

Commission Briefing Paper 4A-02

Implications of an Aging Population on Passenger Travel Demand for Different Modes

Prepared by: Nancy McGuckin (independent consultant) and Section 1909 Commission Staff
Date: January 16, 2007

Introduction

This paper is part of a series of briefing papers to be prepared for the National Surface Transportation Policy and Revenue Study Commission authorized in Section 1909 of SAFETEA-LU. The papers are intended to synthesize the state-of-the-practice consensus on the issues that are relevant to the Commission's charge outlined in Section 1909, and will serve as background material in developing the analyses to be presented in the final report of the Commission.

The coming population surge of older Americans has important future mobility and safety implications. This paper provides projections of the aging population, forecasts of older drivers, and vehicle miles of travel (VMT). Based on population projections from the Census and current driving behavior data from the National Household Travel Survey (NHTS), both the number of older drivers and the vehicle miles of travel will more than double by 2050. The aging of the population contributes to greater exposure of older people to traffic and pedestrian accidents, the aging of the vehicle fleet (leading to longer times for penetration of new technology), and to an increased demand for multiple modes of transportation in most suburban areas.

The past 50 years has seen an unprecedented growth in travel due to several factors, one of which is demographic change. There are a myriad of unforeseeable influences that will shape the future of transportation planning and there are strong indications that the key factors (such as vehicle ownership) that have had a direct relationship on travel demand in the past may be less influential in the future. This paper uses current travel behavior to examine future potential travel demand based on demographic change alone and assumes all other factors are held constant.

Background and Key Findings

The forecasts of travel presented here use current travel behavior from the most recent National Household Travel Survey (NHTS) applied to Census forecasts of population by age and sex. The NHTS is the only source of national data on the travel behavior of older Americans by all modes and for all purposes. For the safety analysis, the NHTS is used to estimate vehicle miles of travel by age and sex (exposure) and the fatalities by age and sex from National Highway Transportation Safety Administration's (NHTSA) Fatality and Accident Reporting System (FARS). This approach (as opposed to solely population based rates) accounts for the differences in the amount of driving (exposure) done by different age groups.

While the current travel behavior of older Americans is used to forecast future travel demand, there are several unknowns which can impact actual future travel behavior. As society changes,

so does travel. Most experts project that the baby-boomers will not travel like current elderly, especially baby boomer women who have worked and driven throughout their adult lives. The growing diversity of the U.S. society will also alter the mix of drivers on the road in the future, along with travel behavior. For instance, half of Asian and Hispanic women over 65 years old do not currently drive, but 80 percent of Asian and Hispanic women aged 30-54 are drivers. These are the 80-year old drivers of the future. In the next five decades nearly all older Americans will be licensed to drive and have the expectation of continuing mobility.

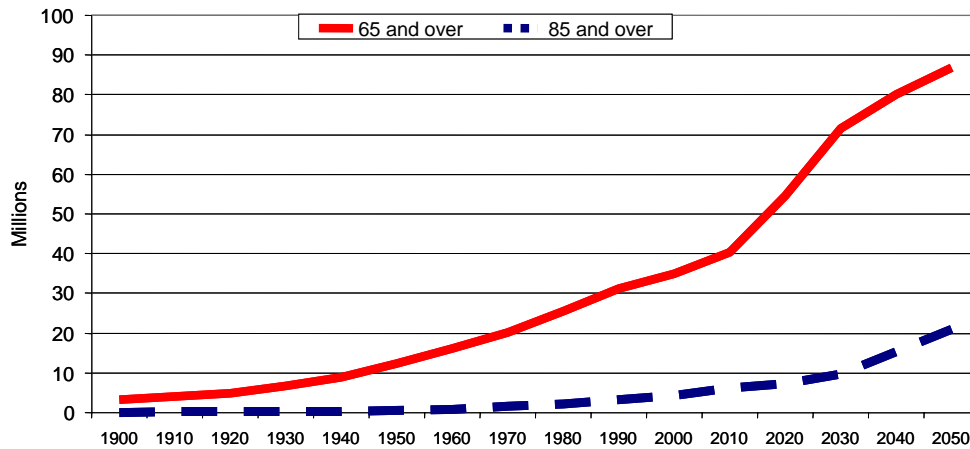
It could therefore be said that using current travel behavior of older Americans to predict future travel patterns provides a highly conservative estimate, with the likely reality that the number of drivers, workers, and VMT generated by the over-65 population in 2025 or 2050 will be much greater. With that caveat, major findings in this paper include:

- Between now and 2050 the population of people over 65 is expected to double from 36 million to 87 million people, from 12 percent currently to 21 percent of the population.
- Using current licensing and driving rates we can extrapolate the number of older drivers and the effect on VMT.
 - By 2050, half of the 70 million drivers 65 years and older will be older than 75.
 - VMT by older drivers is estimated (conservatively) to double by 2050.
- The projected growth in older drivers will have large impacts on safety and mobility, and important policy implications.
 - Increased exposure of this vulnerable group to highway and pedestrian accidents will possibly increase the amount of fatalities.
 - Continued aging of the vehicle fleet will result in longer lead times for new technology in the fleet.
 - Increased demand for multiple modes of transport in most suburban areas will result if older Americans age in place.

Population Trends for Older Americans

There were an estimated 36 million people 65 and older in the United States in 2004, accounting for 12 percent of the total population. By 2050, the 87 million older adults are expected to comprise 21 percent of the total population, more than doubling the population over 65, with historically unprecedented numbers of people aged 85 and over. Currently, women outnumber men aged 65 and over, for every 100 women in this age group, there are only 72 men. For those 85 and older, it drops to 45 men per 100 women.

Figure 1 – Historic and Forecast of Population aged 65 and 85 years and Older



Source: U.S. Census Bureau

The White House Conference on Aging (WHCOA) found that tomorrow’s older population can be expected to differ in distinct ways from prior generations. Specifically, they will:

- be healthier and wealthier,
- be better educated and desire to make contributions beyond traditional retirement,
- be more racially and ethnically diverse,
- live longer, and
- stay in the work force longer.

Current Travel of Older Adults

Older adults travel by auto more than any other mode--almost 9 out of 10 trips by older people are taken by personal vehicle. Older women are more likely than older men to be sitting in the passenger seat during a vehicle trip. Women 75 and older are two and a half times more likely to be passengers during a vehicle trip than men of the same age, and those trips are overwhelmingly more likely to be in a passenger car, rather than a van or SUV. Hence, women do not come into their retirement years with as much driving experience as men (15).

Older Americans walk for a higher percent of daily trips than younger adults – 8.4 percent compared to 7.5 percent, but use transit less often than younger adults.

The purpose of travel shifts with age, and the proportion of travel for shopping, recreation, and other purposes (including medical and visiting friends) increase as the traveler ages. Social and recreational trips, such as visiting friends, account for the largest percentage of older adults’ trips. Work and work-related travel account for only a small percent of daily travel for older adults – 3 percent for those over 64 compared to 21 percent for adults ages 30-54.

Over 60 percent of daily travel by older adults is done between 9 am and 4 pm, compared to young adults who have three distinct peak travel periods: morning (7 am to 8 am), lunch-time

(12 pm to 1 pm) and after-work (5 pm to 6 pm). The growth in the older population may add significantly to mid-day travel,

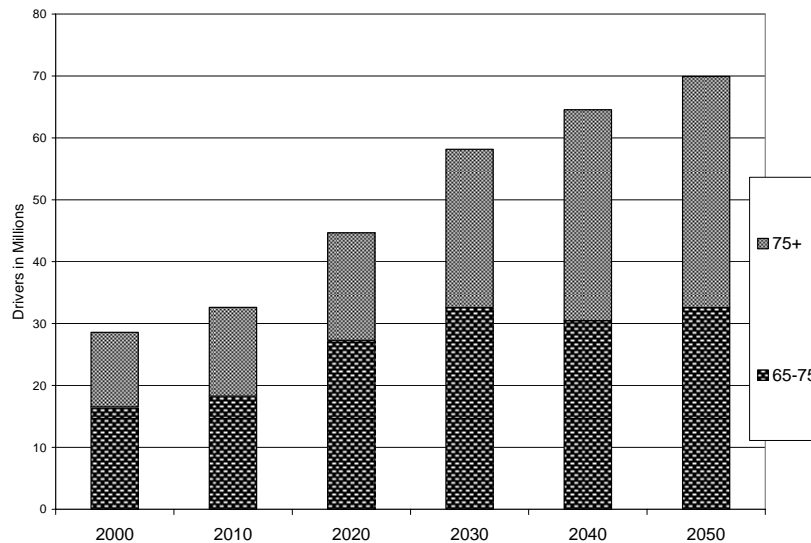
As the population ages, some researchers see a slowing in the growth of VMT, and possibly some easing of congestion. This is predicated on the idea that baby boomers will permanently stop working. Although some of the baby boom generation will retire from work completely, some will move to part-time work, second careers, or volunteer activities.

In 2000, 18 percent of men and 10 percent of women over the age of 65 were still in the labor force, and for the ‘younger’ elderly, people between 65 and 74 years of age, 25 percent of men and 15 percent of women continued to work. With increased longevity, physically undemanding jobs, and even for economic reasons, baby boomers, especially women, are more likely to continue working in their 60s and 70s. ‘Working retirement’ offers an opportunity to explore a second career, “give back to the community”, or simply to help fill the time.

Forecast of Travel Behavior Trends for Older Americans

Mobility is critical to well-being, and without alternative transportation options, many older drivers continue to drive as long as possible, even after the onset of age-related physical and cognitive impairment. More and more people are driving in their 80s and 90s. NHTS trend data shows that 45 percent of 85-95 year olds still drove in 2001 compared to only 36 percent in 1990. By 2050, half of the 70 million older drivers will be over the age of 75 (Figure 2).

Figure 2 – Number of Older Drivers, 2000-2050

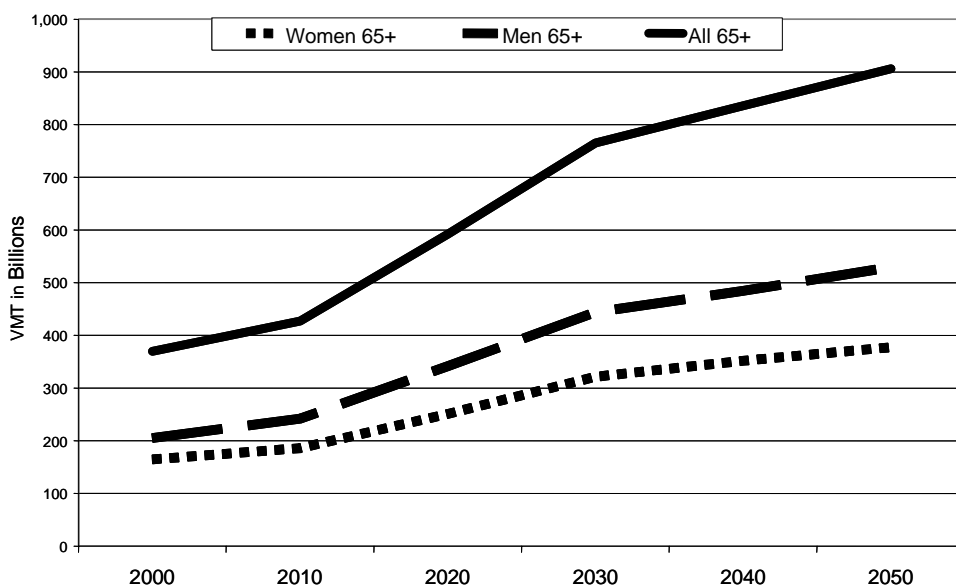


Source: NHTS data on drivers by age and sex combined with Census Bureau forecasts of population by age and sex. The proportion of older drivers that are women will increase dramatically, especially women of Hispanic and Asian ethnicity. While only 50 percent of current older Asian and Hispanic women drive, the baby boomers have driving rates at 80 percent. These are the 80-year old drivers of the future. As the mix of drivers changes, so will their destination choices, trip lengths, auto occupancies, and vehicle choices.

Even if baby boomers follow historic patterns and reduce their daily travel as they age, the sheer number of added travelers will significantly increase the number of miles and proportion of national VMT accounted for by older drivers. Figure 3 shows the projected increase in miles driven for men and women aged 65 and over.

In the next fifty years, this conservative projection shows that the miles driven by older men will grow from 205 to 538 billion miles per year, while women’s miles will more than double by 2050. This increases the exposure of older drivers and passengers to accidents, and will undoubtedly contribute to a higher number of older occupant fatalities.

Figure 3 –Forecast of Vehicle Miles of Travel for Drivers 65+

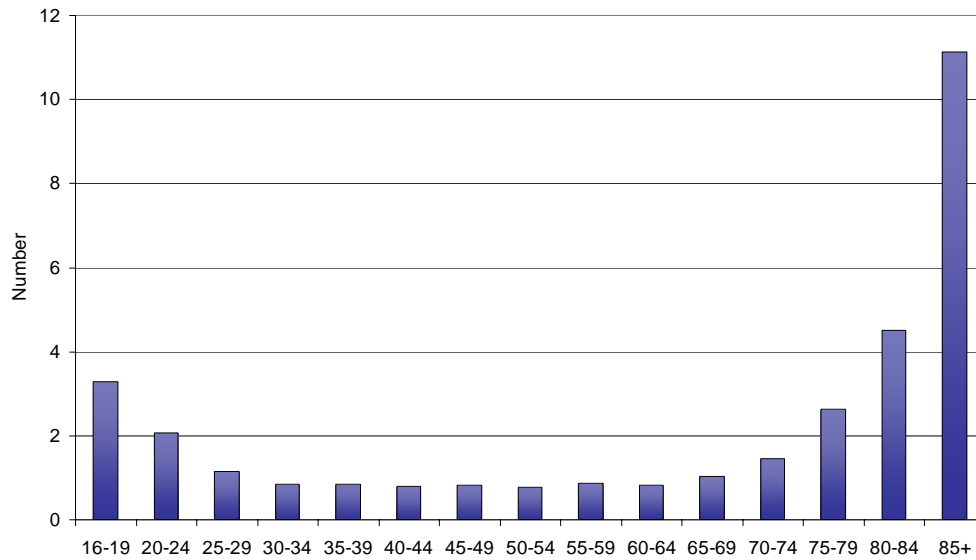


Source: Current estimates of annual driver miles (from 2001 NHTS) and population projections from the U.S. Census Bureau.

Importantly, current older drivers are more likely to be driving older cars than younger age groups. The age of the vehicle may indicate the types of safety features available, fuel efficiency, and reliability. For example, in 1988 automatic seatbelts were made standard equipment, but in 2001 (according to the NHTS) 26 percent of drivers over the age of 80 are driving pre-1988 vehicles, compared to 16 percent of drivers under 60. Women are more likely than men to keep an older vehicle as they get older (1).

The aging of the driving population in the U.S. has raised many safety concerns, particularly focused on older driver’s declining vision and ability. Drivers over the age of 80 are more likely to die in a crash than any other age group (Figure 4).

Figure 4 - Driver Fatalities per million VMT by Age (2001)



Source: NHTSA fatalities by age and sex (FARS data) combined with NHTS miles driven by age and sex, 2001

The importance of calculating the crash rate by miles driven, rather than by population or percent of licensed drivers, is that it puts accidents and fatalities into the context of the amount of driving done. Older Americans drive far fewer miles than younger drivers but are more likely to be injured or die in a crash of the same severity. The Insurance Institute for Highway Safety estimates that the increase in the older population will mean that by 2030 older people will be involved in 25 percent of all fatal car crashes (2).

Pedestrian Safety

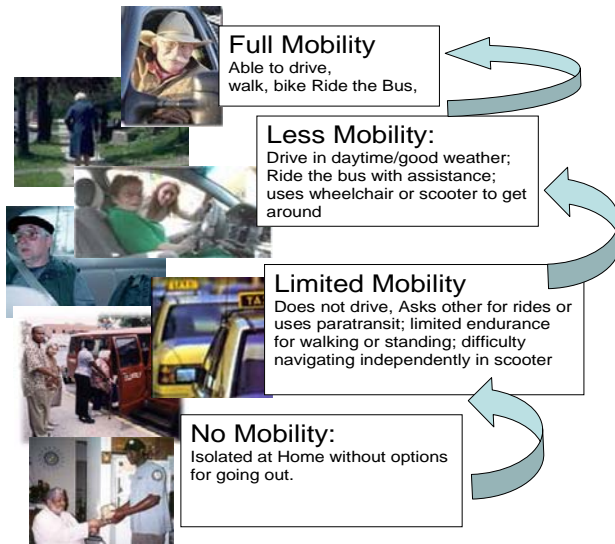
The aging of the population also brings several related pedestrian safety problems. The most discussed are crashes between pedestrians and autos. Historically, pedestrian crash data have been poor, and data on other pedestrian incidents, such as street falls, almost nonexistent. Improved data collection methods in the U.S. and abroad suggest that both pedestrian/vehicle crashes and pedestrian falls are much higher than previously thought, and that street falls may be even more significant than auto-pedestrian crashes among older adults (4).

In 2000, the pedestrian death rate for both men and women over age 70 was the highest of any age group. People aged 65 and over account for 22 percent of all pedestrian deaths and 32 percent of all nonfatal pedestrian injuries. People 70 and over, who constitute less than 10 percent of the population, account for 18 percent of pedestrian deaths. At the same time, pedestrian-auto crash rates have been dropping substantially over the last three decades. Most traffic safety researchers conclude that the decline is tied most closely to the fact that older people in developed countries are walking less and driving more (3).

Mobility Considerations

One of the most difficult transitions for older drivers is the decline or cessation of travel. The resultant loss of mobility is compounded by the reality that many of the factors that cause an older person to give up driving also inhibit or prohibit their use of other travel modes, such as

transit or walking. Reduced mobility puts an older person at higher risk of poor health, as the ability to obtain the goods and services necessary for good health and welfare is reduced. In addition, independence is stifled and loss of self-sufficiency can fuel depression. Women are especially susceptible to risks association with reduced mobility as they are already substantially more likely to be a) living alone, b) poor or have lower incomes as compared to men, and c) inadequately housed (15).



A high proportion of older adults report having a transportation disability, 22.5 percent of people aged 65 and older compared to 3.7 percent of people under the age of 65. Overall, a transportation disability means that people reduce their travel, ask others for rides, or limit driving to daytime. There is a reluctance to give up driving altogether, although nearly 8 percent of older people with a transportation disability have given up driving.

Dr. Sandra Rosenbloom and others note that many older citizens move back and forth along a continuum of mobility. The important policy implication is that options for the older citizen are required across the spectrum of mobility. She says: “People may stop driving temporarily because of a heart attack or other serious illness but begin driving again as their

health improves. Older people may need walkers and other mobility aids on some days but not on others. They may be able to travel by conventional public transit on a sunny day but need a ride on a rainy day.” (4)

Importantly, Rosenbloom discusses the need to structure public transit and other services to reduce car use before the individual ceases driving, to make older people more willing and able to use such options when they do stop driving.

The challenge is in providing these options where they are needed. Most older people remain in the houses where they raised their families; older people are half as likely to move as younger people (5). The 2000 Census finds that about 80 percent of people age 65 and over were in the same house as 10 years ago or more. If this holds true in the future and baby-boomers ‘age in place’ then the impact of the change in travel will be felt in the suburban areas where baby-boomers now reside.

In suburban and rural areas, home to nearly 80 percent of the older adult population, destinations are often too far to walk, public transit is unavailable, taxis are costly, and special services are limited. In particular, distance from public transportation presents a major barrier.

United We Ride--
A national initiative of the Federal Interagency Coordinating Council on Access and Mobility is working to simplify access for older adults and others who depend on alternative transportation for their day to day mobility

For men and women who have to give up driving, alternative means of transportation becomes a necessity. Despite that, current use of alternative transportation is relatively low. Excluding personal vehicle and walking, all other means of transportation only account for about 2 percent of daily travel for the older population. Of those with medical conditions that affect their travel, only about 12 percent use special transportation services (4). As the number of older adults continues to grow, many of these older Americans will be healthy and mobile, however many others, particularly those over the age of 85, will need alternative modes of transportation.

Conclusions and Policy Considerations

The aging of the baby boomers creates an unprecedented shift in the demographics of travelers in the United States. The projected 87 million people in the U.S. by 2050 will constitute 21 percent of the total population, more than doubling the population over 65. At their peak, older Americans alone will generate over 900 billion vehicle miles of travel annually and create significant demand for alternative modes as they experience both temporary and permanent driving reductions.

In summary, the aging of our population can be expected to increase highway and pedestrian deaths, continue to age the vehicle fleet, and place great demands on our transportation infrastructure for multiple modes of transport in most suburban areas. These impacts have significant policy implications for education and safety, modes of transportation, and system design and operations.

Fortunately, a great deal of work is being done to plan for the safety, mobility, and increased travel demand of the aging population. The White House Conference on Aging (WHCOA) identified goals (Resolutions) to guide the Federal Government's Executive Branch policy activities of the next ten years. Of the 50 resolutions that were included in the President's report, two Resolutions were explicitly related to transportation:

Resolution # 3 — Transportation Options--Ensure That Older Americans Have Transportation Options to Retain Their Mobility and Independence.

Resolution # 47 — Capacity for Safe Driving--Support Older Drivers to Retain Mobility and Independence through Strategies to Continue Safe Driving.

In addition, several agencies at the Federal and State level are working towards assessments and solutions in the safety and mobility areas.

NHTSA has had an older driver safety program since 1989. In 2005 with the passage of the Safe Accountable, Flexible, Efficient Transportation Equity Act, A Legacy for Users (SAFETEA-LU), Congress directed NHTSA to develop a plan to, among other things, provide information and guidelines to people who can influence older drivers, and to conduct field tests to assess the safety benefits and mobility impacts of programs.

In 2003, DOT published *Safe Mobility for a Maturing Society: Challenges and Opportunities*. This report outlines the strategies that the Department should pursue to address the needs of a changing population. One strategy focuses on the value of "targeted State and local safe

mobility action plans.” The document suggests that stakeholder groups convene into consortia and that action plans should be developed.

States with a high proportion of older drivers, such as Florida, currently are having some success in managing the licensing of older drivers by developing a collaboration of agencies that work together to identify when an older individual can no longer safely operate a vehicle, including the licensing authorities, law enforcement, aging services, Highway Safety Offices, medical providers, and non-governmental organizations (NGOs).

Currently, five federal departments administer 15 programs that address the mobility issues of older adults. These programs help make transportation available, affordable, and accessible, such as by providing transit passes or reimbursement for mileage. According to an analysis of national data by the Government Accountability Office (GAO) certain types of needs are not being met, including those for trips to multiple destinations or for purposes that involve carrying packages; to life-enhancing activities, such as cultural events; and in rural and suburban areas (GAO, 2004). Table 1 provides a summary of the obstacles identified by GAO in this report.

Table 1
Obstacles, Strategies, and Trade-offs Associated with Meeting Transportation-Disadvantaged Seniors’ Mobility Needs, as Identified by Experts and Stakeholders

Obstacles	Strategies	Trade-offs
Seniors are not sufficiently encouraged to plan for driving alternatives	Facilitate a gradual transition from driver to nondriver	Can increase demand for services and, therefore, increase costs
Government policies do not always address seniors’ varied needs	Improve alternatives and include seniors in transportation-planning process	Can be expensive and time-consuming
Funding constraints limit local agencies’ ability to address needs	Increase funding and funding flexibility and improve coordination	Takes funds away from other uses, flexibility can decrease accountability, and coordination requires sustained effort

Source: GAO.

Combining the goals of safety and mobility, the USDOT report on “Safe Mobility for a Maturing Society: Challenges and Opportunities” developed a vision of our transportation system that: “Offers safe mobility to all people and allows older persons to remain independent and age in place.” This report emphasizes that efforts are needed to help older adults keep their licenses and cars as long as possible, as well as to provide safe, reliable and convenient alternative means of transportation for those for whom driving is no longer a safe option.

Although many studies, goals, and resolutions address the issue, the immensity of this demographic shift demands effective planning. In the context of changed travel behavior for a significant portion of the population, impacts on vehicle fleet characteristics, and the current dearth of alternative mode options for older non-drivers, there is the potential for a mobility and safety crisis. Potential travel demand changes due to the aging of the population include:

- Shifts in travel characteristics including time of day, vehicle trip lengths, and trip purposes which alter the fundamental assumptions used in travel demand forecasting and transportation planning.
- Dramatic increases in VMT by older drivers which has important safety implications drivers, passengers, and pedestrians,
- Increased need for alternative modes in suburban areas as older Americans experience temporary and permanent driving cessation,
- Potential aging of the vehicle fleet which reduces the opportunity for adoption of new safety technologies.

Importantly, travel behavior must be monitored as trends unfold to help us adjust as needed. Commitment to collect comprehensive data on passenger travel, such as that in the NHTS, will help track changes and anticipate future needs.

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