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Accessible Public Transportation for the Elderly in Southeast Asian Cities: Challenges and Prospects

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Abstract

The ageing population is of increasing concern in most countries of the world due to increasing life expectancies. Widespread barriers to full participation in society by the elderly are both caused and embodied in the physical barriers of the built environment, which includes transportation infrastructure. In addition to the obvious problems of distance, the maldistribution of transportation is a burden borne largely by those lacking the wherewithal to use private means for moving about in urban areas. In terms of access to services and opportunities, public transport therefore becomes both enabler and thwarter. Even where it is available, the timing and/or frequency of service may effectively create discrimination and certainly limit its use to only those activities deemed absolute in importance. Journeys may take too long, or services may be too infrequent, perhaps requiring users to spend too long at their destination. For the elderly, who have a disproportionately high rate of mobility impairment, the physical form and layout of public transport infrastructure itself often presents barriers to use. This paper presents the various challenges faced among the elderly in using public transport, exploring initiatives and policies intended to improve the accessibility of public transport in two Southeast Asian countries (Thailand and the Philippines). Our preliminary analysis suggests that measures to improve accessibility in public transport and promote inclusion among the elderly remain inadequate. Responding effectively and equitably to the ageing population entails accommodating their needs for access to opportunities, which demands development and implementation of policy that envisions 'a society for all ages' in public transport.

Keywords: accessibility, elderly, inclusion, public transport, Southeast Asia

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Introduction

Providing accessible and efficient public transport or mass transit is an important component of sustainable urban development.[3] It provides people with access to opportunities across the metropolitan region and mobility without necessitating the ownership of a private automobile. It moreover ensures that those without access to a vehicle are not excluded from the opportunities of urban living. Achieving transportation sustainability through the provision and widespread use of mass transit is a goal sought by local governments in many urban areas across the world. The increasing costs of energy as well as the associated social and environmental effects of motoring together reinforce the ethical imperative for providing mass transit as an important and cost-effective modal choice for various users – one which can provide safe and efficient urban to large numbers of people (Frumkin *et al.* 2004, Raphael *et al.* 2001).

Across the urbanised world, especially the materially rich countries of the global North, a growing concern is the issue of how to enable 'active transportation' through walking, bicycling, and mass transit (Frank 2000; Frumkin *et al.* 2004; Saelens *et al.* 2003; Tomalty & Haider 2009). Of particular interest is how to make these options both more accessible and more attractive to identifiable user groups, particularly those who are vulnerable (Figure 1). Active transportation is increasingly acknowledged as vital for meeting the broad goals of public health, social equity, and economic viability (Falcocchio & Cantilli 1974; Frumkin *et al.* 2004). We seek to take this general argument further by applying it to the transportation needs of ageing populations, which are considered for present purposes individuals aged 60 or over (United Nations 2009).

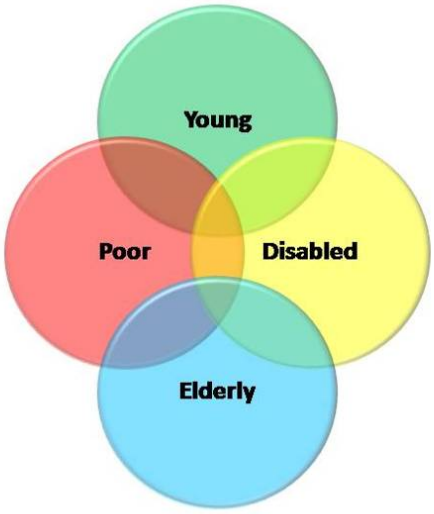

Figure 1.
Typology of vulnerable user groups in transportation

[3] Throughout this paper, the term 'public transport' is used interchangeably with the North American equivalent 'mass transit'.

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(after Falcocchio & Cantilli 1974)

The core convictions from which we derive our arguments in this paper can be summarised in a few sentences. Ensuring that public transport is provided in ways that ensure reasonable accessibility to all users should be a baseline priority for the governments and agencies charged with attending to the needs of society. The use of public transport is a key to community participation, productivity, and independence for the elderly, especially those who cannot operate a motor vehicle. Mass-transit services, which include buses and trains, are frequently the only options for these groups of people for travelling independently to work, health care facilities, shopping centres, and a host of other destinations in the 'home territory' (Marston, Golledge, & Costanzo 1997).

In this paper, we seek to problematise the provision of mass transit, especially in terms of the user-friendliness of its physical infrastructure, using the elderly as a proxy of sorts for all mobility-impaired users as conceptualised by Falcocchio & Cantilli (1974) and represented in Figure 1 above. This issue is particularly evident in Southeast Asian cities where the quality of mass transit provision is often problematic. This paper also presents the various challenges faced among the elderly in using public transport, exploring initiatives and policies intended to improve the accessibility of public transport in two Southeast Asian countries. Widespread barriers to full participation in society by the elderly are clearly embodied in certain physical barriers found within the built environment, which includes public transport infrastructure. In addition to distance, poor access to transportation means that those who do not have private transport are less likely to have reasonable access to services. Thus, the elderly face a double burden in using mass transit given their age and vulnerabilities to impairment. The systemic exclusion of certain user groups is an acknowledged but underscrutinised aspect of transportation provision.

Accommodating the transportation needs of the elderly must be done for reasons that are more than altruistic. Doing so will become almost inevitable in countries with high numbers of people aged 60 and over, many of whom are or will become unwilling or unable to drive, for it stands to reason that an increase in the proportion of elderly citizens will tend to be shadowed by an increase in the number of individuals dependent on modes of transportation other than the private car. Failure to expand and sustain accessibility options for the elderly can easily result in further negative social and economic consequences for these individuals. These circumstances include impeded mobility, heightened safety risks, limited opportunities for personal development, reduced independence, increased social isolation, diminished quality of life, and—inevitably—poorer health in general. This problématique is discussed in greater detail by various observers (Falcocchio & Cantilli 1974; Marston, Golledge, & Costanzo 1997; Audirac 2008; Titheridge, *et al.* 2009). To our knowledge, however, it has yet to receive the close critical scrutiny it merits particularly in the Southeast Asian context.

The state of the elderly in the Philippines and Thailand

Countries in Southeast Asia are seeking ways to deal with new welfare demands for the ageing population. The elderly population of the countries considered in this research has different sets of features and dynamics that are attributed to the economic, social and cultural occurrences. Those who attain a certain age beyond the required legal working age, from 55-60 in most countries, are considered for retirement and may fall under the elderly group

(United Nations 2009). Titheridge *et al.* (2009) pointed that reaching retirement often leads to changes in a person's lifestyle, which includes that individual's normal travel behaviour. This means that elderly people experience a decrease in life spaces due to limitations in their physical and mental capacities, economic disadvantages, absence of a personal automobile and/or lack of available public transportation; thus affecting their ability to complete travel to meet their own needs (Falcocchio & Cantilli 1974; Marston, Golledge, & Costanzo 1997).

In the Philippines, as in many developing countries, the latter part of the 20th century was a time of both rapid urbanisation and an increasingly large elderly population. The 2000 Philippine Census of Population and Housing recorded 4.6 million senior citizens, accounting for 5.97 % of the total population. This number represents an increase of 22.2 % (3.7 million people) from 1995 (NSO 2005; Ogena 2008). The elderly population grew by 4.39 % during the 1995 to 2000 period and is estimated to reach seven per cent in 2009 (United Nations 2009). If this growth rate continues, the number of senior citizens is expected to reach seven million in 2010 and 26 million in 2050 (Table 1). The rapidly increasing absolute number of the elderly is attributed to its declining fertility rate and increasing life expectancy and the density of the Filipino population (NSO 2005; Ogena 2008). In the Philippines, healthy ageing entails fulfilling the desire of the elderly for a more comfortable life not only for themselves but also for their loved ones. Nevertheless, poverty remains a major obstacle to active ageing in the Philippines, especially given the country's limited resources to support its booming elderly population (Sanchez 2008).

Table 1.
Characteristics of the elderly (aged 60 years and above) in the Philippines and Thailand

Indicators	**Philippines**		**Thailand**	
	2009	**2050**	**2009**	**2050**
Number (thousands)	5,993	26,111	7,598	19,331
Percentage of total population	7	18	11	26
Share of persons 80 years and over	8	14	10	20
Old-age support ratio	15	5	9	3
Life expectancy at age 60 (2005-2010)				
• Men	17	-	17	-
• Women	19		19	

Source: UN 2009

Thailand's classification of the elderly refers to persons aged 60 and above; this is in accordance with the officially-mandated retirement age of 60 as embodied in the 2003

Elderly Persons Act (Knodel & Chayovan 2008). The United Nations (2009) reported that the number of older persons in Thailand has increased to 7.6 million persons in 2009; it is expected to double by 2050 to 19.3 million persons, which will correspond to 11 % and 26 % of total populations, respectively (see Table 2). The proportion of older persons in Thailand is also expected to grow in the near future, for along with substantially greater longevity, the country experienced declining levels of fertility in the latter part of the 20th century (Knodel & Chayovan 2009; TGRI 2008). Total fertility decreased from over six per adult female in the early 1960s to fewer than two by the first decade of the 21st century (Knodel & Chayovan 2009). At the same time, life expectancy at birth has increased from 40 years in 1937 to 60 years in 1967 and more gradually to 71 years in 2007 (TGRI 2008). Continuous improvements in social, medical and health services have contributed to the decline in infant and child mortality as well as reduced incidences of communicable diseases leading to a longer life expectancy in Thailand (Knodel & Chayovan 2009; TGRI 2008). As seems to be the case in the Philippines, however, women will live approximately two years longer than men after the age of 60 (Table 1). These demographic developments will have important consequences for families, communities, and Thai society as a whole.

In brief, Thailand is entering a period in which its society will be ageing, as the number of individuals aged 60 years or more has exceeded more than 10% of the country's total population. Given the greater likelihood of serious health problems among older persons compared to the rest of the population, pressures on health facilities and services will increase enormously. The importance of improving access to the city for the elderly by making mass transit user-friendly is part of this transformation.

Challenges to using public transport among the elderly

Mass-transit ridership is high enough in Southeast Asian cities such as Bangkok and Manila, as shown in Table 2, but the physical infrastructure of mass transit (buses, metro systems, etc.) is delivered to users in ways that are based on problematic assumptions. In effect, users are almost always expected to be fully able-bodied and literate in the dominant language(s) of the area. Such systemic assumptions about the supposed 'normalcy' of users tend to effectively exclude those who face chronic or temporary difficulties (Audirac 2008; Bromley *et al.* 2007).

Mobility and accessibility are closely linked to independence, well-being, and quality of life for the elderly. Accessibility is an important characteristic of the geography of space and denotes connectivity of a place with other places by means of a particular transportation system (El-Geneidy & Levinson 2006; Iwarsson & Ståhl 2003). It also entails a person-environment interaction in terms of functional capacity and design and demands of the physical environment, all of which are supported by norms and standards (Iwarsson & Ståhl 2003).

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Table 2.
Ridership data on Bangkok and Manila's mass transit (in millions)

Transit system	**2005**	**2006**	**2007**	**2008**
Bangkok				
BTS Skytrain	101.2	104.8	102	104.3
Metro (Subway)	2.1	2.1	2.3	2.3
Manila				
Metro Rail Transit (MRT3 / Metrostar)	127.9	134.9	142.8	149.5
Light Rail Transit (LRT Line 2 / Yellow Line)	104.5	111.1	119.1	138.1
Megatren (LRT Line 2 / Purple Line)	41.9	47.6	52.9	58.6

Synthesised from BMCL 2010; Laoha-Unya 2009; Virola 2009

It is also noted that the elderly constitute a significant proportion of people with some type of impairment or disability in relation to transportation needs (Transportation Research Board 2004). A linked issue in urban areas concerns enhancing accessibility to transportation among older adults without compromising safety, for physical problems tend to increase as one ages (Titheridge *et al.* 2009). These characteristics may include slower reaction times, deteriorating vision and hearing, impaired attention, and difficulty with physical movement such as loss of strength (Table 3). Women further suffer double discrimination in using public transportation both on the grounds of gender and impairment (Venter, *et al*. 2002). In the Philippines, senior citizens account for 34.9% of all individuals with disabilities according to 2000 census data. Low vision was the most widely-reported disability, followed by difficulty of hearing, partial blindness, partial deafness, and total blindness (DSWD 2007; Ogena 2006). These impairments often have serious implications in terms of mobility and access to opportunities in the city. Since the individuals thus afflicted tend to have difficulties operating a motor vehicle, using mass transit then becomes indispensable for ensuring productivity and independence.

Table 3.
Key functional abilities affected by aging in relation to transportation use

Functional Domain	**Specific Area of Functional Loss**
Vision	Reduced visual acuity and sensitivity
	Poorer visual pattern of perception and visualisation of missing information
	Less efficient visual search
	Reduced area of visual attention
Cognition	Impaired attention
	Less efficient working memory
Agility	Loss of limb strength, flexibility and sensitivity
	Reduced reaction times

Source: TRB 2004

In Manila, for instance, older adults tend to have low rates of use of other modes of transportation, such as mass transit, walking, and bicycling (Pettersson & Schmoker 2010). These options are perceived to be less convenient, available, feasible, or safe and come with a different set of risks. Older adults experience higher rates of injury and/or crime as pedestrians and users of mass transit. The elderly are more likely to be vulnerable than people of other age groups when using public transportation. In addition, using the private car may be favoured because other transportation options may not exist in the area, particularly in an automobile-oriented city such as Bangkok (Table 4). Older adults tend to live in suburban communities that are low-density and car-dependent, often lacking sidewalks or public transport systems. While people are increasingly settling on the urban fringes of Bangkok and Manila, as well as in adjacent rural areas, there is no frequent transportation other than the private car and the waiting time associated with the use of public transport can be tedious if not altogether unsafe for the elderly (Pettersson & Schmoker 2010).

Table 4.
Number of motor vehicles registered in Manila and Bangkok, 2008

Motor Vehicle Type	**Manila**	**Bangkok**
Cars	423,759	2,074,491
Utility vehicles*	638,229	1,229,965
Trucks	61,336	114,208

Buses	9,521	34,344
Motorcycles/tricycles	525,082	2,422,254
Trailers	12,223	1,051

* Utility vehicles include jeepneys, taxis and passenger vans
Synthesised from Virola 2009; DLT 2010

The fact that public transport exists is of course only one part of the picture. Existing roadways, pedestrian facilities at stops and stations, and mass-transit vehicles were generally not designed with the elderly in mind. Rather, they are based on a 'normal' individual—one presuming that the user is an able-bodied and fully literate individual. We therefore need to impress upon transportation engineers and planners, policy makers, and urban planners the importance of the 'one size does not fit all' premise as concerns the provision of transportation services and infrastructure. In particular, these decision-makers have a responsibility to develop a better understanding of the characteristics of older people on the basis of which improvements can be made. Bromley et al. (2007) have recently identified two perspectives in understanding constraints people encounter to the physical environment. The medical or individual model looks at a person's mental or physical hardships while the social model views disability as a result of society's failure to provide a more accessible and user-friendly facilities and structural design. This means that while an individual may have physical disabilities, such as being unable to walk, the same individual also experiences disabilities when accessing a building or transportation facility lacking ramps or elevators (Figure 2).

Figure 2.
Examples of physical barriers to mass transport use

The planning of land uses and transportation can greatly influence accessibility. By setting parameters for the physical design of urban settings, these areas of activity define what is possible and what is not within the physical environment. Incorporating universal accessibility (or universal design) has consequently become an important consideration in building, urban design, and planning in general (Audirac 2008; Bromley *et al.* 2007; Iwarsson & Ståhl 2003; Project Universal Access 2010). Universal design aims to simplify life for individuals of all ages, sizes, and abilities by making the existing and future built environment and products usable by more people. AlterGo (1992) stressed that having accessible facilities helps to meet the needs of the elderly as well as individuals with reduced

mobility by allowing a larger proportion of the population to travel independently than would otherwise be the case. There are many ways in which improvements in the design of public transport with attention to the elderly and/or impaired can in turn benefit the general population. This might include improved clearer delineations of the edge between roadways and pedestrian space, well-built and properly maintained footpaths without any broken or uneven surfaces, good signs with universally-intelligible icons and—if text is necessary—clear, large, reflective lettering in an easy-to-read font, and of course, safe and user-friendly public transport.

Policies and initiatives pertaining to accessible public transport for the elderly

Given the obvious increases of the elderly in absolute and relative terms in Thailand and the Philippines, there is a need for governments to prepare strategies and systems capable of realistically coping. The adoption of plans and policies towards improving the plight of the elderly was recently recognised in both countries although much remains to be done in terms of implementing and achieving an enabling environment in the transportation sector.

A number of national policies and legislations focusing on the improvement of the elderly have been enacted (Table 5) in response to commitments with international laws such as the Vienna Action Plan on Ageing in 1982, the Macau Declaration and Plan of Action on Ageing for Asia and Pacific, the Madrid Action Plan on Ageing in 2002, and the UNESCAP Biwako Millennium Framework for Action, also in 2002 (DSWD 2007; Jitapunkul & Wivatvanit 2009; Prama 2007). It bears noting that emphasis is placed more on improving individual health and increasing the participation of the elderly in community development and livelihood activities. At the same time the governments of Thailand and the Philippines have both developed and tightened policies on the provision of appropriate privileges and benefits as well as appropriate care and protection services for the elderly.

Prominent features of the policies in the Philippines are the provision of privileges in the form of discount in the purchasing of medicines and basic commodities for the personal enjoyment of the senior citizen and establishments of the Office of the Senior Citizens Affairs (OSCA) to be headed by a senior citizen (Sanchez 2008). In Thailand, the Second National Plan for Older Persons (2001–2021) established a social protection system for the elderly. Among the aspects emphasised in the plan are housing and the creation of enabling environments for the elderly; this includes making facilities within buildings accessible and usable to disabled persons and older persons (Jitapunkul & Wivatvanit 2009). Mass-transit operators in Bangkok and Manila have also implemented measures to accommodate certain mobility and accessibility needs of the elderly and/or the disabled. These include the provision of elevators between terminal levels, the introduction of discounted fares, and the designation of priority seating on vehicles.

Table 5.
List of policies and legislations for the elderly in the Philippines and Thailand

Philippines	**Thailand**
• Republic Act 344 (Accessibility Law of 1982) • Republic Act 7432 (Senior Citizens Act, 1991) • Republic Act 7876 (establishment of senior citizens center, 1994) • Republic Act 8425 (1997) • Republic Act 9257 (Expanded Senior Citizens Act of 2003) • Philippine Plan of Action for Older Persons 1999-2004 • Philippine Plan of Action for Senior Citizens 2006-2010	• First Elderly Council in Thailand (1982) • First National Plan for Older Persons, 1982-2001 (1982) • New Constitution of the Kingdom of Thailand (two sections devoted to the elderly) (1997) • National Committee of Senior Citizens (1999) • Declaration of Thai Senior Citizens (1999) • Second National Plan for Older Persons, 2001-2021 (2002) • Elderly Act (2003) • Healthy Thailand (one component focused on promoting the health of the elderly) (2005)

Synthesised from DSWD 2007; Jitapunkul & Wivatvanit 2009; and Prama 2007

Despite the legal framework concerning the inclusion of elderly people and those with disabilities, implementation and compliance within the transportation sector is poor. Drivers and vehicle operators are largely unaware that these laws and policies exist, while negative staff attitudes towards people with disabilities remain major problems to be addressed (Prama 2007). In Bangkok, for instance, past efforts at encouraging a meaningful dialogue between public transport actors and the disability sector were not fully materialised (Bangkok Post 2009a; 2009b).

Accessibility policies to public services such as urban public transport still lag behind in both countries. In each case, the national government is aware of the needs of the elderly in terms of housing, transportation, and built physical environments; however, challenges remain in providing social housing as well as designed vehicles suited for them. While basic requirements such as pedestrian lanes and disability-friendly facilities (*e.g.,* ramps) are provided, these are constructed only in selected urban areas. It is good to note that some establishments and selected stations in Bangkok's BTS Skytrain and Manila's rail transit have elderly-friendly and barrier-free constructions. One of the challenges in the

implementation of the accessible and barrier-free public transport is the lack of formal support and expertise of government staff (Chan 2005). Moreover, the provision of formal care for older persons, whether it is economic (social security or pension schemes), physical (built environments), or social (community programs) will, to some extent, complement functions performed by the family.

Finally, an important challenge in advocating for accessible transportation involves preparing younger adult populations to become prime movers for active ageing in the future. This includes improving their awareness on the importance of providing user-friendly and barrier-free services and facilities as well as training future planners in incorporating active transportation to land use planning.

Conclusion

The ageing population is swelling rapidly in both absolute and proportional terms in the Philippines and Thailand, and it can be expected to do so for quite some time. This clearly poses important challenges for the government and society as a whole. On the positive side, the economic growth and improving standards of living that have substantially improved longevity rates of the people in general. Yet older people face physical, economic, and psychological barriers to travel; for some elderly this includes impairments in motor, sensory, and cognitive abilities. To overcome these barriers and to allow older people to play a full part in society, we have to fundamentally rethink approaches to transportation in the two countries. As a whole, setting an agenda by developing enabling environments for older people is both an economic and a social imperative. Our societal responsibility of meeting older people's needs in a safe, accessible, and sustainable way entails incorporating universal accessibility (or design) principles in the whole transportation environment. Safety and accessibility are two important considerations in designing and improving transportation for the elderly. While national policies are already in place in Thailand and the Philippines, the level of support given to improve land use and transportation planning for the elderly is still minimal. Providing safe, attractive, alternative public transportation options will benefit not only the elderly but the population in general.

For further studies, there is a need to investigate travel behavior of elderly by probing deeper into their constraints and perceptions related to transport use in Manila and Bangkok. There is also a need to investigate causal relationship between accessibility and land use and transportation planning among the two cities and whether promoting active transportation could be possible. Also, our conclusions were dependent on only two city cases in Southeast Asia, and definitely need to extend the number of city samples in the future.

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