The Worldwide Digital Divide:
Information Poverty, the Internet and Development

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Abstract

Many hope that new media, -- particularly the speed, global reach, and interactivity of the Internet, -- will transform civic engagement and political mobilization in democracies. This process is believed to be particularly important in giving voice to the voiceless, strengthening NGOs in civic society, linking citizens with government services, and helping parties generate support among new groups in the electorate.

Certainly the Internet has changed the structure of opportunities for political actors in many post-industrial societies. Yet the evidence from established democracies, at least in the *emerging* years of the Internet Age, throws a skeptical light on popular claims that the Internet will automatically transform the mass basis of political activism. Studies of the US (Davis and Owen 1998; Davis 1999; Bimber 1999; Wilhelm 2000), and the EU (Norris 1999, 2000) suggest that to date use of the political resources on the web tend to reach those who are already most engaged, reinforcing their resources, but not reaching the parts of the polity that other forms of political communication fail to meet.

Before the Internet can ever play a major role in civic engagement the public needs to have opportunities to access political resources on the web. The aim of this brief discussion paper is to focus on the issue of the digital divide, particularly its global dimension and the diffusion of the new technology worldwide from Azerbaijan to Zambia.

The introduction discusses the potential of the Internet for developing societies and for reducing the familiar North-South divide. The next section then briefly maps out the diffusion of the Internet, including the distribution of the online population and Internet hosts. The conclusion discusses the main reasons for the inequalities between industrialized and developing societies, especially the role of socioeconomic development, and how international agencies like the World Bank, UNDP and ITU are calling attention to the need for government, non-profit and corporate initiatives to bridge the global digital divide, reducing information poverty, and the growing inequalities between the information-haves and have-nots.

The Worldwide Digital Divide:

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There are many reasons why new communications technology, particularly the role of the Internet, may potentially level the playing field allowing nations with moderate levels of development, like Malaysia, Estonia and Brazil, to catch up with post-industrial societies.

Potentially the effect of the Internet in broadening and enhancing access to information and communication may be greatest in poorer nations, because once past the barriers of access the new technology offers a relatively cheap and efficient service. In the global marketplace, small businesses in South Africa and Mexico can sell their products directly to customers in New York, irrespective of the traditional barriers of distance, the costs of advertising, and the intermediate distribution chains. With the travel industry accounting for up to a third of total online revenues in 1997, sales via the Internet are likely to be an important source of growth for developing countries (ITU 1999).

The Internet also offers promise in the delivery of basic services like education and health information to far-flung regions, allowing a teacher or doctor in Ghana or Calcutta access to the same database information as one in London or New York. Networks of hospitals and health care professionals in the Ukraine, Mozambique and Senegal can share medical expertise and knowledge. Distance learning can widen access to training and education, such as open universities in India and Thailand and language web sites for schools. In all these regards, in the rosy scenario the Internet promises to level the playing field and strengthen the voice of the voiceless in the developing world.

The global reach of the Internet may also help to integrate the concerns of developing society in the international arena. By connecting disparate social movements, new coalitions can be formed mobilizing global civic society, such as those concerned about the World Trade Organization meeting in Seattle, sweatshop manufacture of Nike shoes, or opposition movements in Burma, linking indigenous groups in developing societies with German greens, Australian trade unionists and EU human rights organizations. This process promises to make international agencies more accountable to grassroots NGOs, a fact that has increased the leverage and networking capacity of the women's movement, human rights activists, and environmentalists. The global reach and speed of connectivity, in particular, allows international mobilization around issues from genetically modified food to the independence movement in East Timor. Foreign policymakers in New York, Brussels and Geneva can no longer assume that the usual diplomatic and political elites can govern international affairs with a passive 'permissive consensus' without taking account of the new ability for public information, mobilization, and engagement engendered by the new technology.

Yet basic access is required before the potential benefits of the Internet can flow to poorer societies. How realistic is this? Will the Internet actually strengthen the voice of the voiceless, as some hope, or will it merely produce new forms of cultural imperialism with the major corporate players located in Silicone Valley, Cambridge and Tokyo? In the last few years international agencies like the World Bank, United Nations Development Program, OECD and International Telecommunications Union have expressed growing concern that the explosion of the Internet may leave many nations far behind, producing growing disparities between advanced industrialized and developing societies.

The United Nations Development Report warned that the gains in productivity produced by the new technology may widen differences in economic growth between the most affluent nations and those that lack the skills, resources and infrastructure to invest in the information society: *"The network society is creating parallel communications systems: one for those with income,*

education and literally connections, giving plentiful information at low cost and high speed; the other for those without connections, blocked by high barriers of time, cost and uncertainty and dependent upon outdated information." (UNDP 1999: 63). Echoing these concerns, UNESCO emphasizes that the North-South divide may be exacerbated in a situation where most of the world's population lacks basic access to a telephone, let alone a computer (UNESCO 1998).

As a result, poorer societies can become increasingly marginalized at the periphery of communication networks. Although the Internet is a new technology, there is nothing particularly novel about this pattern. Research on global information flows from north to south have long emphasized the center-periphery distinction, a problem which aroused heated debate in the 1980s centering on UNESCO's New World Information Order (Galtung and Ruge 1965; Mowlana 1997). But the growing importance of the information economy can be expected to exacerbate these divisions.

The Diffusion of the Internet Worldwide

How far has the Internet diffused around the world? No official data yet exists on how many people go online on a global basis but there is evidence about the penetration of the new technology based on analyzing the location of Internet hosts, web servers and e-commerce sites, as well available surveys of the general population conducted by market researchers. Data remains incomplete, in some countries we have only 'guesstimates' (Rood 1999), but the use of overlapping sources confirms the broad picture of global inequalities of access and use.

The best available evidence on the distribution of users, hosts and hardware indicate that in the emerging Internet Age the information revolution has transformed communications in post-industrial states like Sweden, Australia, and the United States at the cutting edge of technological change, reinforcing their lead in the new economy. But in the early twenty-first century so far the benefits of the Internet have failed to reach most of the poorer nations in Sub-Saharan

Africa, South Asia and the Middle East. The gap between the information-rich and poor countries has sharply increased in the emergent years of this new technology (OECD 1999:85-98; Norris 2000).

NUA provides the most comprehensive unofficial estimates based on combining surveys by different companies, most commonly asking a sample of the general population whether they have access online at home or at work (NUA). Reanalysis of this data shows that worldwide the number of Internet users exploded from about 26 million in 1995 to approximately 257 million by Spring 2000. Although a remarkable rise, it remains the case that at present only 4% of the world's population are online (see Figure 1).

(Figure 1 about here)

Globally the regional disparities are marked. The 29 OECD member states, representing post-industrial economies and developed democracies, contain 97% of all Internet hosts, 92% of the market in production and consumption of computer hardware, software and services, and 86% of all Internet users. In contrast the whole of Sub-Saharan Africa contains only 2.5 million Internet users, or less than 1% of the world's online community. Indeed there are more users within affluent Sweden than in the entire continent of Africa.

Growing inequalities are evident even within post-industrial economies. In the European Union, for example, the spring 1999 Eurobarometer survey found that almost two-thirds of the population had access in Sweden, Denmark and Finland, some of the highest levels of penetration worldwide, compared with only one tenth of those living in Mediterranean Europe (Norris 1999). Today almost two-thirds of the world's online community is located in just five countries: the United States, Japan, the UK, Canada, and Germany (see Figure 2).

(Figure 2 about here)

Alternative indicators of Internet dispersion can be estimated from the distribution of Internet hosts, which are regularly monitored by agencies such as Netcraft, Network

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Wizards, Matrix Information, the Internet Software Consortium, and RIPE. The most comprehensive estimates for the number of web servers around the globe is provided by Netcraft, who found that by the end of the twentieth century there were about 11.1 million sites worldwide, up from 18,000 in 1995 (see Figure 3).

The results confirm the North-South division found in surveys of Internet users. Among industrialized societies, the US, Japan, the UK, Canada, Germany and Australia dominate the location of Internet hosts, followed by many Western European countries, with poorer societies like Turkey, Mexico and Poland at the bottom of the ranking (OECD 1999). Worldwide the disparities are even greater; there are almost as many hosts in France as in all of Latin America and the Caribbean, and there are more hosts in New York that in all of Africa (ITU 1999).

(Figure 3 about here)

Equally important, many have expressed concern about the development of a social divide, referring to the inequalities of Internet access and use by disadvantaged groups within society, even in countries at the forefront of the information society. In the United States, the Department of Commerce's recent study, *Falling through the Net*, emphasizes the familiar disparities in access found among low-income American households, and the gap among high-school educated, blacks and Hispanics, those in rural areas, and to a lesser extent among women. The 1998 survey found that households with income of $75,000 and above are twenty times as likely to have Internet access as those at the lowest income levels, and more than nine times as likely to have computer access (www.ntia.doc.gov.ntiahome/fttn99).

In February 2000, President Clinton expressed concern about this situation and proposed a new plan to help bridge the 'digital divide', offering private companies a $2bn tax break, new teacher training programs, and the development of Community Technology Centers in low-income neighborhoods to help close the gap so that access to computers eventually becomes as ubiquitous as the availability of the telephone or television (www.digitaldivide.gov). The Department of Commerce has headed this initiative, emphasizing the role of public programs to widen access, promote the skills people need to use the technology, and encourage content that will empower under-served communities. In the private sector too, industry leaders like Steve Case, chairman of AOL-Time Warner, have warned that too many people are being left behind in the information age (Case 1998).

Other countries like Finland, Germany and Sweden have all announced initiatives to address these concerns, often incorporating a mix of private and public resources. The British government has recently introduced new ways to try to expand access to disadvantaged groups, through the distribution of reconditioned computers, there is free email through some ISP providers, companies are planning Internet kiosks allowing free access and email, with revenues generated by advertising and e-commerce, and British Telecom is developing public phones and photo booths with multimedia capabilities on a pay-as-you-go basis (aka 'multimedia communication pods') (Peek 2000). In south Asia, initiatives have been proposed to extend the Net to rural areas via Internet kiosks, community centers, wireless delivery, and public sector initiatives (Rao et al. 1999).

Conclusions: The Role of Resources

Many factors may have contributed towards the digital divide, including the *structure of opportunities* provided by the public policies within each country, such as public and private initiatives towards IT education and training, investment in science and technology, the costs of ISP services, and the regulation of telecommunications (for a discussion see Hargittai 1999; ITU 1999; OECD 2000; Norris 2001).

Cultural attitudes towards using computers may also contribute towards some of the differences evident between relatively similar societies, like the UK, Germany, France, and Italy, especially familiarity with the English language, since the most

comprehensive attempt to map over 1 billion web pages found that 87% of the current contents are published in this tongue (www.Inktomi.com).

But in addition to this the role of *resources* can be expected to be particularly important, including levels of socioeconomic development, particularly adult literacy, education and the necessary computer skills.

As shown in Figure 4, the regression of per capita $GDP (measured in Purchasing Power Parity) proves a powerful predictor of where countries are located in terms of per capita Internet use (using a scale of the logged mean). There are some outliers of middle-level developing countries that have used an extensive program of government, non-profit and private sector programs to expand Internet access and training in their societies, pulling themselves up by their LAN wires, such as Estonia, Malaysia and Slovenia (UNDP 1999). Nevertheless in most developing nations the inequalities of resources that continue to produce disparities in health care, longevity and education are also, not surprisingly, evident in the virtual world. Though many hope for a brave new world, access to the Internet is remarkably similar to the diffusion of other forms of information technology that have been available for decades, like telephones and personal computers.

(Figure 4 about here)

The global digital divide raises many issues for discussion that will be explored further in subsequent research (Norris 2001). Will the disparities in Internet access gradually close over time, as the new technology gradually diffuses throughout the world, like the spread of radio? Or will this gap persist or expand? And how can government, non-profit and corporate investment in public access through local centers, Internet cafes and community associations expand access for disadvantaged groups?
Recognizing this potential, international agencies have highlighted the need for inclusive strategies in the dispersion of new technologies.

In a speech in October 1999 at Telecom 99 in Geneva, Switzerland, UN Secretary General Kofi Anan warned of the danger of excluding the world's poor from the information revolution in the wired world. *"People lack many things: jobs, shelter, food, health care and drinkable water. Today, being cut off from basic telecommunications services is a hardship almost as acute as these other deprivations, and may indeed reduce the chances of finding remedies to them."* (news.BBC.co.uk).

Other international organizations echo these concerns. In February 2000 James D. Wolfensohn, president of the World Bank, announced a major new initiative in the attempt to bridge the technological gap between rich and poor nations. '*The digital divide is one of the greatest impediments to development*', he argued, "*and it is growing exponentially.*'

The available evidence in the emergent era is that, despite its capacity for development, without adequate action by government, non-profits and the corporate sector, the global information gap is likely to widen the North-South divide. In their strategies for overseas aid and development, Western governments need to consider how best to reduce information poverty, complimenting traditional areas of concern such as efforts to improve health, nutrition and literacy. Far from a luxury, access to information has become increasingly essential for the effective delivery of services by professionals like teachers and health care professionals, as well as for small businesses seeking to expand their markets worldwide.

The challenge in the emergent era of the Internet age is to maximize the potential benefits worldwide, while the process of dispersion remains in transition, and before new inequalities become rigidified.

References:

Bimber, Bruce. 1998. 'The Internet and Political Transformation: Populism, Community and Accelerated Pluralism.' *Polity* XXXI(1): 133-160.

Case, Steve. 1998. '*Community Update: Election'98*'. www.aol.com, keyword Steve Case. October 6 1998.

Davis, Richard and Diana Owen. 1998. *New Media and American Politics.* New York: Oxford University Press.

Davis, Richard. 1999. *The Web of Politics.* New York: Oxford University Press.

Galtung, J. and M. Ruge. 1965. 'The Structure of Foreign News'. *Journal of Peace Research.* 1: 64-90.

Hargittai, Eszter. 1999. 'Weaving the Western Web: Explaining Differences in Internet Connectivity Among OECD Countries.' *Telecommunications Policy.* 23(10-11): 701-718.

International Telecommunications Union. (ITU) 1999. *Challenges to the Network: Internet for Development.* Geneva: ITU.

Inktomi. www.Inktomi.com

Mowlana, Hamid. 1997. *Global Information and World Communication.* 2nd ed. London: Sage.

Norris, Pippa. 1999. 'The Emergent Internet Age in Europe: A New North-South Divide?' *The Harvard International Journal of Press-Politics.* 5(1).

Norris, Pippa. 2000. *A Virtuous Circle: Political Communication in Post-Industrial Democracies.* (New York: Cambridge University Press, in press, forthcoming Fall 2000).

Norris, Pippa. 2001. *Digital Divide? Civic Engagement, Information Poverty and the Internet in Democratic Societies.* Forthcoming. For more details see www.pippanorris.com

NUA www.nua.ie/surveys/how_many_online/index.html

OECD. 1999. *Communications Outlook 1999.* Paris: OECD. Also www.oecd.org

OECD. 2000. *Information Technology Outlook.* Paris: OECD. Also www.oecd.org

Rao, M., S.R. Bhandari, S.M. Iqbal, A. Sinha and W.U. Siraj. 1999. 'Struggling with the Digital Divide: Internet Infrastructure, Policies and Regulations.' *Economic and Political Weekly.* 34(46-47): 3317-3320.

Rood, H. 1999. 'A Word about Internet Statistics.' *Telecommunication Policy.* 23(10-11): 687-688.

Peek, Laura. 2000. 'Get Connected for Free – Life on the Streets.' *The Times*, March 11 2000.

UNDP. 1999. *Human Development Report 1999.* NY: UNDP/Oxford.

UNESCO. 1998. *World Communication Report: The Media and Challenges of the New Technologies.* Paris: UNESCO.

Note: A full bibliography of the literature on the Internet is posted under 'books' at www.pippanorris.com
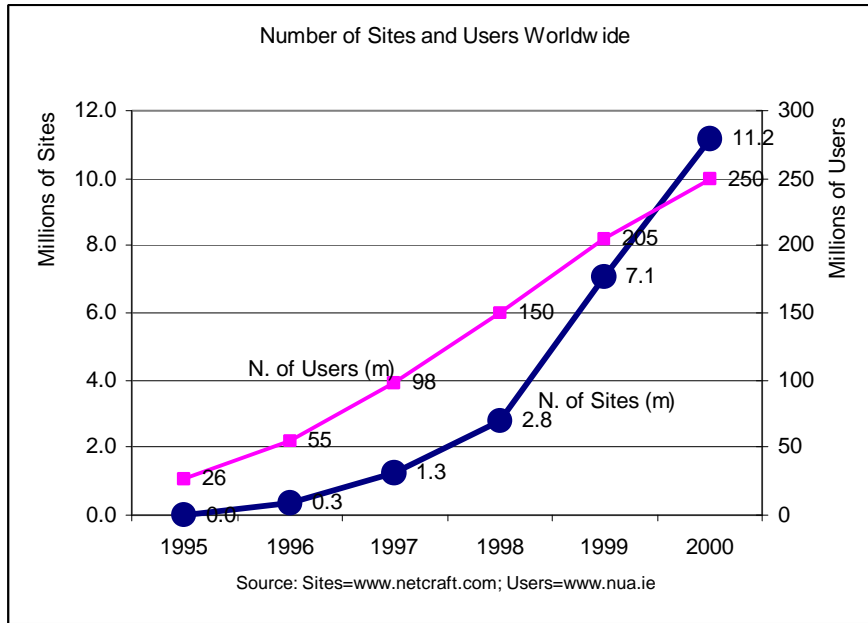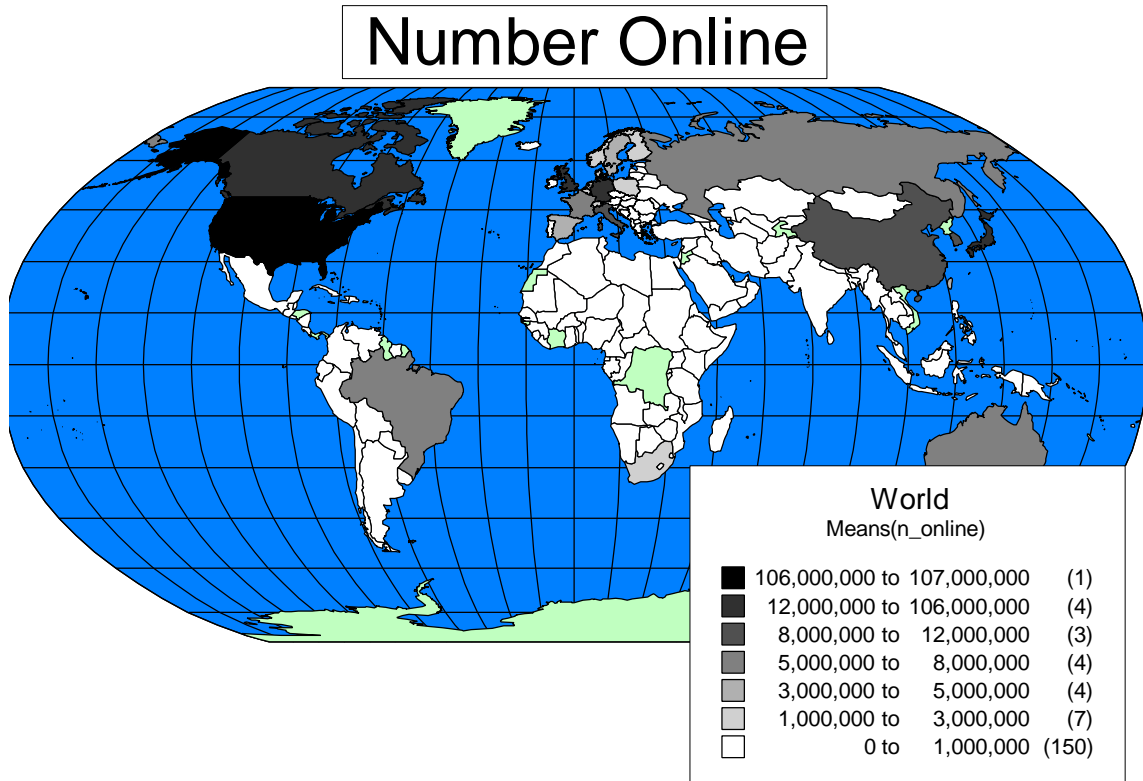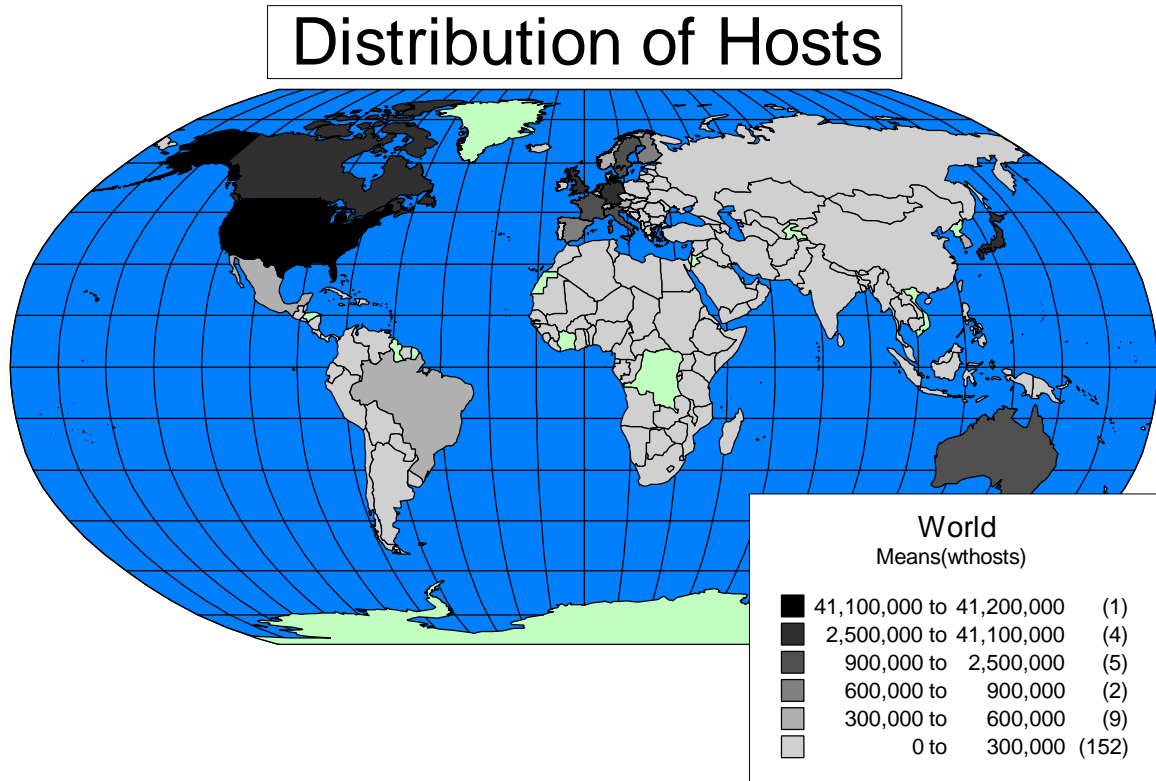
Figure 1

Number of Sites and Users Worldwide

Source: Sites=www.netcraft.com; Users=www.nua.ie

Figure 2

Number Online

World
Means(n_online)

■	106,000,000 to 107,000,000	(1)
■	12,000,000 to 106,000,000	(4)
■	8,000,000 to 12,000,000	(3)
■	5,000,000 to 8,000,000	(4)
■	3,000,000 to 5,000,000	(4)
■	1,000,000 to 3,000,000	(7)
□	0 to 1,000,000	(150)

Note: The number of people online, Spring 2000.

Source: Figures from www.nua.ie

Figure 3

Distribution of Hosts

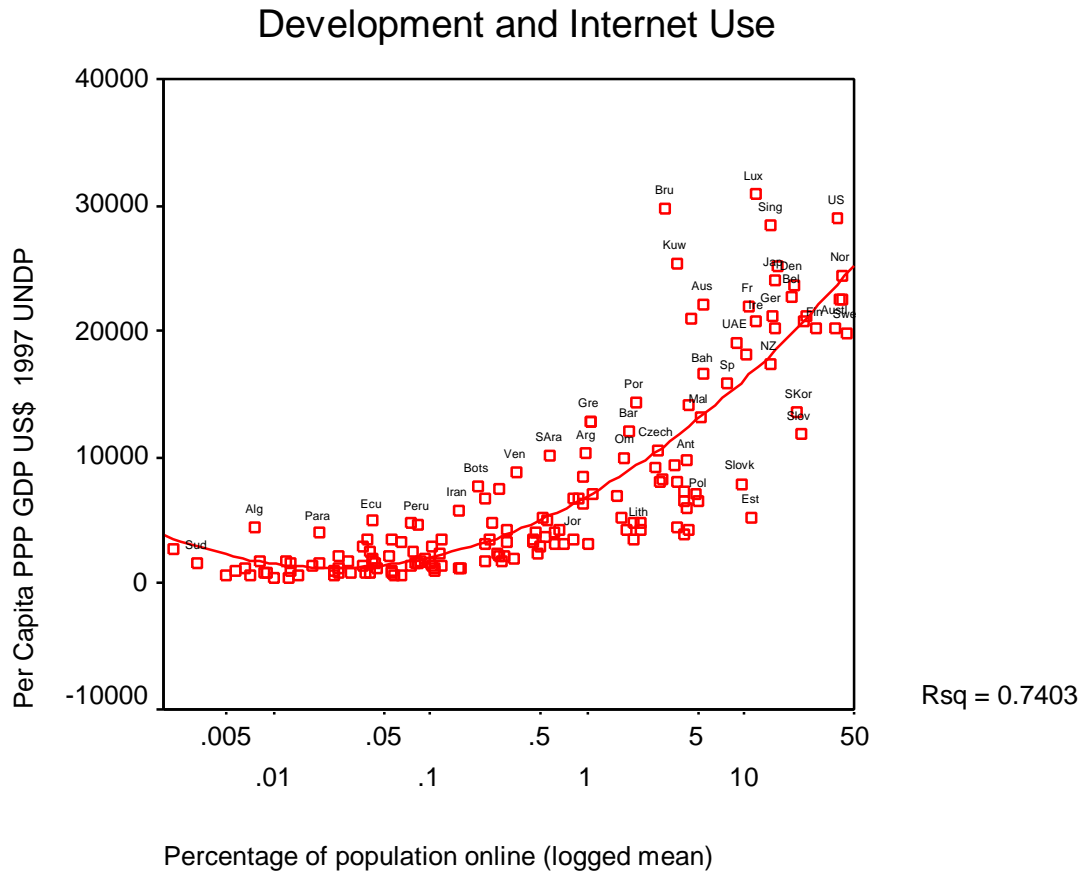|	World Means(wthosts)	
■	41,100,000 to 41,200,000	(1)
■	2,500,000 to 41,100,000	(4)
■	900,000 to 2,500,000	(5)
■	600,000 to 900,000	(2)
■	300,000 to 600,000	(9)
□	0 to 300,000	(152)

Note: The number of Internet Hosts, Spring 2000. Weighted for .com, .org and .net according to the OECD methodology (OECD 1999).

Source: www.Netcraft.com

Figure 4

Development and Internet Use

Percentage of population online (logged mean)

Source: Calculated from www.NUA.com *How Many Online?* Spring 2000.