Does Whom You Know in the Status Hierarchy Prevent or Trigger Health Limitation? Institutional Embeddedness of Social Capital and Social Cost Theories in Three Societies [*]

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Word Count: 9,730
Tables: 7
Figures: 2

Accepted and forthcoming at *Social Science & Medicine.*

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Abstract

Does whom you know in the status hierarchy prevent or trigger health limitation (life disruption due to health problems)? Does that effect vary by society? To addresses these two questions, this study applies five theories and analyzes nationally representative data from three societies (the United States, urban China, and Taiwan). Social capital theory expects accessed status (network members' status) to prevent health limitation, while social cost theory as proposed here asserts the opposite. The collectivistic advantage explanation anticipates social capital theory to apply more to urban China and Taiwan but social cost theory to apply more to the United States, while the collectivistic disadvantage explanation predicts the opposite. The inequality structure explanation expects social capital theory to apply more to Taiwan and social cost theory to apply more to the United States and urban China. This study measures accessed status on the occupational dimension. Results support social capital theory in Taiwan, social cost theory in the other two societies, and the inequality structure explanation across the three societies.

Kew words: accessed status, social capital, social cost, health limitation, institutional embeddedness, Chinese societies

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Durkheim's seminal work on suicide has inspired a twelve-decade-long research tradition on health consequences of various properties of social networks (Durkheim, 1951/1897; for reviews see Song, Son, & Lin, 2011; Thoits, 2011; Uchino, 2013; Umberson & Montez, 2010). One upstream structural attribute of social networks is accessed status, that is, status one's (ego's) network members (alters) occupy. It constitutes the meso-level hierarchical context in which ego dwells in daily life. Systematic research on health impacts of accessed status emerged in the early 1990s and since then has been growing steadily (Acock & Hurlbert, 1993; for a review see Song, 2013a). Despite more than two decades of research, there is limited attention to the double-edged—protective or detrimental—role of accessed status for health and the institutional contingency of that role across culture and society.

The purpose of this present study is to contrast social capital theory with social cost theory as proposed here and examine the health effect of accessed status using unique nationally representative cross-sectional data collected concurrently in three societies: the United States, urban China, and Taiwan (Carpiano, 2007; Festinger, 1954; Lin, 1982, 2001a; Merton & Kitt, 1950; Moore, Daniel, Gauvin, & Dubé, 2009; Song, 2015a; Song & Chen, 2014; Song, Frazier, & Pettis, 2018). Also, the special data provide the first opportunity to examine three institutional explanations—collectivistic advantage, collectivistic disadvantage, and inequality structure—on the varying strength of the two aforementioned theories across the three societies (Bian, 2001; Lin, 2001a, 2001b; Markus & Kitayama, 1991; Song, 2014a, 2015a; Wilkinson & Pickett, 2010; Yang,

1994). They allow us to focus on one health outcome—health limitation (life disruption due to health problems)—and measure both absolute (alters' status) and relative accessed status (alters' status relative to ego's) on the occupational dimension using the same network instrument, the position generator.

1. Literature review: Accessed status and health

Social capital theory argues for the protective role of accessed status for health. Recognizing diverse theoretical approaches to social capital (Bourdieu, 1986/1983; Coleman, 1990; Lin, 1982, 2001a; Putnam, 2000; for a review see Song, Son, & Lin, 2010), this study focuses on the network-based approach proposed by Nan Lin (1982, 2001a). Lin's approach directly theorizes and operationalizes accessed status. It defines social capital as resources embedded in social networks and specifies it as alters' hierarchical positions, particularly in the socioeconomic structure. Accessed status constitutes a meso-level pyramid-shaped network hierarchy. Lin and colleagues developed the position generator to map this network hierarchy (Lin & Dumin, 1986; Lin, Fu & Hsung, 2001). This generator asks respondents to identify their contacts associated with a representative sample of occupational positions salient in a society. Four indicators of absolute accessed status are traditionally used: 1) diversity (the total number of positions in which respondents identify one contact) measures the size of different positions in the network hierarchy; 2) upper and average reachability (the highest and average status of accessed occupations) respectively capture the top and average status of the network hierarchy; and 3) extensity (the difference between the highest and lowest status of accessed occupations) represents the range of status of the network hierarchy (Campbell, Marsden, & Hurlbert, 1986; Lin & Dumin, 1986). Relative accessed status can be indicated by the size of accessed positions ranked higher than ego's,

which measures ego's relative position within the network hierarchy (Song, 2015a). Accessed status can also be captured using the name generator, which asks respondents to name contacts with whom they discuss important matters (Burt, 1984). Accessed status is measured as socioeconomic attributes of named contacts (Song & Chang, 2012).

Assuming that accessed status indicates social resources, social capital theory argues that accessed status can protect health net of ego's status (Lin, 2001a; Song & Lin, 2009; Song, 2011). Its argument has been demonstrated across societies (for a review see Song 2013a). Accessed educational or occupational status is associated positively with self-reported health, health literacy, health information seeking, smoking cessation, and life satisfaction but inversely with depression, physical inactivity, overweight, smoking relapse, and anomie (e.g., Acock & Hurlbert, 1993; Carpiano & Hystad, 2011; Christakis & Fowler, 2008; Legh-Jones & Moore, 2012; Moore, Daniel, Paquet, Dubé, & Gauvin, 2009; Moore et al., 2011; Moore, Teixeira, & Stewart, 2014; Song, 2011; Song & Chang, 2012; Song & Lin, 2009; Verhaeghe & Tampubolon, 2012; Verhaeghe et al., 2012; Yang et al., 2013).

In contrast with social capital theory emphasizing accessed status as one indicator of protective social resources, social cost theory as proposed here underscores accessed status as one source of detrimental expenses and damages (Song et al., 2018). Three mechanisms for social cost theory are simultaneously possible but discussed in isolation from each other in prior work: upward social comparison, receipt of detrimental resources, and networking expenses. First, upward comparative reference group theory conceives of alters as one of the origins of reference groups and alters' status as one of the social comparison standards (Clark & Senik, 2010; Festinger, 1954; Gartrell, 1987, 2002; Merton & Kitt, 1950). It argues that higher-status reference groups can damage health through triggering upward or negative social comparison. This theory has

stimulated substantial studies, most of which, however, examine sociodemographic (e.g., age, gender, race/ethnicity, SES, or residential location) reference groups (see Adjaye-Gbewonyo & Kawachi, 2012; Bygren, 2004; Clark & Senik, 2010; Eibner, Sturm, & Gresenz, 2004; Ishida, 2011; Kondo et al., 2008; Mishra & Carleton, 2015; Yngwe et al., 2003). A few studies across different societies examine network-based reference groups and report the harmful impacts of perceived lower status relative to that of social contacts on physical and mental health (Jusot et al., 2008; Mangyo & Park, 2011; Parker & Kleiner, 1966; Pham-Kanter, 2009). Second, ego may receive health-damaging resources through accessed status. Alters occupying high and diverse status are more able to provide ego unsolicited social support such as unsolicited job information, which can damage ego's mental health possibly due to mismatch with ego's need, miscarriage, violation of reciprocity, and self-esteem threat (Carpiano, 2007; Lin & Ao, 2008; Song, 2014b, 2015b; Song & Chen, 2014). Finally, the establishment and maintenance of social connections require various forms of persistent investment (Bourdieu, 1986/1983; Coleman 1990; Lin, 2001a). It costs more (in terms of time, physiological, psychological, social, cultural, and financial resources) to reach and maintain ties with heterophilous and high-status alters (Bian, 2001; Lin, 2001a). These various forms of burdensome expenses can damage psychological resources and further health (Moore, Daniel, Paquet, Dubé, & Gauvin, 2009).

Only six studies on health and well-being take both social capital theory and different parts of social cost theory into consideration and only two of them analyze the institutional variations across society (Lee & Kawachi, 2017; Moore, Daniel, Gauvin, & Dubé, 2009; Song, 2014a, 2015a, 2015b; Song, Pettis, & Piya, 2017). Among the four single-society studies, two studies apply and find evidence for upward comparative reference group theory (Lee & Kawachi, 2017; Song, 2015b), and the other two suggest the varying explanatory power of social capital theory versus

parts of social cost theory (i.e., networking expenses, receipt of detrimental resources) by gender and education (Moore, Daniel, Gauvin, & Dubé, 2009; Song et al., 2017).

Two studies analyze the institutional contingency of social capital theory and part of social cost theory—upward comparative reference group—across space (Song, 2014a, 2015a). Song (2014a) extends two institutional arguments—relational dependence and inequality structure—to the effect of accessed status on life satisfaction in three societies: the United States, urban China, and Taiwan. The relational dependence explanation anticipates the two competing theories—social capital and upward comparative reference group—to apply respectively more and less to collectivistic societies than individualistic ones (Lin, 2001a, 2001b; Markus & Kitayama, 1991; Song, 2013a; Yang, 1994). The inequality structure explanation expects the two theories to apply respectively more and less to more egalitarian societies (Lin, 2001a; Wilkinson, 1996; Wilkinson & Pickett, 2010). Results on public life domains are more supportive of the inequality structure explanation and those on private life domains are more consistent with the relational dependence explanation. Song (2015a) combines two competing cultural arguments—relational dependence and self-evaluation motive—to examine the effect of accessed status on depression in two societies: the United States and urban China. Results support the self-evaluation motive explanation, which is the opposite of the relational dependence explanation (Chung & Mallery, 1999; Markus & Kitayama, 1991; Sasaki et al., 2014).

Despite their contributions, the two comparative studies apply different institutional theories, report mixed results, and, more importantly, give incomplete theoretical attention to the double-edged role of accessed status and the institutional variation of that role across society. The three mechanisms for the detrimental role of accessed status—negative social comparison, receipt of detrimental resources, and networking expenses—can operate jointly. But the two studies

consider only the mechanism of negative social comparison, and their institutional arguments are also limited to that mechanism. This present study aims to combine these three pathways into the proposed social cost theory in contrast with social capital theory and further propose broader institutional explanations to analyze the varying explanatory power of social capital theory and social cost theory across society.

This study examines the institutional contingency of the two competing theories—social capital and social cost—using three institutional explanations: collectivistic advantage, collectivistic disadvantage, and inequality structure, which are introduced in detail in the next section. It analyzes nationally representative data collected in three societies: the United States, urban China and Taiwan. It focuses on health limitation and measures five objective indicators of absolute and relative accessed occupational status using the position generator. Health limitation is one crucial indicator of life quality (Ferriss, 2004; WHOQOL Group, 1995). Its social causes can differ from those of other health outcomes and vary by society (Angel et al., 2003; Grollman, 2014; Song, 2013b). As summarized above, the impact of access status varies by outcome and society. Whether accessed status affects health limitation differently across space and whether that effect is consistent with existing evidence on other outcomes remains unanswered.

2. Theories and hypotheses

Drawing on five theoretical approaches, this study proposes five hypotheses on the health effects of accessed status (see Figure 1 and Table 1). First, according to social capital theory, accessed status can protect health through advancing social status, providing social support, enhancing healthy norms, facilitating help seeking, acting as social credentials, decreasing stress exposure,

reinforcing psychological resources, influencing health policy, improving access to health care and insurance, and boosting the immune system (Carpiano & Hystad, 2011; Christakis & Fowler, 2008; Lin, 2001a; Lin & Ao, 2008; Moore, Daniel, Paquet, Dubé, & Gauvin, 2009; Song, 2011; Song & Chang, 2012; Song et al., 2011; Song et al., 2018). The higher the absolute accessed status (i.e., diversity, upper and average reachability, and extensity) and the size of accessed positions higher than that of ego, the greater the variety, quality, range, and richness of social capital, the fewer health problems people develop, and the less disruption of life due to health problems. The social capital hypothesis (H1) states that absolute accessed status and the size of higher accessed positions are inversely associated with health limitation.

Insert Figure 1 Here

Insert Table 1 Here

In contrast, social cost theory predicts the opposite. Upward social comparison, receipt of unsolicited support, and networking expenses can damage health through reducing psychological resources, threatening self-esteem, violating reciprocity, and provoking stressful reactions (e.g., goal-striving stress, relative deprivation, anger, and sense of failure) and risky behaviors (Carpiano, 2007; Eibner & Evans, 2005; Moore, Daniel, Gauvin, & Dubé, 2009; Moore, Daniel, Paquet, Dubé, & Gauvin, 2009; Song, 2014a, 2014b, 2015a, 2015b; Song & Chen, 2014). The higher the absolute accessed status and the size of higher accessed positions, the more diverse, greater, and broader the chance of encountering higher-status reference groups, making negative social comparison, receiving stressful unsolicited support, and facing unbearable networking

expenses, the more health problems people develop, and the more disruption of life due to health problems. The social cost hypothesis (H2) states that absolute accessed status and the size of higher accessed positions are positively associated with health limitation.

Furthermore, three institutional factors can shape the explanatory power of the above two theories in different directions: collectivistic advantage, collectivistic disadvantage, and inequality structure. In comparison with individualistic culture, collectivistic culture institutionalizes the legitimacy of individuals' dependence on social ties in purposive actions to a greater degree (Lin, 2001a; Song, 2013b). Individualistic culture in the United States fosters independence from each other, while collectivistic culture in Chinese societies promotes harmonious interdependence between individuals (Lin, 2001b; Markus & Kitayama, 1991). Chinese culture is characterized by the significance of *guanxi* traceable to Confucian ethics (Yang, 1994). *Guanxi* is a particular social network composed of "enduring, sentimentally based instrumental relations that invoke private transactions of favors and public recognition of asymmetric exchange" (Lin, 2001b:159). Chinese are committed to cultivating and using their *guanxi* for various purposes (Bian, 2001; Lin & Ao, 2008). Thus, accessed status can be perceived or constructed more positively as salubrious social resources but less negatively as the target of negative social comparison or the source of stressful unsolicited social support and networking expenses in Chinese societies than in the United States (Mojaverian & Kim, 2012; Song, 2015a). The collectivistic advantage hypothesis (H3a) states that the associations of absolute accessed status and the size of higher accessed positions with health limitation should be more positive in the United States but more negative in urban China and Taiwan.

The collectivistic disadvantage explanation predicts the opposite. People in collectivistic culture may suffer more from negative social comparison, detrimental unsolicited social support

and stressful network expenses. People in collectivistic culture seek more negative social comparison (Chung & Mallery, 1999; Lee & Kawachi, 2017; Sasaki et al., 2014; Song, 2015a, 2015b). As the self-evaluation motive argument states, people in collectivistic culture tend to cherish social scrutiny and public reputation and endeavor for self-critical self-evaluation through conducting negative social comparison, while those in individualistic culture tend to value the unique independent self and individual success and strive for self-serving self-evaluation through avoiding such comparison (Markus & Kitayama, 1991). Internalizing the highly legitimated value of relational dependence, people in collectivistic culture can receive or perceive more unsolicited social support and be burdened by more investment in social networking (Bian, 2001; Chentsova-Dutton, 2012; Song, 2014b; Yang, 1994). Thus, accessed status can be conceived more positively as social resources but less negatively as the trigger of negative social comparison or the origin of harmful unsolicited social support and networking expenses in the United States than in Chinese societies. The collectivistic disadvantage hypothesis (H3b) expects that the associations of absolute accessed status and the size of higher accessed positions with health limitation should be more negative in the United States but more positive in urban China and Taiwan.

Finally, the inequality structure argument highlights the varying degrees of inequality across societies. In more unequal societies, network members occupying high and diverse status may control relatively more valuable resources than those in less unequal societies. But in more egalitarian societies the resource differentials between status groups are less pronounced and the social distance between them is smaller and easier to cross. In such societies people can benefit more from accessed status because their actual mobilization of and capitalization on network members' resources, in particular resources from high-status network members, can be easier and more feasible and successful (Lin, 2001a). Also, they can suffer less from accessed status. They

make less negative social comparison, interpret unsolicited social support more positively, and face less networking expenses because of their experience and consciousness of less status stratification and smaller status distance from their network members (Song 2014a; Wilkinson, 1996; Wilkinson and Pickett, 2010). Of the three societies, Taiwan is more equal than China and the United States. As the Gini index indicates, income inequality in Taiwan (.33) is far below the alarming level (.40), but China (.45) and the United States (.41) have risen above that level since the very beginning of the 21st century (Executive Yuan, 2011; United Nations Development Programme, 2004; Wang, 2008). Similarly, household income or consumption by percentage share (for the richest 10% and the poorest 10%) suggests that Taiwan (a ratio of 6 to 1) is more equal than the United States (a ratio of 15 to 1) and urban China (a ratio of 13 to 1) (Central Intelligence Agency, 2005). The inequality structure hypothesis (H3c) states that the associations of absolute accessed status and the size of higher accessed positions with health limitation should be more negative in Taiwan but more positive in the United States and urban China.

3. Data and methods

3.1. Data

The research project, "Social Capital: Its Origins and Consequences," conducted nationally representative surveys simultaneously in three societies in 2004-2005: the United States, urban China, and Taiwan (for a detailed survey procedure, see Lin, Ao, & Song, 2009; Lin, Fu, & Chen, 2014). These surveys sampled adults aged twenty-one to sixty-four, currently or previously employed. The U.S. sample had 3,000 respondents, the urban China sample 3,500 respondents, and the Taiwan sample 3,280 respondents. During the U.S. survey process an additional sampling

criterion was imposed to seek out qualified African Americans and Latinos to approximate the census distribution. A dummy variable, quota, was created to identify respondents sampled after the recruitment change (value = 1).

As in prior work, this study excluded adults whose accessed status cannot be measured due to their identifying no contacts associated with listed jobs in the position generator (N=170 in the United States, 110 in urban China, and 199 in Taiwan). The listwise deletion of cases with missing values on variables of interest can further incur the loss of 16 percent of the U.S. sample, 4 percent of the urban China sample, and 6 percent of the Taiwan sample. A multiple imputation method was employed to impute missing values in independent variables based on ten imputations through one Stata program (mi impute chained). The imputed data had 2,830 respondents in the United States, 3,390 in urban China, and 3,071 in Taiwan. Table 2 shows the summary of sample characteristics averaged over the ten imputed data sets.

Insert Table 2 about here

3.2. Dependent variable

The question on health limitation asked, "Now I would like you to think of the last twelve months; how often was your daily life disrupted for more than a week due to health related matters?" The four possible responses were (1) frequently, (2) occasionally, (3) seldom, and (4) never. Two binary variables were created. The first one used the last two responses as the reference group, and the second one the last response. The proportional odds assumption was violated when we treated the four-category health limitation as an ordinal variable. The binary measurement allowed us to

run logistic regression models yielding more parsimonious and interpretable results. The proportion of respondents experiencing frequent health limitation was only about 2 percent in the two Chinese societies. We could not construct a third binary variable with the other three responses as the reference group. As discussed later, using two reference groups helped us identify the varying effects of accessed status by reference group and society.

3.3. Explanatory variables

The survey used the position generator to measure accessed status prior to ego's current job (or last job for the unemployed) (Lin et al., 2001). Each respondent was asked, "At the time [you started your current or last job], namely in year____, did you know someone who had the following kinds of jobs?" As Table 3 shows, a list of twenty-one occupations was presented to respondents. The occupational status of each job was coded through the International Socio-Economic Index (ISEI) for the purpose of comparative analyses across societies (Ganzeboom, DeGraaf, & Treiman, 1992). The ISEI score for peasants in China and Taiwan was lower than that for farmers in the United States. Peasants are at the bottom of the occupational hierarchy in China and Taiwan, whereas farmers are part of the middle class in the United States (Hout, Brooks, & Manza, 1995; Lu, 2005; Tsai & Chiu, 1991). Four indicators of absolute accessed status were constructed: diversity (the total number of accessed occupations), extensity (the range or difference between the highest and lowest ISEI score of accessed occupations), and upper and average reachability (the highest and average ISEI score of accessed occupations) (Campbell et al., 1986; Lin & Dumin, 1986; Lin et al., 2001). One indicator of relative accessed status was calculated: the number of accessed occupations with ISEI scores higher than that of ego's previous job (or last/current job for egos without a previous job).

Insert Table 3 about here

3.4. Control variables

All analyses controlled for three demographic factors: age, gender (1=female, 0=male), and marital status (1=married, 0=unmarried). They also controlled for employment status (1=employed, 0=unemployed) and three socioeconomic indicators: education (1=middle school or lower, 2=high school diploma, 3=associate college degree, 4=college degree or above), the ISEI score of current job (or last job for the unemployed at the survey time) (Ganzeboom et al., 1992), and annual family income. A dummy variable for each category of education was created with middle school or lower as the reference group. Annual family income had over twenty ordinal ranges (twenty-eight in the United States and twenty-two in urban China). Natural logarithms for the medians of all ranges were calculated for a normal distribution of income.

The United States and urban China have some unique social factors. The analysis of the U.S. sample further controlled for race/ethnicity (1=white, 2=black, 3=Latino, and 4=other race/ethnicity) and quota. A dummy variable for each racial/ethnic category was created with white as the reference group. The analysis of the urban China sample controlled for political capital (1=communist party member, 0=non-communist party member), and work units of current or last job (1=state, 0=other work units).

3.5. Analytic strategy

A series of logistic regression models were estimated to predict health limitation measured by two binary variables. First, the main effects of the five explanatory variables were separately examined net of control variables in each of the three societies because these explanatory variables could

exert different health effects (Legh-Jones & Moore, 2012; Song, 2015a). Next, the three-society data were combined and the product terms of the five mean-centered explanatory variables with the three societies were analyzed net of control variables shared by the three societies. Significant coefficients of product terms indicate the presence of interaction effects (Cohen & Cohen, 1983).

4. Results

Ten logistic regression models were run to predict health limitation in the United States (see Tables 4). Consistent with social cost theory (H2), the odds ratios for four out of the five explanatory variables—diversity (1.034, 1.030), upper reachability (1.008, 1.007), extensity (1.006, 1.007) and the number of higher accessed occupational positions (1.037, 1.034)—were significantly greater than 1 net of control variables. With one unit increase in each of these four indicators, both the chance of frequently or occasionally (rather than seldom or never) experiencing daily health-related life disruption and the chance of frequently, occasionally or seldom (rather than never) experiencing such life disruption increased by a factor of more than 1.

Insert Table 4 about here

Similarly, ten logistic regression models were run in the analyses of the urban China sample. Consistent with social cost theory (H2), the odds ratios for four out of these five explanatory variables—diversity (1.051), upper reachability (1.016), extensity (1.010) and the number of higher accessed occupational positions (1.061)—were greater than 1 net of control variables in the

prediction of one binary indicator of health limitation with "seldom/never" as the reference group (see Models 1, 2, 3 and 5 in Table 5). With one unit increase in each of these four indicators, the chance of frequently or occasionally (rather than seldom or never) experiencing daily health-related life disruption increased by a factor of more than 1. As Model 4 showed, consistent with social cost theory (H2), the odds ratio for upper reachability was marginally significant and greater than 1 (1.011, $p<.10$). No significant results emerged if "never" served as the reference group in the measurement of health limitation.

Insert Table 5 about here

Next, ten logistic regression models were run in the analyses of the Taiwan sample. No significant results emerged if "seldom/never" served as the reference group in the measurement of health limitation. One significant coefficient appeared in Model 4 in Table 6. Consistent with social capital theory (H1), the odds ratio for average reachability (.990) was significantly smaller than 1 net of control variables. With one unit increase in the average ISEI score of accessed occupations prior to adults' current job, the chance of frequently, occasionally, or seldom (rather than never) experiencing daily life disruption decreased by a factor of .990. As Model 2 showed, the odds ratio for upper reachability was marginally significant and smaller than 1 (.995, $p<.10$), which was also consistent with social capital theory (H1).

Insert Table 6 about here

The above results supported the inequality structure hypothesis (H3c) but not the collectivistic advantage or disadvantage hypothesis (H3a, H3b). The interaction effect analysis using the combined three-society data showed similar results. A dummy variable for each society was created with Taiwan and urban China respectively as the reference group. Because the foregoing results varied by explanatory variable and society, the product terms of the five mean-centered explanatory variables with the three societies were entered separately into the model with control variables shared by the three societies. We first used the binary indicator of health limitation with "seldom/never" as the reference group. With Taiwan as the reference society, four explanatory variables—diversity, upper reachability, extensity, and the number of higher accessed occupational positions—significantly interacted with the other two societies (see Models 1, 2, 3 and 5 in Table 7a). These significant interaction terms showed that the odds ratios for the four explanatory variables were smaller than 1 in Taiwan (OR=.987, .994, .995, .977) but greater than 1 in the United States (OR=1.031, 1.007, 1.004, 1.021) and urban China (OR=1.060, 1.012, 1.011, 1.066). Also, average reachability interacted with urban China significantly but with the United States at a marginal significance level (see Model 4 in Table 7a). That significant interaction term showed that the odds ratio for average reachability was smaller than 1 in Taiwan (OR=.987) but greater than 1 in urban China (OR=1.015). Based on results in Table 7a, Figures 2A-2E visualized the varying predicted probabilities of frequently or occasionally experiencing daily health-related life disruption at fixed values of the five explanatory variables by society. With urban China as the reference group, one significant interaction term between upper reachability and the United States emerged in the direction predicted by the collectivistic disadvantage hypothesis (H3b). That significant term showed that the odds ratio for upper reachability was greater in urban China (OR=1.017) than in the United States (OR=1.006).

Insert Table 7a about here

Insert Figures 2A-2E about here

We then used the binary indicator of health limitation with "never" as the reference group. With Taiwan as the reference society, five significant interaction terms appeared (see Models 1-4 in Table 7b). All these significant interaction terms showed that the odds ratios for diversity and extensity were smaller than 1 in Taiwan (OR=.998, 997) but greater than 1 in the United States (OR=1.026, 1.006); the odds ratios for upper reachability were smaller than 1 in Taiwan (OR=.994) but greater than 1 in the United States (OR=1.004) and urban China (OR=1.005); and the odds ratios for average reachability were smaller than 1 in Taiwan (OR=.988) but greater than 1 in urban China (OR=1.005). With urban China as the reference group, no significant difference between urban China and the United States emerged.

Insert Table 7b about here

5. Conclusion and discussion

Does whom you know in the status hierarchy prevent or trigger health limitation? Does that effect vary by culture and society? This study derives hypotheses from five theoretical approaches. It measures five objective indicators of accessed occupational status and investigates their associations with health limitation using nationally representative data from three societies. It contributes to the relevant literature in three important ways, theoretically and methodologically.

First, this study develops a fuller theoretical framework for the double-edged role of accessed status (see Figure 1). It integrates prior separate arguments on the detrimental role of accessed status into social cost theory as a contrast with social capital theory, and demonstrates the necessity and importance of distinguishing and combining this pair of competing theories on the function of accessed status. Varying by the measurement of accessed occupational status, results here support social capital theory in Taiwan but social cost theory in the United States and urban China. Both theories center on accessed status but make different assumptions (Song, 2015a). Social capital theory is based on the social resources assumption, while social cost theory the social expenses assumption. Lin's social capital theory was originally developed to explain the positive role of accessed status for status attainment (1982, 2001a). Its social resources assumption may apply more to instrumental than expressive or health outcomes. High accessed status may consistently motivate and facilitate ego's climbing the social ladder but affect ego's health in two opposite directions. Its two opposite functions for health may co-exist and offset each other. Social cost theory as proposed here specifically enhances our critical understanding of the heuristic value of social capital as accessed status, which has been relatively understudied in the health literature in comparison with other theoretical approaches to social capital (Moore, et al., 2005; Pevalin, 2003; Song, 2013a; Song et al. 2018; Webber & Huxley, 2004). It is not the abstract concept of social capital but the concrete concept of accessed status that has both the bright and dark sides and requires competing theories. Note that the examination of different mechanisms for social capital theory and social cost theory is beyond the scope of this present study. Future direct research on various possible psychosocial mechanisms linking accessed status to health across society is needed for more complete understanding of the complex role of accessed status.

Second, this study theorizes the institutional contingency of the two competing theories—social capital and social cost—from three perspectives: collectivistic advantage, collectivistic disadvantage, and inequality structure. Most results here are consistent with the inequality structure explanation. Social capital theory is supported in Taiwan, a more egalitarian society, while social cost theory in the United States and urban China, two more unequal societies. These findings are consistent with previous results on satisfaction with public life domains but not with those on satisfaction with private life domains (Song, 2014a). There is only one significant difference between the United States and urban China. Upper reachability is positively associated with people's chance of experiencing health limitation more strongly in urban China than in the United States. This specific finding gives partial support to the collectivistic disadvantage explanation, partly consistent with prior evidence that accessed occupational status can play only a detrimental role for mental health in urban China but a double-edged role in the United States (Song, 2015a). Together with prior comparative studies, this study tentatively suggests that the effect of accessed status may be health outcome-specific. The absence of evidence for social capital theory in urban China may imply that the recent rapid speed of market-oriented economic development and modernization in urban China may have eroded traditionally highly legitimated cultural value of interpersonal dependence or the strength of collectivistic advantage, enlarged the degree of social and economic inequality, or have done both (Gold, Guthrie, & Wank, 2002; Wang, 2008). Considering the lack of evidence for the two cultural explanations (i.e., collectivistic advantage and disadvantage), future research should be more cautious when applying the collectivism-individualism theoretical models. Overall findings here tentatively suggest the embeddedness of the relationship between the meso-level social networks and health within the macro-level social structure (Lin, 2001a). These three institutional forces—collectivistic

advantage, collectivistic disadvantage, and inequality structure—may co-exist but with the last one having the greatest explanatory power. As one of the beginning comparative efforts, this current three-society study contributes to laying the theoretical, methodological, and empirical foundations for future larger-scale national-level comparative data collection and research for the purpose of a fuller and more direct examination of these institutional explanations.

Finally, this study has methodological implications on the measurement of accessed status and health limitation. Consistent with some prior work (Legh-Jones & Moore, 2012; Song, 2015a), results vary by indicator of accessed status. Average reachability is the only significant indicator in Taiwan and predicts negatively health limitation. It is also the only nonsignificant indicator in the other two societies where all the other four indicators are positive predictors of health limitation. These findings tentatively suggest that social capital theory instead of social cost theory may be more applicable to average reachability. Capturing network members' average status, average reachability may be less likely to involve higher-status alters than the other four indicators of accessed status. Higher-status contacts are more likely to trigger negative social comparison, provide unsolicited support, and require more network expenses (Festinger, 1954; Lin, 2001a; Lin & Ao, 2008; Song, 2015b). The inconsistent results on average reachability across the three societies support the inequality structure explanation. The mechanisms for social capital theory may be stronger than those for social cost theory in more egalitarian societies such as Taiwan. Average reachability is a nonsignificant predictor in more unequal societies such as the United States and urban China probably because the mechanisms for the two competing theories—social capital and social cost—may offset each other. Results also vary by the measurement of health limitation. Access status is predictive regardless of the reference group in the measurement of health limitation in the United States. It is predictive in urban China when the reference group

includes people never or seldom experiencing health-related life disruption, and in Taiwan when the reference group includes people never experiencing such disruption. These methodological implications deserve further scrutiny in the future.

As one of the beginning efforts to examine health effects of accessed status across societies, this study has two main data limitations that call for future research. First, this study uses cross-sectional data. Its retrospective measurement of accessed status prior to ego's current or last job allows some confidence in causal inferences but may have recall errors. The positive associations between accessed status and health limitation in the United States and urban China may be spurious due to social selection, for example, due to the possibility that people with health limitations may have to seek out better-off people for support. But such a social selection argument is not justified by findings in Taiwan. Note that the timeframe for the measurement of health limitation is the last twelve months. To permit stronger causal inferences, in supplemental analysis, we exclude respondents who started their current or last occupational positions a year or less than a year ago and find similar results with only two exceptions. One exception is that the marginally significant negative coefficient of upper reachability in Table 6 becomes significant ($p<.05$), which supports social capital theory in Taiwan. The other exception is that the previously significant interaction effect between diversity and the United States (versus Taiwan) in Table 7b became marginally significant ($p<.10$). Furthermore, accessed status is measured through the position generator in this study. Accessed status thus measured is limited to one's access to a list of occupations and cannot directly capture resources (health-related resources in particular) available from social connections. Another network instrument, the resource generator, can directly measure alters' possession of specific assets (e.g., education, health knowledge, and salary) (Van der Gaag & Snijders, 2005).

Future research may collect data on different network instruments and investigate whether the association between accessed status and health varies by network instrument.

Despite its data limitation, this present study is the first effort to investigate the institutional contingency of two competing theories—social capital and social cost—using three institutional explanations: collectivistic advantage, collectivistic disadvantage, and inequality structure. Considering more than twenty-five years of prior systematic work, this study is overdue to systematically theorize the two opposite functions of accessed status across different institutional arrangements. It contributes, theoretically and methodologically, to a more complete framework for the complex roles of accessed status. Whom you know in the status hierarchy may prevent and trigger health limitation, depending on measurement and institutional contexts. Health can be embedded in social networks which are further embedded in institutional structures. Health may depend on not only your own and your network members' status but also the degree of status inequality in your society.

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Table 1. Summary of Theories and Hypotheses on the Relationship between Accessed Status and Health Limitation in the Three Societies

Social Capital Theory (H1)	Negative Effect
Social Cost Theory (H2)	Positive Effect
Collectivistic Advantage Explanation (H3a)	
Social Capital Theory (H1)	Urban China/Taiwan > United States
Social Cost Theory (H2)	Urban China/Taiwan < United States
Collectivistic Disadvantage Explanation (H3b)	
Social Capital Theory (H1)	Urban China/Taiwan < United States
Social Cost Theory (H2)	Urban China/Taiwan > United States
Inequality Structure Explanation (H3c)	
Social Capital Theory (H1)	Taiwan > Urban China/United States
Social Cost Theory (H2)	Taiwan < Urban China/United States

Table 2. Summary of Sample Characteristics

	United States (N=2,830)		Urban China (N=3,390)		Taiwan (N=3,071)	
	Mean/ Percent	SD	Mean/ Percent	SD	Mean/ Percent	SD
Dependent Variable						
Health Limitation						
Frequently	11.17%		2.15%		2.74%	
Occasionally	12.47%		7.82%		7.49%	
Seldom	30.92%		17.79%		11.53%	
Never	45.44%		72.24%		78.25%	
Control Variables						
Age	41.47	10.51	39.29	10.30	40.80	11.60
Gender (1=Female)	54.41%		50.41%		47.74%	
Race/Ethnicity						
White	70.0%		--		--	
Black	11.87%		--		--	
Latino	12.44%		--		--	
Other Race/Ethnicity	5.69%		--		--	
Quota	42.58		--		--	
Marital Status (1=Married)	64.13%		82.89%		69.32%	
Political Capital (1=Communist Party Member)	--		22.25%		--	
Education						
Middle School or Less	4.36%		29.07%		28.33%	
High School Diploma	34.16%		25.20%		31.75%	
Associate Degree	20.79%		26.48%		18.82%	
College Degree or Above	40.70%		19.25%		21.03%	
Employment Status (1=Full-Time Employed)	77.88%		77.49%		74.41%	
Work Units (Current/Last Job) (1=State)	--		53.29%		--	
Occupational Status (ISEI) (Current/Last Job)	50.89	16.39	47.33	14.65	42.67	14.16
Annual Family Income (Median Range)	50,000-		20,000-		60,000-	
(US Dollars/Chinese Yuan/New Taiwan Dollar)	59,999		24,999		70,000	

Notes: ISEI=Standard International Socio-Economic Index (Ganzeboom et al., 1992).

Table 3. Distribution of Occupational Positions in the Position Generator, and Accessed Occupational Status

Position (ISEI)	Respondent Accessing (Percent)		
	United States (N=2,830)	Urban China (N=3,390)	Taiwan (N=3,071)
Lawyer (85)	54.17	22.63	15.34
Professor (78)	39.43	18.85	23.90
Middle School Teacher (71)	47.21	64.93	43.47
CEO (69)	21.06	24.51	23.84
Production Manager (67)	22.12	26.96	26.70
Personnel Manager (67)	35.87	34.87	46.01
Writer (66)	20.85	7.20	5.67
Computer Programmer (64)	44.28	15.28	31.49
Administrative Assistant (58)	34.91	15.40	29.24
Bookkeeper (56)	34.52	56.96	50.86
Policeman (53)	48.13	40.03	36.01
Receptionist (51)	49.54	13.69	26.83
Nurse (42)	63.43	45.37	38.75
Security Guard (35)	28.45	30.97	37.25
Operator in A Factory (34)	31.66	37.73	52.49
Taxi Driver (33)	9.93	34.16	29.70
Hairdresser (32)	60.04	25.66	47.09
Farmers (26)	43.60		
Janitor (26)	32.83	20.86	29.14
Housemaid/Babysitter (24)	31.27	13.48	25.11
Peasants (16)		70.86	61.09
Accessed Occupational Status			
Diversity***			
Mean (S.D.)	7.53 (4.32)	6.20 (4.11)	6.78 (4.71)
Upper Reachability***			
Mean (S.D.)	75.76 (13.64)	69.28 (15.76)	64.52 (18.63)
Extensity***			

Mean (S.D.)	45.63 (17.83)	46.73 (20.13)	41.44 (21.38)
Average Reachability***			
Mean (S.D.)	51.72 (8.62)	47.12 (10.48)	44.48 (11.54)
Number of Higher-ISEI Accessed Occupations***			
Mean (S.D.)	3.82 (3.09)	3.18 (2.79)	4.59 (3.36)

Note: ISEI=Standard International Socio-Economic Index (Ganzeboom et al., 1992); mean comparisons (****p*<.001).

Table 4. Odds Ratios from Logistic Regression of Health Limitation on Accessed Occupational Status in the United States (N=2,830)

	Model 1	Model 2	Model 3	Model 4	Model 5
Frequently/Occasionally vs. Seldom/Never					
Accessed Occupational Status					
Diversity	1.034** (1.012-1.057)				
Upper Reachability		1.008* (1.001-1.015)			
Extensity			1.006* (1.000-1.011)		
Average Reachability				1.004 (0.993-1.015)	
Number of Higher-ISEI Accessed Occupations					1.037* (1.007-1.068)
Pseudo R-Squared	.060	.059	.058	.057	.059
Frequently/Occasionally/Seldom vs. Never					
Accessed Occupational Status					
Diversity	1.030** (1.011-1.049)				
Upper Reachability		1.007* (1.001-1.013)			
Extensity			1.007** (1.002-1.011)		
Average Reachability				1.000 (0.991-1.010)	
Number of Higher-ISEI Accessed Occupations					1.034* (1.007-1.061)
Pseudo R-Squared	.041	.040	.041	.039	.040

Notes: Control variables adjusted; ISEI=Standard International Socio-Economic Index (Ganzeboom et al., 1992); 95% confidence intervals in parentheses; †$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Odds Ratios from Logistic Regression of Health Limitation (Frequently/Occasionally vs. Seldom/Never) on Accessed Occupational Status in Urban China (N=3,390)

	Model 1	Model 2	Model 3	Model 4	Model 5
Accessed Occupational Status					
Diversity	1.051*** (1.022-1.081)				
Upper Reachability		1.016*** (1.007-1.024)			
Extensity			1.010** (1.004-1.017)		
Average Reachability				1.011† (1.000-1.023)	
Number of Higher-ISEI Accessed Occupations					1.061** (1.019-1.105)
Pseudo R-Squared	.039	.040	.038	.035	.037

Notes: Control variables adjusted; ISEI=Standard International Socio-Economic Index (Ganzeboom et al., 1992); 95% confidence intervals in parentheses; †$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 6. Odds Ratios from Logistic Regression of Health Limitation (Frequently/Occasionally/Seldom vs. Never) on Accessed Occupational Status in Taiwan (N=3,071)

	Model 1	Model 2	Model 3	Model 4	Model 5
Accessed Occupational Status					
Diversity	1.005 (0.985-1.026)				
Upper Reachability		0.995† (0.990-1.000)			
Extensity			0.998 (0.993-1.002)		
Average Reachability				0.990* (0.981-0.999)	
Number of Higher-ISEI Accessed Occupations					1.007 (0.979-1.036)
Pseudo R-Squared	.030	.031	.030	.031	.030

Notes: Control variables adjusted; ISEI=Standard International Socio-Economic Index (Ganzeboom et al., 1992); 95% confidence intervals in parentheses; †$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7a. Coefficients from Logistic Regression of Health Limitation (Frequently/Occasionally vs. Seldom/Never) on Accessed Occupational Status and Interaction Terms in Three Societies (N=9,291)

	Reference: Taiwan				
	Model 1	Model 2	Model 3	Model 4	Model 5
Accessed Occupational Status					
Diversity	0.987				
	(0.961-1.015)				
Diversity * United States	1.044*				
	(1.009-1.080)				
Diversity * Urban China	1.074***				
	(1.034-1.115)				
Upper Reachability		0.994*			
		(0.988-1.000)			
Upper Reachability * United States		1.013**			
		(1.004-1.022)			
Upper Reachability * Urban China		1.024***			
		(1.014-1.034)			
Extensity			0.995		
			(0.990-1.001)		
Extensity * United States			1.009*		
			(1.002-1.017)		
Extensity * Urban China			1.016***		
			(1.008-1.024)		
Average Reachability				0.987*	
				(0.977-0.998)	
Average Reachability * United States				1.013†	
				(0.998-1.028)	
Average Reachability * Urban China				1.028***	
				(1.013-1.043)	
Number of Higher-ISEI Accessed Occupations					0.977
					(0.938-1.017)
Number of Higher-ISEI Accessed Occupations * USA					1.057*
					(1.006-1.110)
Number of Higher-ISEI Accessed Occupations * Urban China					1.092**
					(1.033-1.155)
Pseudo R-Squared	.084	.083	.082	.082	.086

Notes: Control variables shared by all three societies were adjusted; ISEI=Standard International Socio-Economic Index (Ganzeboom et al., 1992); 95% confidence intervals in parentheses; †$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 7b. Coefficients from Logistic Regression of Health Limitation (Frequently/Occasionally/Seldom vs. Never) on Accessed Occupational Status and Interaction Terms in Three Societies (N=9,291)

	Reference: Taiwan				
	Model 1	Model 2	Model 3	Model 4	Model 5
Accessed Occupational Status					
Diversity	0.998				
	(0.979-1.018)				
Diversity * United States	1.029*				
	(1.002-1.056)				
Diversity * Urban China	1.022				
	(0.995-1.049)				
Upper Reachability		0.994*			
		(0.990-0.999)			
Upper Reachability * United States		1.011**			
		(1.003-1.018)			
Upper Reachability * Urban China		1.012***			
		(1.005-1.018)			
Extensity			0.997		
			(0.993-1.001)		
Extensity * United States			1.009**		
			(1.004-1.015)		
Extensity * Urban China			1.005†		
			(1.000-1.011)		
Average Reachability				0.988**	
				(0.981-0.996)	
Average Reachability * United States				1.008	
				(0.996-1.020)	
Average Reachability * Urban China				1.017**	
				(1.007-1.028)	
Number of Higher-ISEI Accessed Occupations					1.001
					(0.974-1.030)
Number of Higher-ISEI Accessed Occupations * USA					1.027
					(0.989-1.066)
Number of Higher-ISEI Accessed Occupations * Urban China					1.019
					(0.980-1.060)
Pseudo R-Squared	.084	.083	.082	.082	.086

Notes: Control variables shared by all three societies were adjusted; ISEI=Standard International Socio-Economic Index (Ganzeboom et al., 1992); 95% confidence intervals in parentheses; †$p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1. The Conceptual Model of Accessed Status, Institutions, and Health

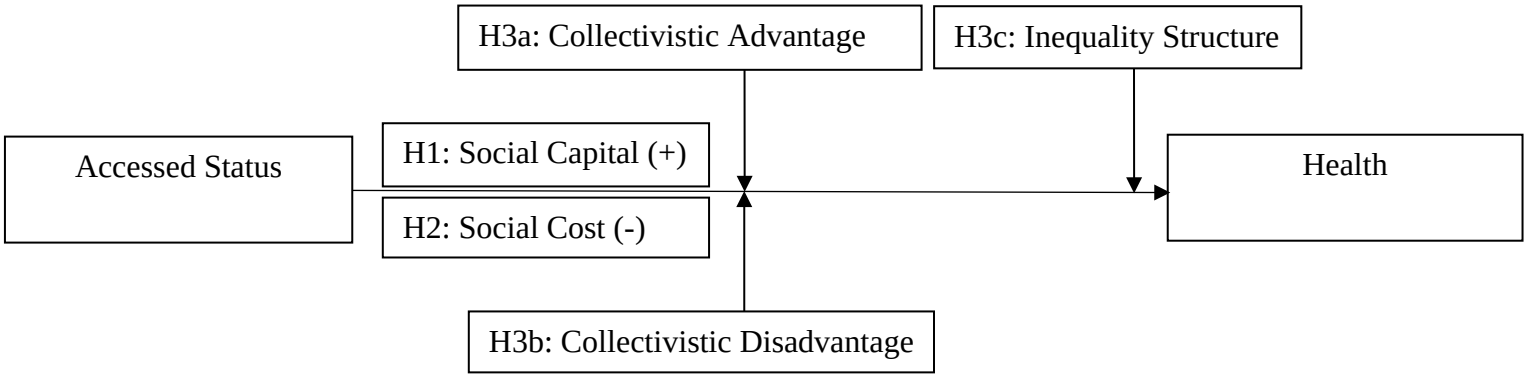

Figure 2. Predicted Probabilities of Health Limitation (Frequently/Occasionally vs. Seldom/Never) in the Three Societies (see Table 7a)

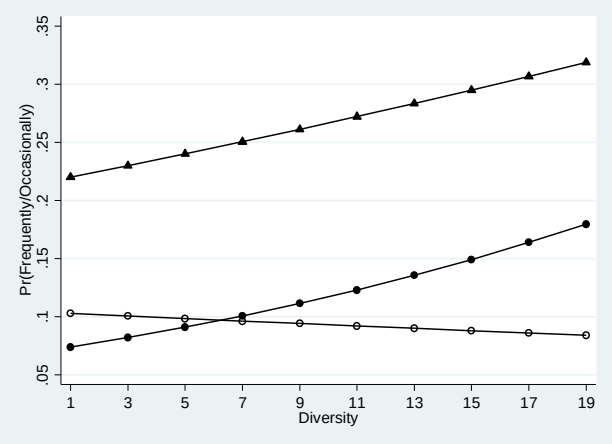

Figure 2A

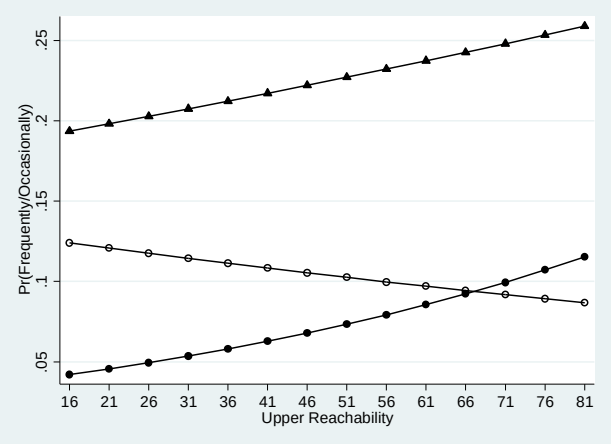

Figure 2B

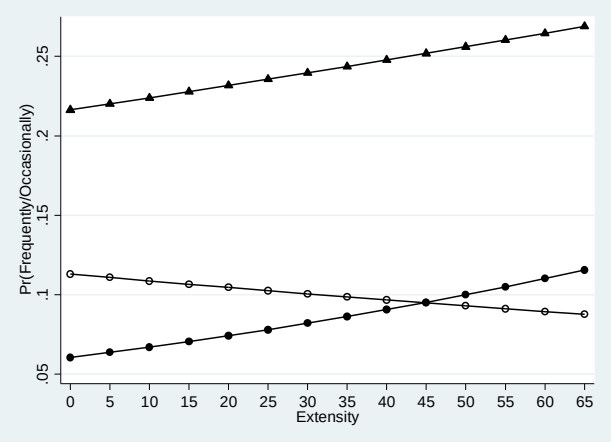

Figure 2C

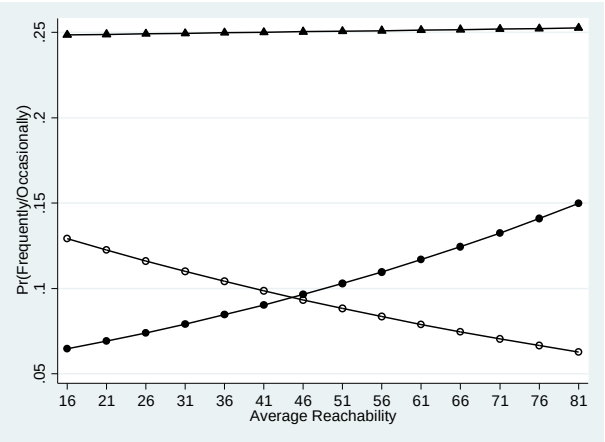

Figure 2D

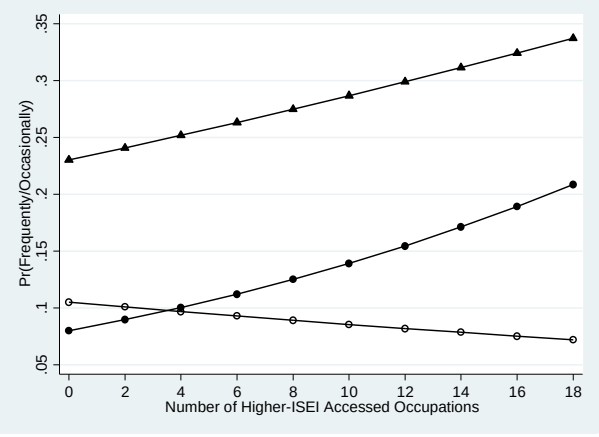

Figure 2E

United States Urban China Taiwan