Components of Social Capital and

Marital Status: A Global Perspective

Hachiro UCHIYAMA
University of Hyogo

Abstract

Utilizing data on 65 countries from the International Institute of Social Studies and the United Nations' Population Division, this study examines the extent of the goodness of fit between components of social capital (COSC) and marital status of male and female subpopulations in various age brackets, by means of Pearson's product-moment correlation coefficient analysis. Subsequently, Spearman's correlation coefficient analysis is executed for the combinations of variables that have resulted in high R^2 values in the first phase of the analyses.

The results elucidated high levels of the goodness of fit as well as correlations between single males (25-59 years of age) and "Civic Activism." In particular, single males between 35 and 39 years of age demonstrated the highest values both in terms of R^2 and r_s. For the female subpopulations, single women between 20 and 49 years of age had relatively high levels not only of the goodness of fit but also of correlations, again, with the variable "Civic Activism." In conclusion, micro-level studies, as well as research scrutinizing the possible role of the Internet technology, are suggested as potential future topics.

1. Introduction

Social capital, in its fundamental form, can be defined as an indicator of and/or a conceptualization for the strength and/or the size of the communication resources that people have. It includes a set of norms, networks, and sanctions that people share with each other (Kapuku 2011). It has been two decades since Robert D. Putnam wrote his influential article entitled *Bowling Alone* in 1995 in which he scrutinized and expounded the concept (Putnam 1995). The article as well as his following book bearing the same title (Putnam 2000) has disseminated the concept of social capital to a wide range of readers, researchers, and scholars, some of who have, in turn, produced studies utilizing the concept. (See, for example, Lindstrom 2001.) In addition to Putnam's works, our enhanced understanding of social capital today can be attributed to the endeavors of many scholars, researchers, universities, and organizations that have attempted to untangle and/or decipher the intricacies of social capital, and devise innovative ways of measuring and evaluating the concept. (For instance, see

Villalonga-Olives et al. 2015, and The World Bank 2011.)

In part, the present study shares some characteristics with my anteceding paper entitled *Prefecture-level Social Capital in Japan: An Interdisciplinary Perspective* (Uchiyama 2015).   In particular, the present study takes into account some of the results from the preceding study—which illuminated, put concisely, the social capital's associations with variables relevant to marital status, public safety, labor force participation by women, and mental health.   Of the aforementioned areas, the current study focuses on the first category, i.e. marital status, since the variable "Ratio of never married population (male; 30-34 years of age) in the former study yielded the most remarkable results (R^2 = 0.31; and r_s = -0.607 (p<0.001)) (Uchiyama 2015). This study's main theme with its focus on marital status has been influenced by the prior study.

Notwithstanding the commonalities, there are differentiating features in this study, when it is contrasted with the author's preceding study.   The first difference is that the present study utilizes nation-level—i.e., macro-level—data from a number of countries in the world, whereas the preceding study employed prefecture- or *meso*-level data from a single country—namely, Japan.   In the context of globalizing nations, the author is of the opinion that macro-level studies have the potential for offering information relevant to the countries.   Secondly, the present study adopts variables which would be called "components of social capital" (henceforth abbreviated as COSC) as explanatory variables in lieu of social capital per se.   Like the well-known adage, "The whole is greater than the sum of its parts," it may be of benefit to investigate the possible impacts of the "parts" on the outcome, as identification of which "parts" are related to marital status in particular could be illuminated.   These two aspects make this study conspicuously distinguishable from the preceding paper.

Put succinctly, the objective of this study is to analyze COSC variables with respect to marital status by age and sex in a global context by making use of macro- or nation-level data from a number of countries, so that the relationships could be elucidated for further studies.

2. Method

This study primarily utilizes data sets from two sources.   The first source is located at the International Institute of Social Studies in Hague, which is part of Erasmus University, Rotterdam, in the Netherlands.   (See International Institute of Social Studies 2015.)   The institute houses and makes precious and reputable data available to social scientists and students alike.   One of the numerous data collections they administer is called "Indices of Social Development" (ISD).   The ISD contains data that would be classified as COSC.   Specifically, the country-level data from 65 countries on the following indicators are utilized from the source: (1) civic activism, which refers to participation in voluntary organizations for political matters, (2) clubs and associations, or memberships in voluntary local groups, (3) intergroup cohesion, which could be interpreted as part of bridging social capital, and (4) interpersonal safety and trust, which is, i.e., perception of safety and trust (International Institute of Social Studies 2015).

The second data source is administered by the United Nations' Department of Economic and Social Affairs. Its Population Division collects and compiles country-level data from the member states on demographic indicators, including data on marriage. The data set on marital status of people at the country level from 65 countries has been acquired from this source and is made use of in this study. These nation-level data on marriage are divided into two subsets by sex—male and female—and each of the two subsets is broken down into 11 cohort groups by age brackets—namely, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, and 65 years of age and over. These groupings result in the total of 22 subpopulations by sex and age, each of which is at the country level. For each country, data for the variable "Ratio of people in relation to the cohort group by sex and age" for the marital categories of (1) married, (2) single, (3) divorced, and (4) widowed are procured from this source for analyses. (See United Nations 2012.)

Making use of the above-mentioned data from the two sources for the 65 countries in the world, statistical relationships between COSC variables, on the one hand, and marital status, on the other, are examined at the country level in ecological study designs, in which the data are at the group level. To attain the objective, two statistical measures of associations are employed in two successive steps. The first step is regression testing. In particular, Pearson's product-moment correlation coefficient analysis is applied to measure the strength of linear association between independent variables—which, in this case, are COSC variables—and dependent variables, i.e. marital status by age and sex. This test is employed to appraise the goodness of fit, or R^2, between the variables. Subsequently, in order to ascertain cross-validation as well as to assess monotonic—rather than linear—relationship, Spearman's correlation coefficient analysis is carried out to tally r_s so as to examine associations between selected pairs of variables that have shown the remarkable goodness of fit in the preceding tests. For the analyses, the data from the year 2010 are used, since the data from this year are the most recent and relatively abundant in terms of availability.

2.1 Participants

As stated, 65 nations have been selected for this study, out of the existing countries in the world. (Table I displays the list of countries.) This study is inclusive in that no country is excluded in the analyses if both of the data sources—the United Nations and the International Institute of Social Studies—possess the specific data on the nation. A calculation based on the population figures for the year 2010 from the United Nations resulted in the total population of the 65 countries being approximately 3,662,945,000 people. Another tallying confirmed that this figure would be equivalent to about 52 percent of the total population of the earth at the time (United Nations 2015).

Table I. List of Countries				
Albania	Cambodia	Guyana	Malaysia	Senegal
Argentina	Cameroon	Hungary	Malta	Singapore
Armenia	Chile	Iceland	Mexico	Slovak Republic
Austria	China	Indonesia	Mongolia	Slovenia
Azerbaijan	Costa Rica	Iran	Nepal	South Africa
Bangladesh	Cyprus	Ireland	Netherlands	Sweden
Belarus	Czech Republic	Israel	Norway	Switzerland
Belgium	Denmark	Italy	Panama	Uganda
Bermuda	Ecuador	Japan	Qatar	United Kingdom
Brazil	Ethiopia	Kyrgyz Republic	Romania	United States
Bulgaria	Finland	Latvia	Russia	Uruguay
Burkina Faso	France	Lithuania	Rwanda	Vietnam
Burundi	Germany	Malawi	Samoa	Zimbabwe

3. Results

In the first stage of analyses, the regression tests were carried out on COSC and four different categories of marital status: single, married, divorced, and widowed. This stage—testing through Pearson's product-moment correlation coefficient—brought about remarkable outcomes, as well as results that would not be considered noteworthy. For instance, the degrees of the goodness of fit were relatively low for both males and females in the subpopulations of the divorced and the widowed. Specifically, concerning "Civic Activism," the divorced males and divorced females of 35-39 years had R^2 values 0.143 and 0.076, respectively. In contrast, the situations were quite different for both males and females in the single subpopulations as seen in Table II on the following page.

Table II juxtaposes the remarkable results of the regression tests between COSC and age-clustered marital status—which, in this case, is single or married—for the male populations in the 65 countries. Note, in particular, the high R^2 values of single men with the COSC variable "Civic Activism." The difference between the single and married subpopulations in terms of "Civic Activism" deserves special attention, because of the pronounced impact of marital status on the variable, "Civic Activism." Specifically, if one contrasts pairs of counterparts in the two subpopulation groups—e.g., those in the age bracket of 30-34 years—the disparities between the single males and married males in terms of R^2 values become evident: the R^2 value for the single males is 0.638, whereas that for the married males is 0.343. The difference becomes even greater if one contrasts R^2 values for the age bracket of 35-39 years: 0.656 for the single males, and 0.273 for the married males.

Table II.   Results of R^2 tests on COSC and single/married males

	Age	Civic Activism	Intergroup Cohesion	Membership in Clubs and Associations	Interpersonal Safety and Trust
Single males	**15-19**	0.143	0.101	0.001	0.101
	20-24	0.458	0.450	0.021	0.430
	25-29	0.606	0.508	0.010	0.308
	30-34	0.638	0.524	0.003	0.297
	35-39	0.656	0.474	0.001	0.210
	40-44	0.671	0.471	0.000	0.218
	45-49	0.671	0.449	0.000	0.196
	50-54	0.614	0.464	0.012	0.175
	55-59	0.531	0.401	0.049	0.083
	60-64	0.336	0.306	0.075	0.015
	65+	0.126	0.205	0.114	0.000
Married males	**15-19**	0.082	0.068	0.103	0.000
	20-24	0.370	0.428	0.097	0.151
	25-29	0.450	0.402	0.048	0.066
	30-34	0.343	0.318	0.035	0.019
	35-39	0.273	0.216	0.032	0.000
	40-44	0.250	0.202	0.031	0.000
	45-49	0.249	0.162	0.019	0.000
	50-54	0.209	0.187	0.000	0.007
	55-59	0.140	0.122	0.001	0.002
	60-64	0.039	0.071	0.005	0.034
	65+	0.000	0.000	0.010	0.125

On the other hand, Table III on the subsequent page shows the results of single/married females.   Single women tend to have higher R^2 values than married women on "Interpersonal Safety and Trust" for most age brackets (15 to 59 years of age), but not for 60-64 and 65 years and over.   Moreover, groups of single women show higher R^2 values than those of married women with respect to "Civic Activism" with the exceptions of the two age categories—60-64 and 65 years and over.

Of all the analyses carried out in this study, the results displayed in Table II and Table III are remarkable, with relatively high R^2 values indicating the goodness of fit between multiple pairs of variables, particularly for single subpopulations.

Table III.   Results of R^2 tests between COSC and single/married females

	Age	Civic Activism	Intergroup Cohesion	Membership in Clubs and Associations	Interpersonal Safety and Trust
Single females	**15-19**	0.386	0.384	0.027	0.349
	20-24	0.583	0.505	0.023	0.444
	25-29	0.637	0.479	0.005	0.330
	30-34	0.612	0.432	0.001	0.241
	35-39	0.577	0.377	0.000	0.156
	40-44	0.570	0.352	0.001	0.130
	45-49	0.532	0.344	0.004	0.103
	50-54	0.285	0.203	0.086	0.000
	55-59	0.141	0.150	0.041	0.024
	60-64	0.054	0.101	0.010	0.061
	65+	0.023	0.105	0.139	0.029
Married females	**15-19**	0.278	0.361	0.061	0.115
	20-24	0.429	0.431	0.055	0.158
	25-29	0.386	0.312	0.027	0.043
	30-34	0.195	0.150	0.020	0.000
	35-39	0.010	0.056	0.021	0.024
	40-44	0.057	0.023	0.009	0.042
	45-49	0.021	0.001	0.001	0.077
	50-54	0.003	0.011	0.004	0.139
	55-59	0.024	0.001	0.026	0.232
	60-64	0.183	0.039	0.048	0.315
	65+	0.241	0.084	0.159	0.357

Of all results obtained in the first stage of this study, the most remarkable and prominent R^2 values are seen for the subpopulation of single men between 25 and 59 years of age, and that of single women between 20 and 49 years of age, each in relation to the variable "Civic Activism." In consequence, the second phase of the analyses—Spearman's correlation coefficient—is carried out for these subpopulations with respect to "Civic Activism," so as to observe their statistical relationships in terms of r_s.   The selection criterion or the cut-off point for the following testing has been set at $R^2 > 0.5$ in the previous regression analyses.   The outcomes are shown in Table IV.

Table IV.   Results of Spearman's correlation coefficient, r_s, for single males (25-59 years of age) and single females (20-49 years of age) on "Civic Activism"

	Age	Civic Activism	P value
Single males	**25-29**	0.832	< 0.001
	30-34	0.646	< 0.001
	35-39	0.846	< 0.001
	40-44	0.837	< 0.001
	45-49	0.833	< 0.001
	50-54	0.786	< 0.001
	55-59	0.720	< 0.001
Single females	**20-24**	0.820	< 0.001
	25-29	0.787	< 0.001
	30-34	0.769	< 0.001
	35-39	0.752	< 0.001
	40-44	0.748	< 0.001
	45-49	0.710	< 0.001

In Table IV, each of the demographic subpopulations composed of single men and single women has a high r_s value.   Of the 13 groups, nonetheless, the group consisting of single men between 35-39 years of age has the highest r_s value of all.   However, each r_s value—both of male and female groups—is considerably high and each can be considered to form a solid positive correlation with "Civic Activism."

4. Discussion

For a visual representation of the result of the highest r_s value, 0.846, Graph 1 on the next page displays the relationship between the single men (35-39 years of age) and "Civic Activism" in the two-dimensional Cartesian coordinates.   This subpopulation resulted in the most linear and hence most noticeable and noteworthy relationship of all subpopulations.

An unequivocal and monotonic correlation is observed in Graph 1, aside from a few outliers.   Even though it is also important to heed that the relationship is at the aggregate and not at the individual level, the positive correlation seen in the graph is nearly spectacular.   Now that both Pearson's product-moment correlation coefficient and Spearman's correlation coefficient have been reckoned, it is fair to infer from the results that the correlation between the percentage of single men (35-39 years of age) and the level of "Civic Activism" is quite firm, at least at the country-level.

Graph 1.   TS Scatter plot showing the relationship between the percentage of single males (35-39 years of age) and "Civic Activism"; Data Sources: International Institute of Social Studies, and the United Nations 2012
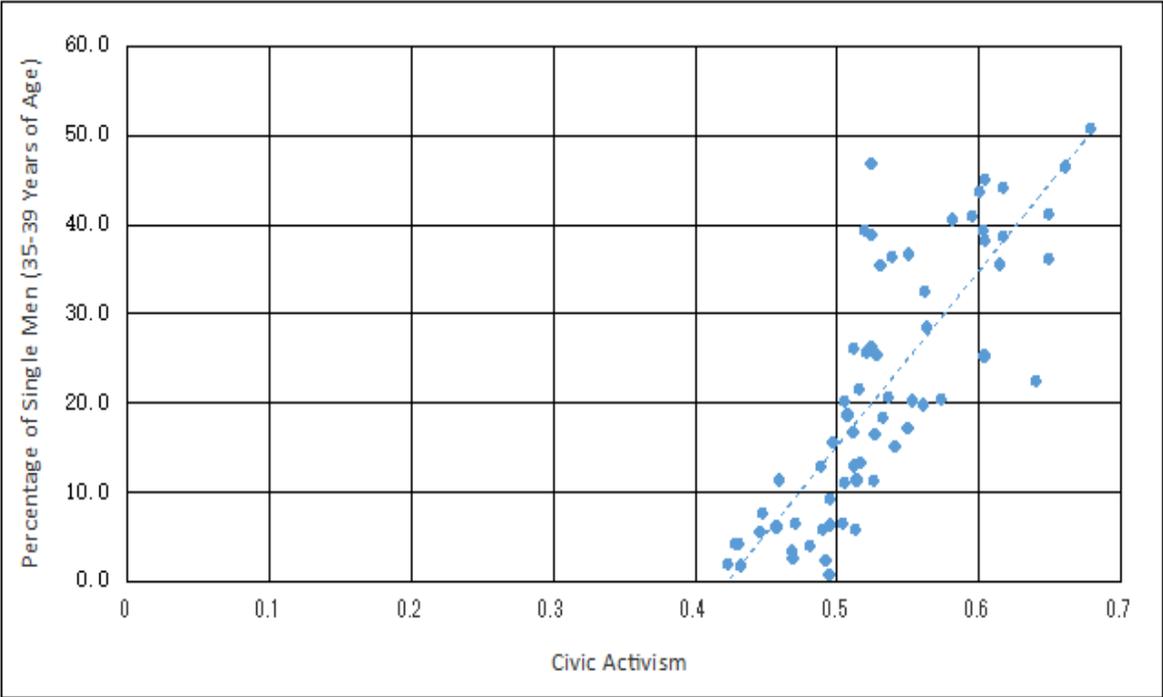
Nevertheless, one cannot help but notice the wide variation that exists among the 65 countries, e.g., in the percentage of single men in the age bracket of 35 to 39 years, when the country-specific data are observed together.   To get a sense of the variation in the variable, several countries have been selected for the purpose of visual presentation and contrast of the data, with the hope that the selection may provide a quantitative snapshot of the diverse global community in which we live.

Graph 2 demonstrates a wide variation observed in selected countries regarding the percentage of single men/women (35 to 39 years of age).   The average value for the male subpopulation (35-39 years of age) among the 65 countries is 22 percent, while its female counterpart is 16 percent.   Nonetheless, it can be seen that the average values are only part of the situation, in which there is much difference in the percentage among the countries and between males and females that are displayed in the graph.   In Cambodia, for instance, the percentage of single men in the age bracket of 35 to 39 years is only 2 percent.   In Sweden, in contrast, the counterpart is 51 percent.   The difference is not only noticeable, but also noteworthy, and hence calls for analyses at the individual- or micro-level, which may subsequently and mutually benefit the meso-level as well as the macro-level studies.

Graph 2.   Percentage of single males/females among the same age cohort groups (35-39 years of age) in selected countries; Data Source: United Nations 2012

Percentage of Single Males/Females (35-39 Years of Age) in Selected Countries
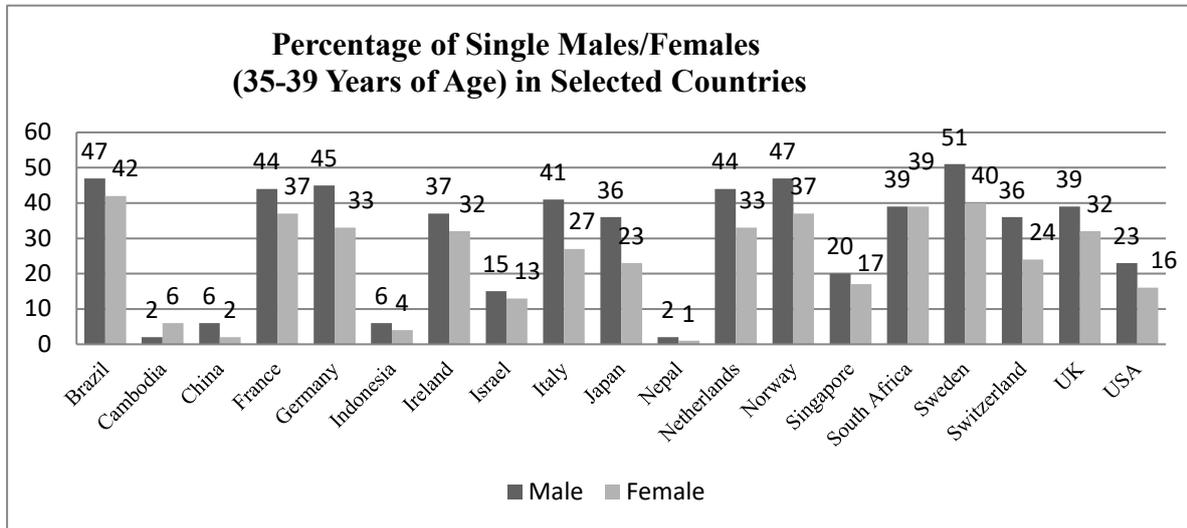
Going back to Table IV, when the highest r_s value of the above-mentioned single male subpopulation (35-39 years of age) is compared with those of other subpopulation groups in the table, the latter's r_s values are also high.   In effect, it is quite evident in the outcomes in Table IV that the latter groups too have reasonably robust correlations with "Civic Activism."   In fact, it is safe to state that it is unlikely for the relationships to have occurred in an entirely haphazard manner.   Now, for nearly identical age brackets as in Table IV, the average percentages of single males/females in the 65 countries are displayed in Graph 3.

Graph 3.   This graph shows the average percentage of single males and single females in the 65 countries by five age groups as of the year 2010; the overall average level of "Civic Activism" for the 65 countries is 0.53 in the scale of 0 to 1.   Data Source: United Nations 2012

Average Percentage of Single Men and Single Women in the 65 Countries by Age Groups (2010)
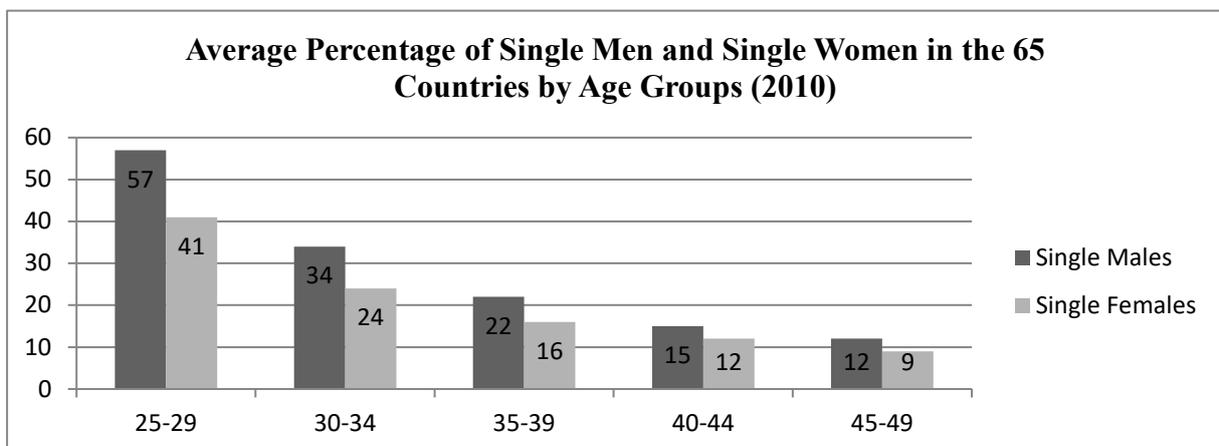
Contrasting the average values between single male and single female subpopulations may allow us to perceive global tendencies concerning gender, at least for the 65 countries, which might escape us, were we to focus our attention on single countries only. The male subpopulations have higher percentages of being single than their female counterparts for all of the age categories that are represented in the graph, although the degree of the difference varies from the least of 3 percent (between those aged 45-49 years) to the highest of 16 percent (between those aged 25-29 years). In short, the difference between male and female subpopulations is somewhat evident in the graph.

Furthermore, there is a tendency that can be observed in the selected subpopulations: the older the subpopulation group, the lower the percentage of single men and women. This observation may be congruent with one's expectation based on one's day-to-day routines and empirical experience with people whom one would typically encounter or interact with on a regular basis, even though one's background—be it cultural, or socio-economic, e.g.—certainly does matter to a degree. For example, though there are certainly exceptions, as one grows older from a teenager to one's twenties, then to thirties and forties, one may typically get an impression that the proportion of single people in one's age cohort group progressively diminishes. In contrast, one may encounter more weddings (of one's own and/or of others') as one matures.

Now, what could be construed from the results of this study? Specifically, what do the positive correlations between percentages of single males (35-39 years of age), of single females (20-49 years of age), respectively on the one hand, and the level of "Civic Activism," on the other, suggest? Or, more broadly, what do the results of those other groups that are represented in Table IV imply, for that matter? After all, they all had relatively high r_s values on "Civic Activism." Interestingly, Smith et al. found that those who use blogging and social networking sites as outlets for civic engagement or activism tend to be more active in traditional—or non-Internet-based—realms regarding both political and apolitical matters than those who do not (Smith et al. 2009). Possible associations between civic activism and diffusion of the Internet technology are worth delving into, as each one of us—over a certain age—probably knows from the first-hand experience as to how much the Internet has changed our day-to-day activities: how we get information, how we shop, how we study, how we work, and how we communicate with others. In fact, the significant impact of heavy Internet use on voluntary participation in organizations and politics has already been concluded by Wellman et al. in their study (Wellman et al. 2001). Moreover, another group of researchers, Ellison et al., carried out statistical analyses in their study and found that the use of Facebook does contribute to an accumulation of social capital (Ellison et al. 2007). Given these findings, in effect, it seems clear that the Internet's impact on our daily life is so unequivocal that it would not be unreasonable at all to conjecture or speculate—even though this is solely a hypothetical scenario—that a single male with both the Internet access and socio-political interest would likely be more prolific in civic activism than his counterpart, e.g., with neither the access nor the interest.

As of 2015, in effect, it is not only in developed countries but also in many developing nations that people have relatively easy access to the Internet.   Some developing countries are accelerating the diffusion rate of the Internet technology.   In Albania, for example, the access to the Internet has rapidly been expanding in recent years, with 45 percent in 2010, and over 60 percent in 2014 (International Communication Union 2014).   In Colombia, moreover, the Internet access in 2010 was 37 percent, while it rose to 53 percent in 2014 (International Communication Union 2014).   Given the impact of the Internet on how people interact with one another, it could be inferred that the need for scrutinizing social capital in general and civic activism in particular with respect to marital status in the midst of the worldwide expansion of the Internet technology has gained significance as well as imminence, as more needs to be known about the matters.

In summary, utilizing data from 65 countries, this ecological study illuminated considerably pronounced positive correlations between the percentage of single males (25-59 years of age) and "Civic Activism," as well as the percentage of single females (20-49 years of age) and "Civic Activism."   Further studies at the micro-level are suggested as a potential approach to deciphering the intricacies to a greater degree in the future.   Moreover, examining the possible role of Internet technology in the relationship between civic engagement and marital status has been suggested as a possibly promising theme for future explorations.

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