period spanning from October 18 through October 31, 2005. In selecting state agency websites for this stage of the analysis, we sought to include a cross-section of state functions that could provide us with some insight into whether ethnic language minorities in the state were being treated as participating citizens (elections), recipients of social welfare benefits (social services), farmers or farm workers (agriculture), business people and investors (economic development), and/or visitors (tourism).

Each site was evaluated in terms of whether a translation option was readily identifiable on the web page. For those sites that did provide translations, we determined the range of languages for which translations were available and then evaluated whether the translated sites were equivalent in design and layout and in the scope of information provided and services accessible when compared to the English language versions of the websites. The results are summarized in Table 5.

Table 4: Key Foreign Language Characteristics of States with Greatest Website Language Accessibility

	California	Delaware	Indiana	Texas	United States
Population 18 years and over (2000)	24,650,185	589,638	4,507,679	14,977,890	208,279,149
Percent of Population Foreign Born	27.9%	6.0%	3.2%	14.9%	11.7%
Percent of Population that speak non-English language at home	38.6%	9.5%	6.4%	30.9%	18%
Percent of Non-English Speaking Households that are Linguistically Isolated***	27%	20%	20%	24%	25%
	Rank of Other Languages Spoken*				
Spanish (% of population)	1 (26%)	1 (5%)	1 (3%)	1 (27%)	1 (11%)
Chinese	2	3	4	3	2
French	9	2	3	5	3
German	7	4	2	4	4
Tagalog	3	8		6	5
Vietnamese	4			2	6
Italian		5	9		7
Korean	5	7	8	7	8
Russian	10				9
Polish		6	5		10
Arabic			10	8	
Japanese	6		7		
Persian	7				
Armenian	8				
Serbo-Croatian			6		
Urdu				9	
French Creole		9**			
Hindi		9**		10	

* The rankings do not include multiple language categories (e.g., “Other Pacific Island Languages,” “Other Asian Languages,” “African Languages,” “Other Slavic Languages,” or “Other West Germanic Languages”) that are reported by the Census Bureau and which may rank higher than some individual languages in some states.

** Tied in rankings

*** The US Census Bureau defines linguistic isolation as any household in which all members 14 years of age or older have at least some difficulty speaking English.

Source: see data sources given in Table 1.

Table 5: Key Characteristics of State Website Language Accessibility

	California	Delaware	Indiana	Texas
Percent of All State Websites with Language Translations	59%	58%	58%	64%
State Homepage	None	Link to third-party translation service for translations in Chinese, French, German, Italian, Japanese, Korean, Portuguese, and Spanish	Spanish	Spanish
State Election Website	None	Same eight languages as Homepage	Spanish	Spanish
State Tourism Website	None	Prominent links for translations in German, French, Spanish, Swedish, and Japanese. Translated websites lack photos and interactive displays of English versions	Spanish	Spanish
State Social Services Website	Translation of forms. Primary translations in Armenian, Cambodian, Chinese, Russian, Spanish, and Vietnamese. Secondary translations in Arabic, Farsi, German, Hindi, Hmong, Hungarian, Indonesian, Japanese, Korean, Lao, Portuguese, Samoan, Tagalog, Thai, Turkish, and Urdu.	Same eight languages as Homepage	Spanish	Spanish
State Agriculture Website	Equivalent Website available in Spanish	Same eight languages as Homepage	Spanish (no translation for some parts of webpage)	Spanish (text only, less information and not interactive)
State Economic Development Website	None	Same eight languages as Homepage	None	None

Source: Authors' analysis of official websites.

This more in depth analysis reveals some interesting differences in state responsiveness to language minorities. Texas, which received the highest score from West (2004b) for providing language translations for 64 percent of its web pages, did provide translations for its home page and four of the five substantive agencies we chose to examine, however it only provides translation to Spanish. The Vietnamese, Chinese, German, French, Tagalog and other language speaking populations within Texas would not find the state's websites accessible despite its high overall score. In its White Paper on Access and E-Government, the State of Texas identified language barriers as a key access issue not only for Spanish-speaking residents and its Mexican neighbors, but also for the growing populations of Asian-Americans (2000, 3). Despite awareness of the need to be responsive to other language minorities, the Texas websites which we examined remain accessible only to those who speak English or Spanish. Our examination of the websites for the State of Indiana, which provided language translations of 58 percent of its total websites, yielded similar results. In both Texas and Indiana, the translations were only to Spanish; they included translations of the state homepage, as well as the election, social services and tourism agencies that were, for the most part, equivalent to their English language counterparts; they provided more limited information and services on the Spanish translations on the state agriculture agency website; and they had no language translations for the state's economic development agency website.

In contrast, California, which provided translations for 59 percent of its websites, did not have readily identifiable translations for its homepage, elections, economic development, or tourism websites. The social services agency provides translations of forms in more than 20 different languages (see Table 5), although these appear to be targeted to the social service staff rather than the public. The state's agriculture website provides a Spanish language equivalent of its English language website.

Delaware has opted to use a translation service (BabelFish) which provides prominent links to translation options on each of the websites we examined. The State also appears to have made conscious decisions about which language groups to target for particular websites. Their homepage, election, social service, economic development, and agriculture websites are translated to eight languages, six of which represent the language groups among the top seven in the state population. The state tourism page includes a slightly different package of language translation options that may reflect differences in patterns of tourism compared to residency. Although it is notable that the tourism website in Delaware includes Swedish translation, along with the more common languages of Spanish, German, French, and Japanese which are found in other website translation options, the state does not provide translations for several of the top ranked minority languages identified in Table 4 (e.g., Hindi, Tagalog, Korean, and Polish). The findings from our examination of the homepages and specific state agency websites for these four states are informative and, when considered in conjunction with the results of the regression analysis, they suggest several strategies for improved practice as well as future research.

Conclusion

Substantial research and public policy has focused on closing the gap between advantaged and disadvantaged members of society, and recent efforts to reduce the digital divide have been advanced by law, professional guidelines, and increasingly available and sophisticated technology. By marrying original and existing data sources we have been able to confirm some existing assumptions about the effect of e-government on language minorities, obtain greater understanding of state government practices, and in turn, gain some insight into how states might best improve their e-government accessibility. Our findings suggest that many states do not

recognize people lacking English language proficiency as part of the digital divide and are not making efforts to make digital government accessible to them. As official web sites become more advanced and sophisticated in the services they offer, the costs to those excluded become higher. Responsiveness to foreign language minorities appears to be accounted for by demographic and political factors including their overall share of the population and the political party occupying the executive branch. However, our closer examination of the “top performing” states demonstrated that most of the advances in language access are for Spanish speaking populations. Since Spanish speakers account for the largest share of the non-English speaking populations in the country and in each state, this is a form of responsiveness, however, it does not directly address the needs of other language minorities whose numbers raise significant concerns for equity.

Whether the lack of website translations is due to technological oversight or explicit state policy intention, the exclusionary effect on non-English speaking individuals is the same. Even in states with low proportions of foreign-born or non-English speaking populations, an English only website design excludes other potential users. We have no estimates for non-residents from other states or countries who may enter a state website seeking information related to tourism, commerce, education opportunities and so forth, but it is obvious that these potential users exist. Where language translation is available, it mainly pertains to social services, rather than commerce or tourism, which suggests that members of ethnic language minorities are seen as social dependants rather than as economic actors. Diversity research would suggest that this perception limits their economic opportunities and can create a self-fulfilling prophecy.

Currently available software can provide non-English equivalents of information-based web pages for many common languages and are increasingly used in the business sector (Callaghan 2003; Campanelli 2005; Chweh 1998; Gautschi 2005; Orton 2000). West (2003) notes that “it is especially perplexing” that states have such limited progress in the area of foreign language translation of websites because it does not require a high-tech or costly solution. The task can be as simple as providing a link to free translation tools or to translate essential documents, particularly where web pages can appropriately use relatively simple syntax and information bullets rather than dense narrative texts. Advances in translation technology may effectively undermine use of the undue burden argument as an explanation for states’ failing to provide non-English equivalents.

Our findings also suggest that spending more money on technology is not the solution to the problem of limited language access. Concerned public officials should direct their attention to influencing the decisions about how to spend existing resources rather than relying on increasing funding levels to result in improved access for language minorities. Public administrators should make conscious decisions about which websites to translate in light of both values (e.g., responsiveness, social equity, cost-effectiveness) and potential legal mandates. This task should be seen as both political and technical, and thus not left in the hands of website specialists or external contractors. This means examining the diversity of languages represented in the state population or others who may seek to use the services (tourists, visitors, international businesses), evaluating which services are most likely to be used by those with limited English proficiency and, of those, which are best suited for electronic rather than face-to-face access, considering costs of website translations relative to costs of other translation or interpretation options, and monitoring which state websites deal with agencies, programs and services that receive federal funding.

One possible explanation for the lack of state responsiveness to language minorities is that state government officials have not considered the issue of web accessibility for language

minorities to be in need of their attention. This might be a function of lack of awareness of the barriers to access experienced by individuals with limited English proficiency or a tendency to treat web design and management as largely technical matters. If this is the case, it would suggest that schools of public affairs and administration need to inform prospective public administrators of accessibility implications related to web page construction in general and to alert students of information management in particular to concerns related to both access for those lacking English language proficiency as well as to available resources for providing web page translations. Public affairs programs have a responsibility to help students appreciate the intersection of diversity, information technology, and the law as they relate to this increasingly salient issue. Lack of attention to this issue may place public agencies and officials in the position of violating essential civil rights of a growing segment of the population.

From a research perspective, this study reveals a need to move beyond analysis of web content to the people in state government who are responsible for webpage construction and content. Researchers might focus on the extent to which those officials consider language minorities a legitimate group in the digital divide debate, as well as the factors that influence their decisions regarding foreign language accessibility. Finally, future research might focus on members of language minorities themselves to understand the extent to which they are isolated by the digital divide and gain insight into their perspective as beneficiaries of state services. Studies might determine their practices with regard to using e-government and their experiences with different language configurations, the relative value of language translation mechanisms, and their use of public services or political engagement. Attitudinal surveys targeted at key language groups in a given state could assess their needs and preferences for state services and access to public information. In turn, future research can provide insight to state policy makers into the needs for additional web-based information and government services for ethnic language minorities.

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