The Effect of the Availability of a Car on the Consumption Expenses of Older Adults

The purpose was to explore the relationship between the availability of an automobile and consumption expenses for food at home, food away from home, tickets, and trips for those who were 65 and older. It was hypothesized that those who no longer had an automobile available would decrease their expenses. The data were drawn from the Health and Retirement Study and the Consumption and Activities Mail Survey. Multilevel model for change was used for analysis. Those who no longer had a car available had a decline in both their expense for food at home and food away from home. The expenses on tickets and trips did not reveal a similar decline. The results for food: (1) suggest that the life cycle hypothesis which assumes relatively stable consumption over the lifetime is influenced by resources (e.g. availability of a car), and (2) provide support for the theory of planned behavior because perceived behavior control (e.g. availability of a car) influenced consumption behavior.

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Introduction

Because of modern medical technology, Americans are enjoying a longer life expectancy. People who were born in the year 1900 had a life expectancy of 47.3 years, while those who were born in 1950 had a life expectancy of 68.2 years (National Center for Health Statistics Health, 2007). The longer life expectancy, accompanied with a decreasing birth-rate, has changed the age composition of the population. It is estimated that in 2030, one out of five people in the U.S will be age 65 or older (U.S. Census Bureau, 2000). This trend is expected to continue for some time which means that there will a large proportion of older adults. The significance of the well-being of older adults would only increase its importance. Also, given the potential market needs of this large proportion of the population, it is important to explore their consumer behavior.

The majority of older adults depend on automobiles as their main method of transportation (AARP, 2005). In 2006, there were 30 million older licensed drivers; they were approximately 15% of all licensed drivers (NHTSA, 2007). By 2029, about one out of four licensed drivers will be 65 or older (NHTSA, 2008). However, as people grow older, some perceptual and cognitive abilities decline, including visual, audio, attention, and so on. The decline in perceptual and cognitive abilities may gradually diminish the safety of driving to a point that older adults decide not to drive anymore. Driving cessation marks a significant change to the older adults. A few studies have looked at the relationship between driving cessation with social integration, depression, and consumption (Kim & Richardson, 2006; Mezuk & Rebok, 2008). Kim and Richardson (2006) found spending on dining out, tickets, and trips was negatively related to driving cessation. Mezuk and Rebok (2008) found that driving cessation was associated with a smaller network of friends.

Shopping is the main purpose of private vehicle trips by individuals age 65 or older. Shopping accounted for 44% of all trips (AARP, 2005). However, only one study was located that examined the relationship between driving cessation and consumption. Kim and Richardson (2006) conducted cross-sectional research and compared those who continued to drive and those who stopped driving. They found that the expenses for dining out, trips, and tickets were significantly lower for those who stopped driving compared to those who continued to drive. However, the expense for food at home did not differ between those who continued to drive and those who stopped driving. The authors concluded that expenses on the basic necessities did not change but secondary consumption, such as dining out, trip, and ticket expenses, was associated with the driving status of the person.

It is important to take into account the dynamics within a household while studying the consumption pattern of the entire household. In 1977, 60% of older drivers were male. Now, a larger proportion of older women drivers learned to drive when they were young, and they continue to drive as they grew older (U.S. Department of Transportation, 2008). In a typical household in which an older couple live together, it is highly likely that one person is not driving while the other person is still driving. Therefore, whether the household has a car available was used as the focus of the study.

Furthermore, no studies have looked at the rate of change of consumption patterns associated with the transportation of the household. In this study, a longitudinal approach was taken, which enables the researchers to explore the consumption pattern using three waves of data.

Literature Review

Theory

Two theories are used to guide the study. They are the life-cycle hypothesis and the theory of planned behavior. The life cycle hypothesis was proposed by Modigliani and Brumberg (1957) and Ando and Modigliani (1963). The life-cycle hypothesis assumes that a person comes into the world without an inheritance (e.g. wealth) and leaves no bequest when he or she dies. It is also assumed that income will increase as a person attains an education and work experience. Income is assumed to decrease as a person approaches old age and retires from full-time work. In contrast, a person's consumption is expected to be relatively stable during their lifetime.

The theory of planned behavior was proposed by Ajzen (1991). It is based on previous research done by Ajzen and Fishbein in 1977, and the theory was expanded from Fishbein's (1980) theory of reasoned action. According to the theory of planned behavior, there are three antecedents of behavioral intention which influence the actual behavior. The three antecedents are attitude toward the behavior, subjective norms, and perceived behavioral control. Several studies have utilized the theory of planned behavior to examine consumption behavior. Notani (1997) used the theory of planned behavior and added perceptions of affordability to the model to demonstrate the relationship between these factors and consumption behavior. De Cannière, De Pelsmacker, and Geuens (2008) compared the theory of planned behavior and relationship quality models to see which was better for predicting purchase intentions. They found that the theory of planned behavior performed better.

In this study, the idea of the relationship between perceived behavior control and behavior was adapted from the theory of planned behavior. According to the theory of planned behavior, if the perceived behavior control is greater, the person is more likely to perform the behavior. The perceived behavior control was approximated by the measurement of the availability of an automobile and the consumption behavior was approximated by the dollar value of the consumption in several categories. The relationships between the availability of an automobile to different kinds of consumption were examined to see whether the availability of the automobile influenced a person's consumption behavior.

Purpose

The purpose of this study was to explore the relationship between the availability of an automobile and consumption expenses for food at home, food away from home, tickets, and trips. It is hypothesized that those who no longer had an automobile in their households would decrease their expenses on the consumption categories. The term "car" will be used in place of automobile because car is the commonly accepted term.

Hypotheses

H1: Those who no longer have a car available in their households will have a decrease in their expenses on food at home.

H2: Those who no longer have a car available in their households will have a decrease in their expenses on food away from home.

H3: Those who no longer have a car available in their households will have a decrease in their expenses on tickets.

H4: Those who no longer have a car available in their households will have a decrease in their expenses on trips.

Methodology

Sample

The data were drawn from the 2002, 2004, and 2006 Health and Retirement Study (HRS) and the 2003, 2005, and 2007 Consumption and Activities Mail Survey (CAMS). Both the HRS and the CAMS are sponsored by the National Institute on Aging (NIA) and conducted by the University of Michigan. The HRS is a longitudinal study focusing on the health and retirement of older adults. The sample represents the noninstitutionalized U.S. population who are 51 or older. The CAMS is a supplement to the HRS; it is intended to gather information on the daily activities and the consumption of older adults. In fall 2003, 4,156 questionnaires were sent to those who participated in the 2001 HRS.

In this study, the data from the 2002, 2004, and 2006 HRS and the 2003, 2005, and 2007 CAMS were merged. The independent measure, whether or not a car was available, was obtained from the 2002, 2004, and 2006 HRS. The control variables were obtained from the 2002 HRS. The dependent variables related to expenses for several categories were obtained from the CAMS.

Independent Variables

The main independent variable was "Do you have a car available to use when you need one?" Since this question was only asked for those who were 65 or older, those who were not 65 or older were excluded from this study. Only those who answered Yes to this question in the 2002 HRS were retained for this study. The responses to this question in the 2002, 2004, and 2006 HRS were then combined to form two groups. Those who answered Yes to the question across three waves were categorized as "Still available." These responses accounted for 96.97% of the total sample. Those who answered No to the question in both the 2004 and 2006 HRS or those who answered Yes to the question in the 2004 HRS but no in the 2006 HRS were categorized as "No longer available." These responses accounted for 3.03% of the total sample. Only one person had a car available in the 2002 HRS, not available in the 2004 HRS, and available again in the 2006 HRS. Since only one person fell in this category and it was not possible to infer when the sample size was one, this person was dropped from the study.

The other control variables were obtained from the RAND HRS. The RAND HRS data was funded by the NIA and the Social Security Administration, and produced by the RAND Center for the Study of Aging. Income of the household, which was measured in the 2002 HRS, was transformed into log form because of its highly skewed nature. After the transformation, the mean was 4.37, and the standard deviation was 0.36.

Household size was utilized as a categorical variable. It was coded as: one person, two people, three people, and four or more people in the household. Gender was categorized as male or female. Race was categorized as White or non-White. Education was measured by years of education reported in the 2002 HRS. Health was measured by self-reported health, which ranged from excellent (1) to poor (5).

Dependent Variables

Four dependent variables were examined in this study: expenses for food at home, food away from home, tickets, and trips. Food at home measured food and drinks including alcohol that a person can buy in a grocery or other stores. Food away from home included items in restaurants, cafes, and diners, including take-out food. For the two food-related variables, the respondents could chose either to answer the expense as weekly, monthly, or annually. The response was multiplied (by 52, 12, or 1) to estimate the annual expense.

The ticket variable included tickets to movies, sporting events, and performing arts. For the ticket variable, the respondent could choose whether the expense was monthly or annually. The response then was multiplied (by 12 or 1) to estimate the annual expense. The trip variable included transportation, accommodations, and recreational expenses on trips. For this question, only the annual value was asked. The cases which had values that were three standard deviations away from the mean were deleted, resulting in a loss that was less than 5% of the original cases.

Analytic Plan

Multilevel model for change was used in this study. It is designed to address two types of questions. The first one is about within-person change, and the second one is about between-person change. In this study, the first level of the question was (1) How does each household's consumption in different categories change over time? And the second level of the question was (2) Does the change vary by whether there was a car available in the household?

In order to answer the above questions, two multi-level models were conducted for the analysis of change on consumption of food at home, food away from home, ticket expenses, and trip expenses using Stata. The formula was derived from the following two formulas. By combining (1) and (2), where

$$\pi_{0i} = \gamma_{00} + \gamma_{01}(\log(\text{income})) + \gamma_{02}(\text{householdsize}) + \gamma_{03}(\text{gender}) + \gamma_{04}(\text{race}) + \gamma_{05}(\text{education}) + \gamma_{06}(\text{health}) + \gamma_{07}(\text{caravailable}) + e_{0i}, (1)$$

$$\pi_{ij} = \gamma_{10} + \gamma_{11}(\log(\text{income})) + \gamma_{12}(\text{householdsize}) + \gamma_{13}(\text{gender}) + \gamma_{14}(\text{race}) + \gamma_{15}(\text{education}) + \gamma_{16}(\text{health}) + \gamma_{17}(\text{caravailable}) + e_{ij}, (2)$$

the full model was

$$Y_{ij} = \pi_{0i} + \pi_{ij}(\text{time}) + e_{ij}$$
$$= \gamma_{00} + \gamma_{01}(\log(\text{income})) + \gamma_{02}(\text{householdsize}) + \ldots + \gamma_{10}(\text{time}) + \gamma_{11}(\log(\text{income}) \times \text{time}) + \gamma_{12}(\text{householdsize} \times \text{time}) + \ldots + e_{ij}(\text{time}) + e_{ij} + e_{0i}, (3)$$

Results

The weighted descriptive statistics are presented in Table 1. About 43.25% of the sample had only one

person in the household, 44.63% had two people in the household. About 7.67% had three people in the household, and only 4.45% had four people or more in their household. As to the gender variable, 34.09 % were male, and 65.91% were female. About 89.89% of the total sample was White, and 10.11% of the total sample was non-White. The mean of years of education was 12.15, and the standard deviation was 3.04. The mean of self-reported health was 2.78, with the standard deviation equaled to 1.09. The mean of income reported in 2002 was $34,458, and the median was $23,267.

The mean expense for food at home in 2003, 2005, and 2007 were $3,600, $4,657, and $4,009, respectively. The mean expense for food away from home in 2003, 2005, and 2007 were $1,931, $1,750, and $1,796, respectively. The mean expense for tickets in 2003, 2005, and 2007 were $459, $407, and $439, respectively. The mean expense for trips was $1,913, $2,269, and $2,283, respectively.

All the dependent variables were transformed into log form in order to accommodate the skewed distributions. The mean value of food at home at 2003, 2005, and 2007 were 3.40, 3.43, and 3.43 respectively. The mean value of food away from home at 2003, 2005, and 2007 were 2.99, 2.92, and 2.91 respectively. The mean value of tickets was 2.22, 2.23, and 2.17 respectively, and the mean value of trip expenses was 2.97, 3.03, and 3.03, respectively.

Table 1.
Descriptive Statistics of Variables from the CAMS and the HRS

Dependent Variables	N	Mean	Median	S.D.
Food at home				
03	1435	3600.7670	2600.0000	3773.7640
05	1346	4657.3200	2760.2750	23201.1700
07	1192	4009.0170	2930.4410	4860.3570
log10				
03	1435	3.4031	3.4150	0.3895
05	1346	3.4307	3.4410	0.4004
07	1192	3.4346	3.4669	0.4290
Food away from home				
03	1192	1931.3760	1040.0000	4356.2890
05	1117	1750.4080	955.4792	4141.1710
07	1015	1796.4650	955.4840	3532.7400
log10				
03	1192	2.9874	3.0170	0.5139
05	1117	2.9206	2.9802	0.5360
07	1015	2.9055	2.9802	0.5759
Tickets				
03	526	459.1680	160.0000	1018.3150
05	510	407.7621	159.2465	1196.5560
07	430	439.4349	135.2511	1278.4950
log10				
03	526	2.2160	2.2041	0.5557
05	510	2.2293	2.2021	0.5436
07	430	2.1708	2.1311	0.5868
Trips				
03	855	1913.2000	1000.0000	3319.2600
05	748	2269.3020	1061.6440	5565.6620
07	670	2283.2840	1127.0930	3544.5260
log10				
03	855	2.9690	3.0000	0.5497
05	748	3.0250	3.0260	0.5532
07	670	3.0310	3.0520	0.5504
Independent Variables				
Income				
02	2014	34458.7500	23267.9900	43644.8800
log10				
02	2014	4.3762	4.3668	.3602

Education	2111	12.1495	12.0000	3.0397
Health	2111	2.7756	3.0000	1.0935
Whether has a car				
No longer available	30	3.03		
Still available	950	96.97		
Categorical Independent Variables	N	Frequency		
Availability of Car				
03	1343	98.41		
05	1167	97.04		
07	990	95.21		
Gender				
Male	618	34.09		
Female	1194	65.91		
Race				
White	1628	89.89		
Non-White	183	10.11		
Household Size				
Single	782	43.25		
Couple	807	44.63		
Three people	139	7.67		
Four or more	80	4.45		

Food at Home

The results of the multi-level modeling of consumption of food at home are presented in Table 2. Those who had a higher income in 2002 had a higher expense for food at home in 2003. Compared to households with one person, those who had two persons, three persons, and four or more in the household had a higher expense for food at home. Those who did not have a car available in year 2004 or 2006 had a higher expense for food at home in year 2003.

To explain the results relating to rate of change, compared with those who had only one person, those who had two or three people in the household had a negative slope, which meant their expense declined from 2003 to 2007, while those who had four people or more in their household did not have a significantly different slope. Compared to White respondents, non-White respondents had an increase for food at home from 2003 to 2007. Compared to those who had a car available for the three waves, those who no longer had a car available had a declining expense on food at home from 2003 to 2007.

Table 2.
Multi-level Modeling of Consumption on Food at home (N = 1073)

		Estimates	Standard Error	P-value	
Fixed effects					
Initial Status					
	Intercept	2.6085	.2821	0.00	***
	Log of income	.1343	.0633	0.03	*
	Couple	.2434	.0416	0.00	***
	Three people	.3248	.0806	0.00	***
	Four or more	.4306	.1013	0.00	***
	Female	-.0152	.0383	0.69	
	Non White	-.1121	.0728	0.12	
	Education	.0096	.0073	0.19	
	Health	.0155	.0185	0.40	
	Car not available	.3404	.1111	0.00	***

Rate of Change					
	Intercept	-.0480	.0549	0.38	
	Log of income	.0080	.0124	0.52	
	Couple	-.0207	.0081	0.01	*
	Three people	-.0319	.0155	0.04	*
	Four or more	-.0328	.0196	0.09	
	Female	-.0010	.0075	0.90	
	Non White	.3966	.0141	0.01	*
	Education	.0003	.0014	0.82	
	Health	-.0033	.0036	0.36	
	Car not available	-.0821	.0223	0.00	***
Random effects					
Level 1					
	Within-person	.2450	.0060		
Level 2					
	In initial status	.2792	.0316		
	In rate of change	.0562	.0059		
	Correlation	-.7070	.0611		

Food away from Home

The results of the multi-level modeling of consumption for food away from home are presented in Table 3. Compared to the single person households, those who had two or three people in their household had a higher expense for food away from home in 2003. However, those who had four people or more in their household did not have a higher expense compared to the single person households. One more year of education was positively related to the expense for food away from home in year 2003.

In regard to rate of change, those who had higher household income reported in 2002 had an increasing consumption on food away from home. Compared to single person households, those who had two people in the household had decreasing expense on food away from home. Compared to men, women had a decline in spending on food away from home. Those who no longer had a car available had a marginally significant decline in spending on food away from home.

Table 3.
Multi-level Modeling of Consumption on Food away from Home (N = 1013)

	Estimates	Standard Error	P-value	
Fixed effects				
Initial Status				
Intercept	1.8588	.3921	0.00	***
Log of income	.1443	.0858	0.09	
Couple	.2471	.0569	0.00	***
Three people	.2768	.1070	0.01	*
Four or more	.1305	.1442	0.37	
Female	.0603	.0512	0.24	
Non White	.1428	.1108	0.20	
Education	.0207	.0101	0.04	*
Health	-.0172	.0250	0.49	
Car not available	.1990	.1618	0.22	

Rate of Change					
	Intercept	-.0940	.0400	0.02	*
	Log of income	.0430	.0159	0.01	*
	Couple	-.0260	.0106	0.01	*
	Three people	-.0359	.0199	0.07	
	Four or more	-.0182	.0270	0.50	
	Female	-.0309	.0096	0.00	***
	Non White	.0063	.0204	0.76	
	Education	-.0022	.0019	0.24	
	Health	.0013	.0047	0.77	
	Car not available	-.0578	.0298	0.05	
Random effects					
Level 1					
	Within-person	.3415			
Level 2					
	In initial status	.2217			
	In rate of change	.0259			
	Correlation	1	.		

Tickets

The results of the multi-level modeling of consumption for tickets are presented in Table 4. Income was positively related to the expense on tickets in 2003. Compared to single person households, those who had two people in the household had a higher expense on tickets in 2003. As to the rate of change, compared to single households, those who had two people in the household had a decrease of their expense on tickets from 2003 to 2007.

Table 4.
Multi-level modeling of Consumption on Tickets (N=1231)

	Estimates	Standard Error	P-value	
Fixed effects				
Initial Status				
	Intercept	.5218	.6528	0.42	
	Log of income	.3178	.1361	0.02	*
	Couple	.2287	.0962	0.02	*
	Three people	.3397	.1932	0.08	
	Four or more	.2070	.2558	0.42	
	Female	-.0600	.0859	0.49	
	Non White	-.2571	.1949	0.19	
	Education	.0325	.0178	0.07	
	Health	-.0422	.0430	0.33	
	Car not available	-.0826	.3820	0.83	
Rate of Change					
	Intercept	.0246	.1222	0.84	
	Log of income	-.0026	.0254	0.92	
	Couple	-.0381	.0182	0.04	*
	Three people	-.0634	.0354	0.07	
	Four or more	-.0113	.0504	0.82	
	Female	.0018	.0162	0.91	
	Non White	.0254	.0368	0.49	
	Education	-.0023	.0033	0.49	
	Health	-.0050	.0081	0.54	
	Car not available	-.0030	.0680	0.97	
Random effects					

Level 1			
	Within-person	.3585	.0144
Level 2			
	In initial status	.3699	.0804
	In rate of change	.0518	.0204
	Correlation	-.3065	.3752

Trips

The results of the multi-level modeling of consumption for trips are presented in Table 5. Income was positively related to the expense on trips in 2003. Education was also positively related to the expense on trips in 2003. There were no significant results to the rate of change on trip expenses.

Table 5.
Multi-level modeling of Consumption on Trips (N=1867)

	Estimates	Standard Error	P-value	
Fixed effects				
Initial Status				
	Intercept	.3848	.4758	0.42	
	Log of income	.4784	.1037	0.00	***
	Couple	.1284	.0697	0.07	
	Three people	-.0253	.1308	0.85	
	Four or more	.3222	.1736	0.06	
	Female	-.1090	.0615	0.08	
	Non White	.0295	.1194	0.81	
	Education	.0370	.0118	0.00	***
	Health	-.0413	.0302	0.17	
	Car not available	-.1104	.2116	0.60	
Rate of Change				
	Intercept	.1628	.0857	0.06	
	Log of income	-.0319	.0187	0.09	
	Couple	.0019	.0127	0.88	
	Three people	.0205	.0245	0.40	
	Four or more	-.0335	.0309	0.28	
	Female	-.0002	.0111	0.99	
	Non White	-.0021	.0209	0.92	
	Education	-.0010	.0022	0.66	
	Health	.0000	.0055	1.00	
	Car not available	.0102	.0395	0.80	
Random effects				
Level 1				
	Within-person	.3170	.0102	
Level 2				
	In initial status	.3784	.0504	
	In rate of change	.0411	.0152	
	Correlation	-.2958	.2754	

Discussion on the Main Hypotheses

Availability of a Car

Two of the four main hypotheses were supported in this study. Those who no longer had a car available had a decline in both their expense for food at home and food away from home, although the results for food away from home was only marginally significant. On the other hand, the expenses on tickets and trips did not reveal a similar decline. The results for food suggest that the life cycle hypothesis which assumes relatively stable consumption over the lifetime is influenced by resources (e.g. the availability of a car) that are available to the person. The results for

food provide support for the theory of planned behavior because perceived behavior control (e.g. the availability of a car) influenced consumption behavior.

The results supported the hypotheses that those who no longer had a car available in the household had limited access to grocery stores and restaurants. Some of these older adults might rely on their neighbors, relatives, or public transportations to get to the grocery store. If they were in a carpool, they would need to coordinate their travel with the schedule of the driver and/or other riders. The older adults might not have enough time to walk around the grocery stores and shop freely. Instead, they might have to plan very carefully and only buy necessities. Some older adults might rely on relatives or friends to bring groceries to their home. If that is the case, they would no longer have the opportunity to browse through the store and see what is new on the shelves. Therefore, their expense on food at home was decreasing. Similarly, those who did not have a car could not go to a restaurant whenever they wanted. Instead, they would be able to go out and enjoy lunch or dinner only when they were accompanied by other people who had cars and were willing to give them a ride.

The results for expenses on trips and tickets did not show declines related to not having a car available in the household. The results were not as hypothesized. One possible reason for no change in the expense on tickets was that there were not enough responses for this dependent variable. Only about five hundred out of two thousand responded to this variable. Therefore, there was not enough power to test the significance.

Similarly, only about eight hundred out of two thousand responded to the trip variable. This might be the reason why there was no relationship between no longer having a car available and expenses for trips. Another reason for not finding a significant decline for trips might result from the respondent using a rental car during a trip. People who had a car might go for a trip using their own car while those who no longer had a car available might rent a car while taking a vacation. Renting a car could lead to an increase on their expenses on trips.

Discussion on Other Control Variables

Food at Home

In regard to expenses on food at home, those who had a higher income might have had a higher standard of living; therefore, they spent more on food at home in 2003. As the number of people in the household increases, much more was spent on food at home. An interesting finding here was that those who stopped having a car in their household had a higher initial expense although in 2002, they all had cars. This might mean that the reason they stopped having a car was related to financial reasons so that instead of having meals away from home, they stayed at home. Or this might mean that all the members in the household were already not feeling comfortable to drive in 2003, but they still had the car in the household just in case. Therefore, they changed their habits of dining out and stayed at home.

As time went by, people spent less on food at home also. This may because they became more health conscious and ate less. Compared to single person households, those who had two or three people in their household had a decline for expenses on food at home. Perhaps everyone became more health conscious and the decline in spending became larger. Compared to White households, non-White households had a smaller decline for food at home. This might be related to a preference for less expensive foods and they did not change what they ate as they aged.

Food away from Home

Compared to single-person households, those who had two or three people in the household had higher expenses on food away from home in 2003, while those who had four or more did not differ significantly with single-person households. The reason why those with more people in the household spend more on food away from home was straight forward. It was because they simply had more people to feed. However, those who had four people or more in the household may feel that dining out cost a lot because they had so many people. Therefore, they did not dine out as much as the other smaller households. Those who had a higher level of education level may prefer a higher standard of living. Therefore, their expenses on food away from home in 2003 were relatively higher.

As time went by, people spent less on food away from home. This implies that as people grow older, they became limited in their resources. Therefore, their expense on food away from home declined. Income was positively related to the rate of change in expense of food away from home. This implies that those who had higher income did not have to reduce their spending as much since they had more money available. Two-person households had a more rapid decline compared to single-person households although they had a higher initial amount. The result can be explained that the two-person households incorporate having meals at home as their routine, and compared to the single-person households, who only cook for a single person, it was relatively more efficient to prepare meal for two people at one time. Therefore, their expense on food away from home declined. Compared to men, women had

a steeper decline for expense on food away from home. This may be explained that women were more familiar with cooking, especially for this age group. While men may have to learn how to cook, women can more easily prepare meals at home.

Tickets

For the ticket expense, it is reasonable that the expense for tickets was positively related to income. Also, those who had two people in the household may like to go out for entertainment more often than those who live alone. However, as they became older, the couples might decide to stay at home and change their preference for entertainment. Therefore, there was a decline in spending on tickets for couples.

Trips

The consumption on trips was also positively related to income. Another variable that was positively related to the expenses on trips in 2003 was education level. This suggests that those who had a higher education level would spend more on trips.

Implications and Future Research

Those who no longer had a car available had a decline on their expenses for food at home and food away from home. This implies that the ease of shopping was a significant factor associated with shopping expense. If a car is available in the household for the older adult to use, it is easier for them to shop, and they do not have to limit their consumption because of being unable to shop. As people grow older, they may not feel safe while driving, but they still need to have access to other stores in order to shop for necessities. This implies that there is a demand on transportation for the older adults.

Service Providers

To the transportation service provider, the results in this study showed a market of a mature consumer-oriented transportation. While having relatives or friends to come and help them either go shopping or dining might be a way of meeting their needs, people might still want to enjoy shopping alone whenever and wherever they want. Transportation service providers might consider working with grocery stores and restaurants to provide a transportation service focusing on shopping or dining out specially designed for the older adults. This may create a positive situation in which the mature consumers are provided with easier access to the stores, the transportation service providers can increase their markets, and the stores would realize an increase in sales.

Policy Makers

To the policy maker, it implies the importance of providing a more convenient public transportation. Many older adults do not take advantage of the benefits of public transportations because it is not as convenient as having a vehicle at home. A more convenient transportation might imply a more flexible schedule, more stops to the housing complex, or a slower and safer way of driving. If there is a convenient public transportation available, those who don't have a car in their household can take advantage of the public service, and still enjoy the convenience of grocery shopping or dining out.

Future Research

The change of consumption on food away from home after there is no car available in the household may have an impact on other aspects besides household budgets. Gutherie, Lin, and Frazao (2006) compared consumption and nutrition of food away from home in 1977-78 and 1994-96, and they found that a larger amount was spent on food away from home in 1994-96. Furthermore, the food away from home contained less nutrition, such as dietary fiber, calcium, and iron. One may infer that eating less food away from home reflects a healthier way of diet. However, in this study, the amount of money spent on both food away from home and food at home decreased. Therefore, it was possible that the household changed their dining behavior, and purchased cheaper food to replace the expensive food, or it was possible that the household members simply did not eat as much. Further research is needed to explore the consequence of nutrition intake after not having a car available in the household.

Since the sample size was small and most of the people in the study continued to have a car throughout the three waves, only a limited number of people fell in the category of not having a car available. If a larger sample size could be obtained in the future, it would be possible to examine consumption expenses in more detail. Furthermore, in order to see whether the public transportation plays a role in the relationship between having a car and consumption, the measurement of perceived ease of use of public transportation will be needed in the future.

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