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## What Constrains PWDs to Participate in Discount Privileges? The Case of Bus Fare and Medical Care Discounts in the Philippines

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Philippine Institute for Development Studies  
*Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas*

What Constrains PWDs to Participate  
in Discount Privileges? The Case of Bus Fare  
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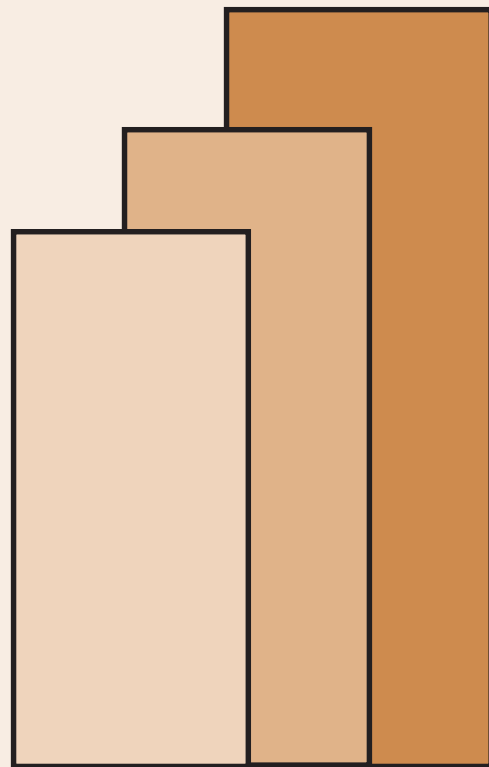
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**What constrains persons with disability to participate in discount privileges?  
The case of bus fare and medical care discounts in the Philippines**

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**Abstract**

The Philippines is at par with developed economies in terms of creating and passing laws that protect and uphold the rights of and mainstream persons with disability (PWD) into the society. However, pioneering surveys on the condition of PWDs reveal that they rarely take advantage of the privileges provided for by the law because of various constraints they face, and the lack of implementation and enforcement of these laws among others. An empirical analysis of the participation of PWDs in discount privileges shows that lack of awareness is a major problem and that many PWDs have not been issued proof of identification for them to be eligible to avail of these privileges. These aspects are more problematic in relatively poorer localities than in more affluent ones. Moreover, despite awareness and possession of identification, many PWDs are not able to participate given their special circumstances; many of them have low self-esteem, are unemployed and immobile.

Keywords: PWD, disability, Bivariate Probit, participation, biprobit, discount privileges  
JEL classification: D01, D03, C31, J14

# **What constrains persons with disability to participate in discount privileges? The case of bus fare and medical care discounts in the Philippines<sup>1</sup>**

**Aubrey Duldulao-Tabuga<sup>2</sup>**

## **1. Introduction and motivation**

Despite the many legislations protecting and upholding the rights of persons with disability (PWD) and other initiatives to mainstream them in the society, the PWDs remain a marginalized sector. The first law concerning PWDs dates as far back as 1954 when RA 1179 which provides for the promotion of vocational rehabilitation of the blind and other handicapped persons and their return to civil employment was enacted. There are at least 9 Republic Acts which have been enacted following RA 1179. Pioneering surveys on the condition of PWDs found that there is low awareness among PWDs on the laws and other initiatives of the government and various stakeholders aimed at improving their conditions. Worse, even with awareness, the PWDs rarely take advantage of the opportunities provided for by the law because of various constraints they face. This warrants the necessity to look into the participation of PWDs in various activities and programs.

There is very rare literature in examining the participation of PWDs in various activities and programs. Lamoureux, Hassell, and Keeffe (2004) studied the determinants of participation in activities of daily living by people with impaired vision. The study found that distance visual acuity, physical health, and mental health explain a large part of the variation in the participation of people with impaired vision in daily living activities. Therefore, interventions aimed at improving the lives of the visually impaired may include approaches to improve not just in terms of vision-related rehabilitation but also mental and physical health.

Alma, Van Der Mei, Melis-Dankers, Van Tilburg, Groothoff, and Suurmeijer (2011) studied the participation of visually-impaired (VI) elderly persons. They noted that VI elderly persons are doubly burdened by aging and loss of vision. The study reported that the VI elderly persons do participate in society, but they do less than their peers in some domains namely household and sports activities, and on recreational places. Alma (2012) found that a major determinant of participation among VI elderly persons is perceived importance. The study likewise noted that physical health, social and psychological status, also affects participation. Future studies should look into how environmental factors contribute to variance in participation and loneliness among VI elderly persons (Alma, 2012).

A 2004 survey by Ireland's National Disability Authority points that what restricts social participation of people with disability is more about accessibility problems rather than health issues. Hence, their social lives are more concentrated in their own homes rather than outside. Others have studied the participation of PWDs in physical activities such as that by

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<sup>1</sup> Revised and updated version of the 2011 PIDS Discussion Paper

<sup>2</sup> Research Associate, PIDS. The author acknowledges the excellent assistance provided by Ronina Asis of PIDS; and invaluable comments from Tatsufumi Yamagata of the IDE, JETRO and other participants in the 2010 Conference of the East Asian Economic Association, held in Seoul, Korea; and Celia M. Reyes of PIDS. The usual disclaimer applies.

Rimmer, Riley, Wang, Rauworth, and Jurkowski (2004). This study found a multitude of factors acting as barriers or facilitators of participation. They identified themes affecting participation - (1) those relating to the built and natural environment; (2) economic issues; (3) emotional and psychological barriers; (4) equipment barriers; (5) barriers related to the use and interpretation of guidelines, codes, regulations, and laws; (6) information-related barriers; (7) professional knowledge, education, and training issues; (8) perceptions and attitudes of non-PWD, including professionals; (9) policies and procedures both at the facility and community level; and (10) availability of resources.

The study by Heckman and Smith (2003), although doesn't concern persons with disability, examined the determinants of participation in a social program by decomposing participation into eligibility, awareness, application, acceptance and enrolment. The results show that personal choices significantly influence participation while awareness of being eligible in the program is a major source of disparity in participation.

One key factor that influences participation and the general outlook of PWDs in general is societal attitude. Enns (n.d.) noted that societal attitudes reinforce passivity and dependence among disabled people. These attitudes are classified into medical and religious. The medical model views that PWD are sick patients to need to spend the rest of their lives getting well. This attitude treats the PWD as a child relieving him/her of many adult responsibilities. Therefore full participation in many activities are either denied or discouraged on the so called patients. The religious model meanwhile views PWD as people who committed some sin in the past. Sometimes, the disability is seen as caused by a sin committed by the family. Thus the PWD are expected to beg and helping the beggar is believed as an act to avoid punishment in the afterlife. These attitudes limit the PWD in participating fully in the mainstream society. In many cases, because of the limiting societal attitudes and other environmental factors such as inadequate facilities and infrastructure to cater to the needs of PWD, a disabled person chooses to shut himself out from the mainstream society.

The low awareness and consequently participation of PWDs in community affairs reflects the complex set of societal and environmental constraints that they face in their life. The abovementioned studies apply to PWD populations in developed countries. This paper analyzes these factors in the case of PWD's participation in discount privileges mandated in the law with application to population in a developing country. The objective of this chapter is to elucidate on factors that affect policy awareness and participation among PWDs in a developing country setting by using survey data on PWDs in the Philippines.

## **2. Conceptual framework**

For a PWD to participate in a certain discount privilege, he must first be aware of it and has the need for the service, say, transportation to go to work or school, or to self-help organizations. There must be willingness on his part to assert his/her right to this privilege depending on the perceived costs and expected benefits (Heckman and Smith, 2003, p.7). At the same time, he needs to be eligible to avail the discount hence has the appropriate identification to prove his entitlement. Meanwhile, the service provider, in this instance, the

bus operator through the driver, should be aware of this privilege and is willing to comply. All these requirements have to be met for a PWD to successfully be granted the discount.

Various factors affect each stage of these processes. Awareness depends on efforts by the government and other stakeholders to disseminate information, the needs of the prospective participant and access to social networks who might have knowledge about the discount privileges (Heckman and Smith, 2003, p.7). The need for the service depends upon the PWD characteristics, if he/she is considered mobile, hence the need for transportation in which he/she can avail of the discount, or if the risk for sickness is high, justifying the need for medical care for him/her to have a reason to avail of the medical discount. The assertiveness of the PWD to avail of the discount may be a function of characteristics such as level of education and general well-being (more affluent and hence powerful families would be more assertive than the poor income families).

The provision of ID meanwhile is determined by the efficiency of the local government through the Municipal/City Social Welfare Office and the national government through the National Council for Disability Affairs (NCDA) in providing ID cards for PWD. It is also affected by the initiative of the local volunteers, acting as conduit, to expedite this process because they are being utilized to disseminate information related to this as well as collect the application forms for the ID from the PWDs. The awareness of service providers is determined by the effectiveness of policy enforcement in all levels of the government and various stakeholders.

### 3. Methodology

To analyze the factors that tend to prevent PWDs from fully benefiting from the programs and privileges, an empirical analysis of the different aspects of the participation process is necessary. We have seen that the prerequisites for participation are awareness and eligibility. At the same time, other factors like the need and circumstance of the PWD, and the ability to assert his/her right also affect the likelihood to avail or participate. The awareness, eligibility, and participation are therefore analyzed to draw useful insights on which particular aspects efforts should be prioritized on in terms of assisting the PWDs.

The structure of the econometric equation to estimate the PWD's likelihood to participate in a discount privilege is as follows:

$$\Pr(A = 1|X) = \alpha + \sum_{k=0}^n X\beta + \varepsilon$$

where the probability of availing or participating,  $\Pr(A=1|X)$ , is conditional on a vector of individual, household, and community/location characteristics  $X$ . We are interested on the parameters  $\beta$  for each explanatory variable.

The equation is estimated using Probit regression or in the event that there is an endogenous explanatory variable, Bivariate Probit. This are estimated using maximum likelihood which computes coefficients by finding the estimates that maximizes the chance

one would see the values that actually occurred in the sample. The Probit model is used because it works best for large sample sizes, often in the hundred (Halcouis, 2005). This analysis uses a total of 500 observations from the pooled datasets of urban and rural surveys conducted to gather personal and household information of PWD respondents.<sup>3</sup> Pooling the datasets, instead of doing the estimation each for the rounds of the survey, will provide greater degree of freedom since there are very few events of availment particularly in the rural survey.

The estimations for the likelihood to be aware and be eligible (that is, having an ID) were also done where personal, and household characteristics, and community/governance factors were analyzed. The estimations for awareness and eligibility are estimated simultaneously using Bivariate Probit model (in Stata, the command used is *biprobit*) simply because the factors that determine awareness such as governance factors like the ability of the community volunteers to disseminate information may be the same which affects the likelihood that a PWD gains an ID because this is strongly affected by the government's ability to fast track issuance of the needed ID. The correlation coefficient between being aware and having an ID is 0.5870 which means that the 2 variables (and the errors) are correlated with each other.

Meanwhile, participation is estimated separately under the assumption that participation is, in the case of an ordinary PWD, strongly a function of the need for the services. A PWD who does not have any reason to go out, like work or a self-help group gathering, does not need transportation discount. One who is not sick or does not have the resources at all for a medical or dental check-up will not have the opportunity to avail of a discount in a medical/dental facility. One who has a low self-esteem who believes that the disability is a constraint for not being able to participate in the community will lose the opportunities provided for in the discount privileges. In the participation estimation, the predicted probability of being both aware and eligible will be incorporated.

The empirical analysis is quite straightforward and aims to draw intuitive understanding of what motivates or conversely, constraints PWD to participate in the discount privileges intended for them. Table 1 provides the summary statistics of the dependent variables and explanatory variables. One of the dependent variables is whether the PWD have ever availed of the discount privilege or not. Because of a very small number of events where the PWDs avail of various discounts as mentioned earlier, this paper analyzed only that for land transportation fare discounts and discount on medical services in public or private medical facilities. For the awareness model, the dependent variable is whether the PWD is aware or not, and for the eligibility analysis, whether the PWD has a PWD ID or not. To some extent, there are variables which will be used in estimating all 3 models.

This paper analyzes the personal characteristics of the individual PWD, their household characteristics, and several location/governance variables to determine likelihood to be aware, eligible and eventually to participate. General characteristics like sex, age, educational attainment and impairment type of the PWD respondents are important factors

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<sup>3</sup> For the complete details on how the surveys were carried out, see Yap, et. al.(2009) and Reyes, et. al. (2011).

that help explain preferences and circumstances. Governance factors, likewise, are critical in determining awareness and eligibility particularly of PWDs who have limited access to information because of their special circumstances.

Women PWD are assumed to participate less because their situation is double jeopardy. They are both disabled and women (Enns, n.d.). Older people may tend to participate less, not only because of the physical constraints (older people may tend to be less mobile and hence not have the chance to avail of the discounts) but also for the fact that they may already be enjoying the discount privileges for the elderly and hence no longer qualified to avail of the PWD discounts. Education may turn positive or negative. Educated people may be more aware of the policies and have higher bargaining power therefore are able to participate more. At the same time, more educated persons may no longer opt to avail of the discounts because they may have higher paying jobs/businesses and can very well afford to pay.

Meanwhile, the type of impairment controls for the fact that the survey included varying types of impairment with varying levels of functioning and abilities. The mobility impaired would be expected to participate less because of physical constraints of moving from one place to another. In addition, the discount on fares does not cover taxi cabs which are believed to be used more frequently by the mobility impaired because they, particularly those in wheelchair and crutches, could hardly get on a bus where there is a mandated fare discount. However, the mobility-impaired may be expected to be less constrained relative to the visually impaired and those with multiple impairments. The hearing impaired meanwhile would normally participate more, especially in the transport fare discount, because of the fact that they can still see and walk and move around places. The blind may have a better mobility than one who is in a wheelchair with the help of a personal assistant. The type of impairment may also be a proxy for the health risk that a PWD faces. Because there might not be enough degree of freedom if all the impairment types are included in the model, only the mobility impairment was included because this impairment is sometimes associated with other diseases like diabetes, stroke, and polio among others which may cause the PWD to visit the medical facility more often than the non-mobility impaired ones.

The general circumstance of the PWD is also taken into account. The likelihood to avail, say the bus fare discount, depends upon whether the person uses public transportation or not. This may be proxied by having an income-generating job where the person would have the need to go from one place to another, say from home to place of work or from home to the market if the person has a buy and sell or *sari-sari* store business.

The location/governance factors such as efficiency of the local government social welfare office on advocacy and information dissemination, manpower resources (e.g. number of social workers in the city, and the presence or number of barangay health workers (BHW) assigned in the villages), the private sector's level of awareness, and levels of enforcement have all been lumped together and appear in the model as location dummies. Being in Makati, and also Quezon City, may positively motivate participation in the sense that these two are relatively more progressive cities which may have better advocacy campaigns and information dissemination initiatives, not only on the part of the PWDs but the general public especially the establishments and facilities providing the services. But



then, those in poorer cities may avail more of the discounts because they are aiming to save some money.

#### **4. Findings from the 2008 and 2010 surveys**

This analysis used the cross-sectional data from the PWD survey conducted in the urban areas by PIDS and IDE in August, 2008 and by PIDS and the University of Tokyo in the rural areas in November 2010. The urban cities covered in this pioneering survey were chosen to represent the heterogeneous population of Metro Manila. Makati City and Quezon City represented the relatively richer segments while Pasay and Valenzuela represented those at the lower classes. For the rural areas, the survey was conducted in Rosario, Batangas. The surveys targeted only to the types of impairment – visual, mobility, and hearing with several cases of multiple impairments. Because the focus was on independent living and livelihoods, other types such as mental and psychological disability were not specifically targeted in the survey.

In the 2008 survey on PWDs in Metro Manila, 403 respondents aged 15 and above were interviewed. Of this total, 249 were male while 154 were female. The three (3) types of impairment targeted by the survey were the mobility-impaired (31%), visually-impaired (35%), and hearing-impaired (26.3). There were also several cases (8%) where the impairment was multiple in nature, meaning having two or more of the three types mentioned or having other additional impairments such as mental/cognitive and speech disability.<sup>4</sup>

In the 2010 survey representing the rural areas which was conducted in Rosario, Batangas, there were a total of 106 respondents. There was an equal distribution of the respondents by sex. The survey likewise included three main types of impairment – mobility (29%), visual (24%), and hearing (30%). Some respondents happened to have other impairments aside from these types and they comprise 17 percent of the total sample.

The Republic Act No. 9442, or the act that amends the Magna Carta for Disabled Persons, stipulates that Filipinos with disability, upon the submission of an identification card, be given a discount not lower than 20 percent for their exclusive use of enjoyment of the following: 1) hotels and similar lodging establishments; restaurants and recreation centers; 2) theaters, cinema houses, concert halls, circuses, carnivals and other similar places of culture, leisure and amusement; 3) medicines in all drugstores; 4) medical and dental services including diagnostic and laboratory fees such as, but not limited to, x-rays, computerized tomography scans and blood tests, in all government facilities subject to guidelines of Department of Health (DOH), in coordination with the Philippine Health Insurance Corporation (PHILHEALTH); 5) medical and dental services including diagnostic and laboratory fees, and professional fees of attending doctors in all private hospitals and medical facilities, in accordance with the rules and regulations to be issued by the DOH, in coordination with the PHILHEALTH; 6) domestic air and sea travel; and 7) public railways, skyways and bus fare. The establishments providing the services/goods may claim the discounts they have granted to qualified PWDs as tax credits. The establishments or facilities providing medical and dental services however cannot make these claims.

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<sup>4</sup> For more details on the methodology of both the rural and the urban surveys, see Yap, et.al. (2009) and Reyes, et. al. (2011).

Based on the 2008 and 2010 surveys, participation in these discount privileges by PWD is low. In the two rounds of survey conducted, it was found that 34 percent of those included in the Metro Manila Survey were able to avail of the land transportation discount while only 10 percent did for the medical discount (whether in the public or private medical/dental facilities). The rural condition was far more disappointing with only 6 percent and 3 percent of the respondents have ever availed the transportation and medical discounts, respectively. The rates of participation in other discount privileges were likewise very low. Only about 8 percent of the urban respondents were able to avail at least once the discount program on services in hotels and restaurants, while only 6 percent of those in the rural were. The discount privilege in admission fees in cinema houses and similar venues, and fare in air travel were enjoyed so far only by the urban interviewees (see Table 1). In this paper, the participation of the PWD respondents in the transport and medical discounts are the ones empirically analyzed.

| Discount privilege           | Urban | Rural |
|------------------------------|-------|-------|
| Hotel and restaurants        | 7.7   | 5.7   |
| Cinema and others            | 14.4  | 0.0   |
| Medical and dental (public)  | 9.2   | 2.8   |
| Medical and dental (private) | 9.7   | 1.9   |
| Air travel                   | 6.5   | 0.0   |
| Land transportation          | 34.2  | 5.7   |

The surveys reveal as well that about 38 percent of all the respondents have an ID which they can present to avail of the discount privileges. These IDs were obtained from then NCWDP, now NCDA, the present NCDA, or the local government unit's social welfare office. Among the target areas, Makati has the highest proportion of those who already possess PWD ID with 86 percent. The rural target area Rosario has the lowest proportion than any of the urban areas with only 8 percent. Among the urban areas, Pasay has the lowest coverage in terms of distributing ID based on the survey with only 24 percent, followed by Quezon City with 26 percent. Valenzuela has relatively higher rate with 32 percent but still is way lower than that for Makati.

| Location/Area     | Male | Female | Total | % to total respondents |
|-------------------|------|--------|-------|------------------------|
| Makati            | 65   | 43     | 108   | 86.4                   |
| Quezon City       | 18   | 14     | 32    | 26.2                   |
| Pasay             | 12   | 8      | 20    | 23.8                   |
| Valenzuela        | 14   | 9      | 23    | 31.9                   |
| Rosario, Batangas | 5    | 4      | 9     | 8.5                    |
| Total             | 114  | 78     | 192   | 37.7                   |

\*Obtained from then NCWDP, now known as NCDA, or the local government Social Welfare Office

In terms of awareness, there exists likewise a significant gap among PWDs in the different target areas. While 9 in 10 respondents in Makati already have certain knowledge of the policies, only 4 in 10 are in Pasay, and 3 in Rosario, Batangas. Quezon City meanwhile has relatively higher awareness with 65 percent of its respondents being aware. Valenzuela, too, has a better awareness rate of 61 percent.

| Location/Area     | Male | Female | Total | % to total respondents |
|-------------------|------|--------|-------|------------------------|
| Makati            | 67   | 46     | 113   | 90.4                   |
| Quezon City       | 49   | 30     | 79    | 64.8                   |
| Pasay             | 22   | 14     | 36    | 42.9                   |
| Valenzuela        | 27   | 17     | 44    | 61.1                   |
| Rosario, Batangas | 18   | 13     | 31    | 29.2                   |
| Total             | 183  | 120    | 303   | 59.5                   |

## 5. The role of governments

To see at what particular aspects is there a need for more concerted efforts in the goal to assist the PWDs particularly in their participation to various discount programs, and other activities of relatively the same nature, the rates of awareness, eligibility, participation and rejection to avail discount were calculated for each of the five (5) survey areas – Makati, Quezon City, Pasay, Valenzuela and Municipality of Rosario in Batangas.

There is an urgent need to heighten awareness among PWDs, their families, and the public in general the different laws on disability, their provisions, in the rural areas particularly because the rate of awareness in the rural survey (that is, Rosario, Batangas) was the lowest among the areas at only 29 percent, compared to say 90 percent for Makati City. The rate of rejection was also highest for the rural areas (that is - 56% of the respondents who are aware and eligible for the discount has experienced rejection by the establishments/facilities providing the needed services).

Among the urban cities, Pasay City needs to boost up its awareness campaigns to the public especially the PWDs and their families because only 43 percent of its respondents have reported being aware of the laws or any of their provisions. Likewise, it has the highest rate of rejection, at 30 percent, among all the urban cities included in the survey.

The municipality of Rosario also needs to fast track issuance of the ID for PWDs as the results show that among the areas, it has the lowest proportion of those with ID at only 29 percent. Quezon City also needs to accelerate issuance of PWD ID because it is lagging behind the other cities as there are only 40 percent of the respondents in the area who have ID so far.

It is noteworthy that there is no significant variation in terms of participation among those who are aware and eligible (see 6<sup>th</sup> column in Table 4). The participation rate for Rosario, 78 percent is comparable to Makati's 76 percent. Pasay City has the highest participation rate at 85 percent while Valenzuela has the lowest at 61 percent. The situation is very different if one looks at the participation rate without controlling for awareness and participation (see column 2 in same table). The rate for Makati, 66 percent, would be much higher than Rosario's 7 percent.

| Area              | Participation in any discount privilege, as % of total sample | Being rejected to participate, % of total sample | Rate/incidence of |  |  |  |
|-------------------|---|--|-------------------|--|--|--|
|                   |   |  | Awareness         | Eligibility (conditional on awareness) | Participation in any discount privilege (conditional on awareness and eligibility) | Being rejected to participate (conditional on awareness and eligibility) |
| Makati            | 65.6  | 9.6  | 90.40             | 95.58                                  | 75.93  | 11.1   |
| Quezon City       | 19.7  | 4.9  | 64.75             | 40.51                                  | 75.00  | 18.8   |
| Pasay City        | 20.2  | 7.1  | 42.86             | 55.56                                  | 85.00  | 30.0   |
| Valenzuela City   | 19.4  | 4.2  | 61.11             | 52.27                                  | 60.87  | 13.0   |
| Rosario, Batangas | 6.6   | 4.7  | 29.25             | 29.03                                  | 77.78  | 55.6   |
| All               | 28.3  | 6.3  | 59.53             | 63.37                                  | 75.00  | 16.7   |

These findings lead us to draw useful policy insights that PWDs have the tendency to participate given awareness and eligibility. The main bottlenecks therefore concern the ability of national and local governments in disseminating information to the public especially the PWDs, their families and concerned establishments; and the speedy issuance of ID to PWDs so that they can take advantage of the discounts mandated by the law.

## 6. Empirical Results and Discussion

### Awareness and eligibility

Awareness and eligibility were analyzed using Bivariate Probit regression because factors that affect awareness may be the same ones that determine eligibility. Hence, the probability of one may be dependent on the probability of the other. The regression result shows that indeed the two equations are not independent with one another. The variables in one part have an influence on the other part. The null hypothesis that these two are independent (that is  $\rho=0$ ) was rejected as shown by the Likelihood ratio test being highly significant (see Table A in the Annexes).

Age, educational attainment, and income significantly influence awareness based on the biprobit regression results shown. Possession of identification is also influenced by age, educational attainment, and type of impairment. The estimations have shown that sex did not matter in the awareness and eligibility of PWD. Some of the locality dummies which

represent governance and awareness level of the public in general in those areas have also been significant in the probability of being aware and eligible. Meanwhile, being a member in an organization positively influences probability of seeing positive outcome in both regressions.

The effect of age as one gets older in the likelihood of being aware and eligible increases but later declines when the PWD becomes very old. This is understandable especially for obtaining the ID because the elderly, being senior citizens, already have the entitlement to receive discounts by way of their being senior citizens. Therefore, there is not much incentive to obtain the PWD ID when they already have the ID as senior citizens. There is however a policy implication of such result. Ageing disabled persons are doubly vulnerable and if programs and other initiatives fail to include them, their dire situation could worsen. A close coordination between local focal persons for elderly and disabled is therefore necessary.

Education is a significant determinant of both awareness and eligibility holding other factors constant. Being able to obtain higher level of education signals the person's ability and perseverance to assert himself/herself in matters that improve one's welfare. Education is imperative in every aspect of the life of PWDs especially that capabilities become more crucial in the presence of a disability. The importance of education is discussed in more details in the chapter by Celia Reyes.

The welfare status of the PWD's family also makes a difference in estimating awareness but not in getting issued an ID, even after controlling for the educational attainment. This means that for two PWDs with the same education background but where one is more affluent than the other, the more affluent one has a higher likelihood to become aware. If PWD members in poor households are less likely to get informed, the cycle of poverty leading to disability and vice versa would persist. Efforts therefore to target poor households with PWD members in government programs and other initiatives is highly commendable to get out of the poverty trap.

Meanwhile, the mobility impaired person's probability to be aware about the policies do not differ significantly from the rest of the PWDs. However, mobility-impaired persons are less likely to be issued an ID as PWD. This attests to the high importance of implementing and enforcing the Accessibility Law in the country not only for the benefit of the mobility disabled but for all users of wheelchair, strollers, and the like such as elderly and infants. In the rural areas, expediting improvement of the rural physical infrastructure is not only beneficial to all the constituents in general but doubly beneficial for PWDs.

PWDs living in Makati and Valenzuela have significantly higher probability of being aware than those in the rural areas (i.e. Rosario, Batangas) which is the reference dummy. In particular, a PWD in Makati would be 63 percent more likely to be aware compared to one who is in Batangas (see marginal effects after *biprobit* in Table B). In terms of possession of ID, those in Makati and Valenzuela also have higher chances than those in Rosario. Meanwhile, those in Quezon City and Pasay do not have a likelihood that is significantly different from those in Rosario for both awareness and possession of ID.

Membership in an organization whether it is a self-help, religious, or other types of organization, represents the extent of social networks that a PWD has. It is shown to be positively and significantly associated to the likelihood to be aware and eligible. In fact, a member is 36 percent more likely to be aware given eligibility than a non-member, holding other factors constant.

#### Participation in the land transportation fare discount

In the Probit estimation for the likelihood to participate, the predicted joint probability to observe positive outcome in both equations computed from the Bivariate Probit was included. As expected, it is a highly significant factor in the likelihood to avail. Other factors have also been taken into account given their potential influence in the decision. These are log of distance from home to place of work, urban location dummy, education, age, and income.

The log of distance from home to place of work is a proxy of the PWD's need for transportation and a measure of the person's range of movement (see Table C). The farther the work is from home, the more likely the person will use public transportation, hence, the greater chance of availing the discount. PWDs who are not employed were assigned a value of 0.001 to indicate their lack of need for transportation. The value of 0.001 was inputted instead of zero (0) because of the need to have a non-zero value for convenience of transforming the original variable into log form. The Probit regression result shows that it significantly influences participation in a positive way.

Meanwhile, the urban dummy represents several things. First, it accounts for the presence of better transportation service and road networks in the urban areas. It also represents better awareness by the citizens, establishments and service providers included, in terms of the policies. Lastly, it represents the presence of better and more opportunities so people will participate in the society in general. The regression result indeed shows that being in the urban area positively impacts participation in land transportation discounts. On the margin, those in the urban areas have about 14 percent higher probability of availing than those in the rural areas (see Table D).

Meanwhile, education, age and income are no longer significant in explaining participation when the predicted probability of awareness and eligibility and the other factors mentioned were taken into account. This shows that participation, when awareness and eligibility are already met, is not so much a function of personal characteristics but by various community and governance factors, and also the circumstance (like being employed and mobile as proxied by the distance from home to work) of the PWD, his/her ability and willingness to interact with the outside world.

#### Participation in the medical and dental discount

Like in the Probit estimation of participation in transport discounts, the analysis on the medical/dental discount availment of PWDs include the resulting joint predicted probability of being aware and having issued an ID. Several other factors were likewise taken into account and these are urban location dummy, years of education, age, age squared, income level and a dummy for having mobility disability.

As expected, the predicted probability of being aware and eligible positively influences likelihood to avail of the medical/dental discount. Aside from this, only variables on age were shown to be significant in explaining probability to participate (see Table F). In particular, the likelihood to avail decreases as one becomes older but increases when one gets really old. This is consistent with intuition that very old people have higher risk of getting sick and hence, have better chances as availing the medical discounts holding other factors constant.

Interestingly, education, income, location, and type of impairment were not instrumental in explaining probability of participating after awareness and eligibility were already taken into account. The estimation shows that beyond awareness and eligibility, the likelihood to participate in a discount program is more a function of the need and the circumstance of the person.

## **7. Concluding Remarks**

To determine the factors that constrain persons with disability to participate in discount privileges particularly the case of bus fare and medical care discounts in the Philippines, an empirical analysis of the survey datasets obtained from two recent rounds of survey involving PWDs is conducted. A Bivariate Probit regression was estimated to determine the joint probability of awareness and eligibility (possession of PWD ID card). The reason for doing this is because the factors that affect awareness may be the same determinants of eligibility (i.e. possession of the ID), therefore, their errors may be correlated. The values of the predicted joint probability obtained from the Bivariate Probit regression were then incorporated in the estimation of participation in discount privileges to account for awareness and eligibility.

The analyses show that the main constraints PWD face in their participation in discount privileges are indeed the lack of awareness and the requirement which is the ID for them to enjoy/partake in these privileges. Majority of the variables have been instrumental in the estimation for awareness and eligibility. These results are consistent with the insights drawn from Table 4 in section on the role of governments which shows that the participation rates across space/target areas do not vary significantly from each other when awareness and eligibility have been taken into account. In other words, the main problems that remarkably separate one LGU (particularly the richer one) from the others (mostly poorer ones) are level of awareness of the PWD in that locality and ability of the local government to fast track issuance of IDs and conduct various related activities (e.g. information dissemination campaigns).

The econometric estimations show that the higher the educational attainment one has, the greater the likelihood that he/she is aware about the discounts and eligible to participate in these programs. Likewise, age significantly explain variations in the probability to see both events positive (that is, to be aware and eligible). It is found that older people are less likely to be aware than younger ones. This has implications in terms of government initiatives of assisting the elderly. Also, poor people may be not be benefiting from these discount privileges because of lack of awareness as income is a significant determinant of

awareness. The regressions also show that people with mobility constraints (e.g. those in wheelchair and crutches) have lower probability of getting an ID. Effectively implementing and enforcing the Accessibility Law, not only for the benefit of PWDs but for the public in general (e.g. elderly, infants) is therefore crucial. Moreover, the role of the local government in implementing disability laws is very important given its proximity to the grassroots. Various initiatives should prioritize educating the general public, especially the PWD with respect to their rights, privileges and more importantly capabilities. Only then can programs aimed at improving their capacities such as livelihood and training programs can be more relevant and effective. Richer LGUs have the means to implement programs for PWD and the capacity to effectively assist a greater percentage of the PWD population. On the other hand, poorer localities have very limited resources and hence their disabled constituents are deprived of competent services. Without proper intervention, these PWDs living in poorer areas will remain poorer and inequality would persist and widen as time goes by.

The analyses also showed that after accounting for awareness and eligibility, the tendency to participate rests on the individual circumstances of the PWDs which also reflect the kind of society they are in. For instance, despite being equipped with the knowledge that there are indeed privileges which are meant to lessen the burden of the PWDs and their families and the necessary requirement to avail such, if the person believes that his/her impairment disables him/her to participate in the society because the society and the system is not as accommodating to his/her capabilities, that person will not come out and be part of the mainstream society. Beyond being recipients of government programs, PWDs need to be empowered through decent livelihood and greater participation in the society. These will not become possible unless the provisions of various disability laws are seriously implemented and enforced.



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## Annex Tables

| Table A. Results of Bivariate Probit Regression of awareness and eligibility (Possession of PWD ID) |                   |               |        |       |                      |         |
|---|-------------------|---------------|--------|-------|----------------------|---------|
| Bivariate probit regression   | Number of obs     | =             |        |       | 476                  |         |
|   | Wald chi2(22)     | =             |        |       | 309.06               |         |
|   | Prob > chi2       | =             |        |       | 0                    |         |
| Log pseudolikelihood = -356.1156  |                   |               | Robust |       |                      |         |
|   | Coef.             | Std. Err.     | z      | P>z   | [95% Conf. Interval] |         |
| Aware   |                   |               |        |       |                      |         |
| Female dummy  | 0.0959            | 0.145         | 0.66   | 0.508 | -0.1882              | 0.38    |
| Age   | 0.0639            | 0.0328        | 1.95   | 0.051 | -0.0004              | 0.1282  |
| Age squared   | -0.0008           | 0.0004        | -2.02  | 0.043 | -0.0016              | 0       |
| Years of education  | 0.0829            | 0.0177        | 4.68   | 0     | 0.0482               | 0.1176  |
| Log of per capita income in PWD household   | 0.324             | 0.0735        | 4.41   | 0     | 0.1801               | 0.468   |
| Mobility-impaired dummy   | -0.2017           | 0.1557        | -1.3   | 0.195 | -0.5069              | 0.1035  |
| Member in organization dummy  | 0.9904            | 0.1592        | 6.22   | 0     | 0.6784               | 1.3023  |
| Location dummies:   |                   |               |        |       |                      |         |
| 1. Makati   | 0.9714            | 0.2465        | 3.94   | 0     | 0.4883               | 1.4546  |
| 2. Quezon City  | 0.3333            | 0.2068        | 1.61   | 0.107 | -0.0721              | 0.7386  |
| 3. Pasay  | -0.1398           | 0.2217        | -0.63  | 0.528 | -0.5743              | 0.2947  |
| 4. Valenzuela   | 0.5139            | 0.2273        | 2.26   | 0.024 | 0.0684               | 0.9594  |
| Constant  | -5.2301           | 0.899         | -5.82  | 0     | -6.9921              | -3.4681 |
| With_id   |                   |               |        |       |                      |         |
| Female dummy  | 0.1151            | 0.1531        | 0.75   | 0.452 | -0.1851              | 0.4152  |
| Age   | 0.0952            | 0.0398        | 2.39   | 0.017 | 0.0172               | 0.1731  |
| Age squared   | -0.0014           | 0.0005        | -2.72  | 0.007 | -0.0024              | -0.0004 |
| Years of education  | 0.0967            | 0.0188        | 5.15   | 0     | 0.0599               | 0.1334  |
| Log of per capita income in PWD household   | 0.1636            | 0.0868        | 1.89   | 0.059 | -0.0065              | 0.3337  |
| Mobility-impaired dummy   | -0.4243           | 0.176         | -2.41  | 0.016 | -0.7693              | -0.0793 |
| Member in organization dummy  | 0.969             | 0.1682        | 5.76   | 0     | 0.6392               | 1.2987  |
| Location dummies:   |                   |               |        |       |                      |         |
| 1. Makati   | 2.0466            | 0.2654        | 7.71   | 0     | 1.5264               | 2.5669  |
| 2. Quezon City  | -0.0842           | 0.2579        | -0.33  | 0.744 | -0.5897              | 0.4214  |
| 3. Pasay  | 0.0806            | 0.2614        | 0.31   | 0.758 | -0.4317              | 0.593   |
| 4. Valenzuela   | 0.7164            | 0.2521        | 2.84   | 0.004 | 0.2223               | 1.2106  |
| Constant  | -4.9646           | 1.062         | -4.67  | 0     | -7.046               | -2.8832 |
| /athrho   | 0.8786            | 0.1418        | 6.2    | 0     | 0.6008               | 1.1565  |
| rho   | 0.7057            | 0.0712        |        |       | 0.5376               | 0.8199  |
| Wald test of rho=0:   | chi2(1) = 38.4113 | Prob > chi2 = |        |       |                      | 0.0000  |

| Table B. Marginal effects at means on Prob(aware,with_id) after biprobit |         |           |       |       |         |         |         |
|--|---------|-----------|-------|-------|---------|---------|---------|
| y = Pr(aware=1,with_id=1) (predict)                                      |         |           |       |       |         |         |         |
| = .33107044  |         |           |       |       |         |         |         |
| Variable   | dy/dx   | Std. Err. | z     | P>z   | [ 95%   | C.I. ]  | X       |
| Female dummy   | 0.0419  | 0.0522    | 0.8   | 0.422 | -0.0603 | 0.1442  | 0.4118  |
| Age  | 0.0335  | 0.0131    | 2.57  | 0.01  | 0.0079  | 0.0591  | 38.8382 |
| Age squared  | -0.0005 | 0.0002    | -2.89 | 0.004 | -0.0008 | -0.0002 | 1684.52 |
| Years of education   | 0.0352  | 0.0065    | 5.46  | 0     | 0.0226  | 0.0479  | 7.8041  |
| Log of per capita income in PWD household                                | 0.0718  | 0.0302    | 2.38  | 0.017 | 0.0127  | 0.1309  | 9.7405  |
| Mobility-impaired dummy  | -0.1384 | 0.0539    | -2.57 | 0.01  | -0.244  | -0.0328 | 0.2962  |
| Member in organization dummy   | 0.3632  | 0.054     | 6.73  | 0     | 0.2574  | 0.469   | 0.4076  |
| Location dummies:  |         |           |       |       |         |         |         |
| 1. Makati  | 0.6342  | 0.0604    | 10.5  | 0     | 0.5158  | 0.7526  | 0.2458  |
| 2. Quezon City   | -0.0087 | 0.0861    | -0.1  | 0.92  | -0.1775 | 0.1601  | 0.2332  |
| 3. Pasay   | 0.0136  | 0.086     | 0.16  | 0.875 | -0.1551 | 0.1822  | 0.1534  |
| 4. Valenzuela  | 0.2689  | 0.0867    | 3.1   | 0.002 | 0.0989  | 0.4389  | 0.145   |

(\*) dy/dx is for discrete change of dummy variable from 0 to 1

| Table C. Probit regression on participation in transport discount |               |           |        |        |            |           |
|---|---------------|-----------|--------|--------|------------|-----------|
| Probit regression   | Number of obs | =         | 476    |        |            |           |
|   | LR chi2(7)    | =         | 108.83 |        |            |           |
|   | Prob > chi2   | =         | 0      |        |            |           |
| Log likelihood = -229.43924                                       | Pseudo R2     | =         | 0.1917 |        |            |           |
| Availed land transportation discount                              | Coef.         | Std. Err. | z      | P>z    | [95% Conf. | Interval] |
| Predicted probability (Aware=1; With ID=1)                        | 1.2821        | 0.2306    | 5.56   | 0.0000 | 0.8302     | 1.7340    |
| Log of distance of place of work from home                        | 0.0227        | 0.0103    | 2.2    | 0.0280 | 0.0024     | 0.0429    |
| Urban location dummy  | 0.5330        | 0.2378    | 2.24   | 0.0250 | 0.0670     | 0.9991    |
| Years of education  | 0.0336        | 0.0181    | 1.86   | 0.0630 | -0.0018    | 0.0690    |
| Age   | 0.0168        | 0.0349    | 0.48   | 0.6310 | -0.0516    | 0.0852    |
| Age squared   | -0.0003       | 0.0005    | -0.6   | 0.5470 | -0.0012    | 0.0006    |
| Log of per capita income  | 0.0007        | 0.0761    | 0.01   | 0.9930 | -0.1486    | 0.1499    |
| Constant  | -2.0514       | 0.9788    | -2.1   | 0.0360 | -3.9698    | -0.1330   |

| Table D. Probit regression on participation in transport discount, marginal effects |                   |               |      |        |           |         |        |
|---|-------------------|---------------|------|--------|-----------|---------|--------|
|   |                   | Number of obs | =    | 476    |           |         |        |
|   |                   | LR chi2(7)    | =    | 108.83 |           |         |        |
|   |                   | Prob > chi2   | =    | 0      |           |         |        |
| Log likelihood = -229.43924   |                   | Pseudo R2     | =    | 0.1917 |           |         |        |
| Availed land transportation discount  | dF/dx             | Std. Err.     | z    | P>z    | x-bar     | [ 95%   | C.I. ] |
| Predicted probability (Aware=1; With ID=1)  | 0.3916            | 0.0715        | 5.56 | 0      | 0.3807    | 0.2515  | 0.5318 |
| Log of distance of place of work from home  | 0.0069            | 0.0032        | 2.2  | 0.028  | -1.9562   | 0.0007  | 0.0131 |
| Urban location dummy  | 0.1442            | 0.0540        | 2.24 | 0.025  | 0.7773    | 0.0383  | 0.2501 |
| Years of education  | 0.0103            | 0.0055        | 1.86 | 0.063  | 7.8041    | -0.0005 | 0.0210 |
| Age   | 0.0051            | 0.0106        | 0.48 | 0.631  | 38.8382   | -0.0157 | 0.0260 |
| Age squared   | -0.0001           | 0.0001        | -0.6 | 0.547  | 1684.5200 | -0.0004 | 0.0002 |
| Log of per capita income  | 0.0002            | 0.0233        | 0.01 | 0.993  | 9.7405    | -0.0454 | 0.0458 |
| obs. P  | 0.2836            |               |      |        |           |         |        |
| pred. P   | 0.2325 (at x-bar) |               |      |        |           |         |        |
| (*) dF/dx is for discrete change of dummy variable from 0 to 1                      |                   |               |      |        |           |         |        |
| z and P> z  correspond to the test of the underlying coefficient being 0            |                   |               |      |        |           |         |        |

| Table E. Diagnostics: Probit regression on participation in transport discount |        |
|--|--------|
| Iroc   |        |
| Probit model for availed_landtranspo   |        |
| number of observations =   | 476    |
| area under ROC curve =   | 0.7896 |
| estat gof  |        |
| Probit model for availed_landtranspo, goodness-of-fit test                     |        |
| number of observations =   | 476    |
| number of covariate patterns =   | 476    |
| Pearson chi2(468) =  | 461.33 |
| Prob > chi2 =  | 0.5781 |
| estat gof, group(10)   |        |
| Probit model for availed_landtranspo, goodness-of-fit test                     |        |
| (Table collapsed on quantiles of estimated probabilities)                      |        |
| number of observations =   | 476    |
| number of groups =   | 10     |
| Hosmer-Lemeshow chi2(8) =  | 14.04  |
| Prob > chi2 =  | 0.0806 |

| Table F. Results of Probit regression for participation in medical/discount discount |               |           |       |       |            |           |
|--|---------------|-----------|-------|-------|------------|-----------|
| Probit regression  | Number of obs | =         |       |       |            | 476       |
|  | LR chi2(7)    | =         |       |       |            | 41.45     |
|  | Prob > chi2   | =         |       |       |            | 0         |
| Log likelihood = -130.46685  | Pseudo R2     | =         |       |       |            | 0.1371    |
| Avail medical/dental discount  | Coef.         | Std. Err. | z     | P>z   | [95% Conf. | Interval] |
| Predicted probability<br>(Aware=1; With ID=1)  | 1.1207        | 0.3070    | 3.65  | 0     | 0.5190     | 1.7223    |
| Urban location dummy   | 0.2649        | 0.3149    | 0.84  | 0.4   | -0.3522    | 0.8821    |
| Years of education   | 0.0178        | 0.0240    | 0.74  | 0.458 | -0.0292    | 0.0649    |
| Age  | -0.0790       | 0.0391    | -2.02 | 0.043 | -0.1556    | -0.0024   |
| Age squared  | 0.0011        | 0.0005    | 2.23  | 0.026 | 0.0001     | 0.0021    |
| Log of per capita income   | 0.1377        | 0.0936    | 1.47  | 0.141 | -0.0457    | 0.3212    |
| Mobility-impaired dummy  | -0.3417       | 0.2142    | -1.6  | 0.111 | -0.7616    | 0.0781    |
| Constant   | -2.2867       | 1.0842    | -2.11 | 0.035 | -4.4116    | -0.1617   |

| Table G. Results of Probit regression for participation in medical/discount discount: Marginal Effects |         |            |      |       |           |         |         |
|--|---------|------------|------|-------|-----------|---------|---------|
| Avail medical/dental discount  | dF/dx   | Std. Err.  | z    | P>z   | x-bar     | [ 95%   | C.I. ]  |
| Predicted probability<br>(Aware=1; With ID=1)  | 0.1449  | 0.0400     | 3.65 | 0     | 0.3807    | 0.0666  | 0.2232  |
| Urban location dummy   | 0.0307  | 0.0321     | 0.84 | 0.4   | 0.7773    | -0.0322 | 0.0937  |
| Years of education   | 0.0023  | 0.0031     | 0.74 | 0.458 | 7.8041    | -0.0038 | 0.0084  |
| Age  | -0.0102 | 0.0050     | 2.02 | 0.043 | 38.8382   | -0.0201 | -0.0004 |
| Age squared  | 0.0001  | 0.0001     | 2.23 | 0.026 | 1684.5200 | 0.0000  | 0.0003  |
| Log of per capita income   | 0.0178  | 0.0119     | 1.47 | 0.141 | 9.7405    | -0.0056 | 0.0412  |
| Mobility-impaired dummy  | -0.0400 | 0.0225     | -1.6 | 0.111 | 0.2962    | -0.0842 | 0.0042  |
| obs. P   | 0.0966  |            |      |       |           |         |         |
| pred. P  | 0.0667  | (at x-bar) |      |       |           |         |         |

(\*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P>|z| correspond to the test of the underlying coefficient being 0

|   |
|---|
| Table H. Diagnostics: Probit regression on participation in medical/dental discount   |
| Iroc  |
| Probit model for availed_medical<br>number of observations = 476<br>area under ROC curve = 0.7677   |
| estat gof   |
| Probit model for availed_medical, goodness-of-fit test<br>number of observations = 476<br>number of covariate patterns = 476<br>Pearson chi2(468) = 489.88<br>Prob > chi2 = 0.2339  |
| estat gof, group(10)  |
| Probit model for availed_medical, goodness-of-fit test<br>(Table collapsed on quantiles of estimated probabilities)<br>number of observations = 476<br>number of groups = 10<br>Hosmer-Lemeshow chi2(8) = 11.95<br>Prob > chi2 = 0.1534 |

| Table I. Summary tables of variables used  |     |           |           |       |        |
|--|-----|-----------|-----------|-------|--------|
| Variable                                   | Obs | Mean      | Std. Dev. | Min   | Max    |
| Aware dummy                                | 509 | 0.5953    | 0.4913    | 0     | 1      |
| With_id dummy                              | 509 | 0.3969    | 0.4897    | 0     | 1      |
| Female dummy                               | 509 | 0.4067    | 0.4917    | 0     | 1      |
| Age  | 509 | 38.7485   | 13.3201   | 15    | 75     |
| Age squared                                | 509 | 1678.5250 | 1064.2460 | 225   | 5625   |
| Years of education                         | 509 | 7.7459    | 4.5160    | 0     | 19     |
| Log of per capita income                   | 476 | 9.7404    | 0.9972    | 6.438 | 12.422 |
| Member in organization dummy               | 509 | 0.4126    | 0.4928    | 0     | 1      |
| 1. Mobility                                | 509 | 0.3026    | 0.4598    | 0     | 1      |
| 2. Visual                                  | 509 | 0.3301    | 0.4707    | 0     | 1      |
| 3. Hearing                                 | 509 | 0.2711    | 0.4450    | 0     | 1      |
| 4. Multiple                                | 509 | 0.0963    | 0.2952    | 0     | 1      |
| 1. Makati                                  | 509 | 0.2456    | 0.4309    | 0     | 1      |
| 2. Quezon City                             | 509 | 0.2397    | 0.4273    | 0     | 1      |
| 3. Pasay                                   | 509 | 0.1650    | 0.3716    | 0     | 1      |
| 4. Valenzuela                              | 509 | 0.1415    | 0.3488    | 0     | 1      |
| 5. Rosario, Batangas                       | 509 | 0.2083    | 0.4065    | 0     | 1      |
| Urban dummy                                | 509 | 0.7917    | 0.4065    | 0     | 1      |
| Log of distance of place of work from home | 509 | -1.9371   | 6.6715    | 6.908 | 10.491 |
| Predicted probability (Aware=1; With ID=1) | 476 | 0.3807    | 0.3471    | 0.000 | 0.994  |

Table J. Correlation coefficient among variables used in the estimations

| Variable                                   | Aware dummy | With_id dummy | Female dummy | Age   | Age <sup>2</sup> | Years of educ | Log of per capita income | Member in orgn. dummy | 1. Makati | 2. Quezon City | 3. Pasay | 4. Valenzuela | 5. Rosario, Batangas | Log of distance of place of work from home | Predicted probability (Aware=1; With ID=1) | 1. Mobility | 2. Visual | 3. Hearing | 4. Multiple | Urban dummy |  |
|--|-------------|---------------|--------------|-------|------------------|---------------|--------------------------|-----------------------|-----------|----------------|----------|---------------|----------------------|--|--|-------------|-----------|------------|-------------|-------------|--|
| Aware dummy                                | 1           |               |              |       |                  |               |                          |                       |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| With ID dummy                              | 0.58        | 1             |              |       |                  |               |                          |                       |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| Female dummy                               | 0.00        | 0.02          | 1            |       |                  |               |                          |                       |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| Age  | -0.04       | -0.07         | 0.04         | 1     |                  |               |                          |                       |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| Age <sup>2</sup>                           | -0.07       | -0.09         | 0.06         | 0.99  | 1                |               |                          |                       |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| Years of education                         | 0.40        | 0.38          | -0.12        | 0.06  | 0.02             | 1             |                          |                       |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| Log of per capita income                   | 0.31        | 0.17          | -0.07        | -0.02 | -0.04            | 0.23          | 1                        |                       |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| Member in organization dummy               | 0.47        | 0.54          | 0.06         | -0.11 | -0.12            | 0.27          | 0.16                     | 1                     |           |                |          |               |                      |  |  |             |           |            |             |             |  |
| 1. Makati                                  | 0.35        | 0.59          | 0.02         | 0.04  | 0.04             | 0.21          | 0.05                     | 0.46                  | 1         |                |          |               |                      |  |  |             |           |            |             |             |  |
| 2. Quezon City                             | 0.07        | -0.15         | -0.02        | 0.01  | -0.01            | 0.07          | 0.11                     | 0.06                  | -0.31     | 1              |          |               |                      |  |  |             |           |            |             |             |  |
| 3. Pasay                                   | -0.13       | -0.11         | -0.05        | -0.04 | -0.05            | 0.09          | 0.06                     | -0.14                 | -0.24     | -0.23          | 1        |               |                      |  |  |             |           |            |             |             |  |
| 4. Valenzuela                              | 0.02        | -0.03         | -0.07        | -0.07 | -0.08            | 0.01          | 0.01                     | -0.17                 | -0.24     | -0.23          | -0.18    | 1             |                      |  |  |             |           |            |             |             |  |
| 5. Rosario, Batangas                       | -0.34       | -0.34         | 0.10         | 0.05  | 0.08             | -0.38         | -0.23                    | -0.27                 | -0.31     | -0.30          | -0.23    | -0.22         | 1                    |  |  |             |           |            |             |             |  |
| Log of distance of place of work from home | 0.21        | 0.06          | -0.13        | -0.03 | -0.07            | 0.15          | 0.21                     | 0.25                  | -0.07     | 0.24           | 0.02     | 0.05          | -0.23                | 1  |  |             |           |            |             |             |  |
| Predicted probability (Aware=1; With ID=1) | 0.56        | 0.72          | 0.01         | -0.08 | -0.11            | 0.54          | 0.27                     | 0.75                  | 0.80      | -0.18          | -0.19    | -0.04         | -0.45                | 0.17                                       | 1  |             |           |            |             |             |  |
| 1. Mobility                                | 0.02        | 0.00          | -0.07        | 0.10  | 0.06             | 0.17          | 0.03                     | 0.00                  | 0.11      | -0.13          | -0.03    | 0.06          | 0.00                 | -0.18                                      | 0.02                                       | 1           |           |            |             |             |  |
| 2. Visual                                  | 0.19        | -0.03         | -0.02        | 0.10  | 0.11             | -0.03         | 0.15                     | 0.14                  | -0.10     | 0.17           | 0.00     | 0.06          | -0.12                | 0.37                                       | 0.07                                       | -0.47       | 1         |            |             |             |  |
| 3. Hearing                                 | -0.05       | 0.17          | 0.10         | -0.30 | -0.26            | -0.05         | -0.15                    | -0.01                 | 0.07      | -0.07          | 0.03     | -0.09         | 0.04                 | -0.13                                      | 0.02                                       | -0.39       | -0.44     | 1          |             |             |  |
| 4. Multiple                                | -0.27       | -0.21         | -0.01        | 0.12  | 0.13             | -0.14         | -0.07                    | -0.19                 | -0.12     | 0.03           | 0.00     | -0.05         | 0.14                 | -0.12                                      | -0.19                                      | -0.21       | -0.23     | -0.20      | 1           |             |  |
| Urban dummy                                | 0.3397      | 0.3372        | -0.10        | -0.05 | -0.08            | 0.38          | 0.23                     | 0.27                  | 0.31      | 0.30           | 0.23     | 0.22          | -1.00                | 0.23                                       | 0.45                                       | 0.00        | 0.12      | -0.04      | -0.14       | 1           |  |