EE489: Seminar in Industrial Economics

Factors that affect expenditure on pet product and service of pet owner in Bangkok

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Introduction

Pet business in Thailand has grown constantly due to the change of social condition in Thailand. Thai people's residence areas are moving from the countryside to urban areas along with Thai living styles are changing from living in extended family to single family. The restyle of Thai social condition and lifestyle make Thai millennial behaviors alter. Most of Thai millennials are getting married later in life and having single status. Based on research from Gale, 44% Millennial have an opinion of having kids as having pets. Therefore, Pet becomes their alteration for not married and having kids. Moreover, the beginning of an aging society in Thailand also increases the trend of having pets to replace their friends and lineage.

Looking more on pet business in Thailand, The increasing pet population in Thailand has an impact on the market demands from the influences of the millennial lifestyle and behavior. Thailand's pet business had an approximation of 35 billion Baht for the market value in 2019, with 10 percent of the market growth per year (Marketeer online, 2019). Pet business in Thailand can be divided into 3 main groups such as pet food, pet healthcare and pet product. Half of the pet market value is dominated by pet food.

Meanwhile, the past researcher suggested that the spending on pets in the United State rises annually and spending on pet products is growing faster than other retail sectors. The baby boom generation is also embracing pet ownership, so demand for pet products and service rise from the growth of the pet population (Janice Arenofsky, 2020). In addition, the study from Purdue University shows that more than 50% of pet owners believe that they have an obligation to provide the best standard care for their pet which they are capable of. This can be the reason that people put a lot of afford and spending on their pets.

Pet business expenses depend on numerous factors of the pet owners such as demographic factors, lifestyle factors and other factors which are related to their pet. In this study, Expenses on pet product and service of the pet owner in Bangkok reflect the specific intention or the behavior of the pet owner. As a result, the objective of this study is to understand about the characteristics and behavior of the Thai pet owners in Bangkok affecting their expenses on pet products and services. Hence, the study will show the

relationship between the influential factors and the level of pet product and service expenses.

This paper will help Thai pet business owners to understand more about the Thai pet owner in Bangkok purchasing behaviors and factors that affect their purchasing intention and expect their sales performance in the future.

Literature Review

This section introduces the past research or article which demonstrated the factors that affect the purchasing of pet products and services. Also, the authors want to briefly review the overall pet business in Thailand and the reason for its growth.

The pet population in Thailand tends to grow along with the growth pattern of single family in Thailand. Moreover, the young generations tend to delay their marriage and having kids. Therefore, Single household and young generation have pets for companionship (Thawatchai Maythayaskul, 2019). The old generation and young generation have different way to treat their pets. Young generation tends to treat their pets as a part of their family members, which reflects a “Pet humanization” trend. This trend raises the sales premium pet product and service which represent the willingness to pay more for their pets. The pet owner want to spend more on pet products and services which improve living conditions and health for their pet. The demand of pet products and services are driven by their emotion rather than their basic needs from this trend (Tarinee Chaipradermsak, 2007).

From Euromonitor international report on pet care in Thailand 2019, the number of pets in Thailand has grown 5 years consecutively from 2014 to 2019 and expected to continue. Pet business in Thailand has constantly grown about 10% per year, especially in pet food and animal hospital business. The growth of the number of pets in Thailand has the same trend as the growth of demand for pet services and products.

Past research on pet care spending in the United States showed pet care spending grew substantially especially couples without children and with children aged 6-17 years old from 2003 to 2017 (Yuying Shan, 2017). The paper only recognized income as an independent variable determining the expenditure on pets by using a regression model by different income levels. By looking at different income levels, the expenditure growth was higher for households with larger spending. Moreover, the increase in expenditure of

pets depends on the elasticity of income of the pet owners which translates into more spending on foods, pet products and veterinary treatment.

After reviewing all of the papers mentioned, changing trends and pet humanization have made people's behavior and life patterns changed. However, past papers didn't answer how is the situation of the pet market in Thailand and factors that determined pet owner expenditure on pet product and service. Therefore, this paper aims to identify the factors that affect expenditure on pet products in Bangkok and to be specific, we separate expenditure into expenditure on pet products and pet service.

Theoretical Framework

To understand the pet product market, we started with Demand and Supply analysis to explain the structure of the market and analyzed the consumer decisions towards pet related expenditures.

1. Demand Analysis

With changing people trends toward pet humanization and more young people adopted pets, information from questionnaires shows that the majority of owners are aged 21-30 years old (66.4%) with income of 10,001-20,00THB (34.9%) followed with less than 10,000THB (33.20%). The pet business market was continuously affected by the trends. Moreover, People are more likely to have a single cat in their household rather than multiples and at the same time likely to raise multiple dogs rather than a single dog.

2. Supply analysis

The producers in pet business also reacted and increased their selling platforms responding to the changing trends and following the law of demand. Many pet shops started to sell their products on online platforms such as Shopee and Lazada. To capture new groups of customers and receive more revenue, Pet Products were redesigned leaving the traditional design towards fashionable products and being more convenient for the urban lifestyle of the pet owners, for instance automatic toilet for cats or automatic feeder for dog.

3. Marginal Propensity to Consume Theory

In economics, Marginal Propensity to Consume Theory is defined as the proportion of aggregate raise in pay that a consumer spends on their consumption of goods and services. According to the theory, it is assumed that everyone has the same preference and utility function.

In this case, the changes of pet owner income affects their spending level on pet products and service. So, the higher income pet owner tends to spend more on pet products and services than lower income pet owners.

Methodology

The explanation and methods used in the analysis will be provided in this section. It consisted of six processes of the method including research method, source of data, population sample to study, random sampling method, data collection method, data evaluation and data analysis.

1. Research method

   Quantitative research is our main method to conduct the survey. By using a structured questionnaire to collect samples, this helps us gather information directly from the target group of the research which could be useful in describing characteristics of the large group of people.

2. Source of Data

   The source of data for our survey came from the primary data that was collected from the survey. This involves a survey method to analyze the result and conclusion.

3. Population Sample to study

   The population sample of this research is the pet owner, which we only focus on dogs and cats. Since we want to study pet business expenditure and its related expenditures, therefore we tried to scope in demographic factors, pet information and lifestyle of the owners.

4. Random sampling method and data collective method

   To be more specific, we attempt to scope down by using pet owners in Bangkok as our population sample group using online surveys via Google Forms. The survey will include personal information and demographic factors (age,

gender, education background, monthly income, numbers of family member's age below 18 and above 60 years old), their pet information in their household, their willingness to pay and approximated expenditure related to pet products and service per month. The survey was conducted on April 4, 2020 until April 18, 2020 with 245 respondents. However, there are some respondents that were impractical therefore only 238 observations were analyzed.

5. Data evaluation and data analysis

We use the Ordered Probit Regression model to analyze the data. Since in this case, there are more than two outcomes of ordinal dependent variables. To analyze the hypothesis, we estimate the expenditure on pet business by specifying three models separately, estimating expenditure on pet product, pet service and pet product combined with service together.

Specification 1: $Pr(Y_p = j) = D_{ji}\,\beta_j + P_{ji}\gamma_j + L_{ji}\delta_j + \varepsilon_i$ $\quad i=1,..,238,\ j=0,..,4$

Where $Pr(Y_p = j)$ is the probability of the consumer purchasing pet product in each range of expense, where j=0 is when expenditure is less than 500THB, j=1 is when individual is from 500 to 1000THB, j=2 when expenditure is from 1,001 to 1,500THB, j=3 when expenditure is from 1,501 to 2,000THB, j=4 when expenditure is more than 2,000THB

D_{ji} is the vector of demographic variables of consumers which including, age, gender, education, income, number of family members age less than 18 years old, number of family members age more than 60 years old. All of the variables used in the model are captured by dummy variables. For instance, for a variable that stands for the number of respondents' age, we use the age range of below 21 years old to be a baseline case in order to compare other dummy variables to the baseline case.

P_{ji} is the vector of pet information variables, including Number of dogs in household, Numbers of pedigree dogs in household, Number of cats in household, Number of Pedigree cats in household, Estimation of the most expensive pet price, Expense time per month on pet product and service.

L_{ji} is the vector of lifestyle variables including whether individual consumers like buying beauty products or not and whether the consumer likes to spend their time on weekends indoor or outdoor.

Specification 2: $Pr(Y_s = j) = D_{ji}\,\beta_j + P_{ji}\gamma_j + L_{ji}\delta_j + \varepsilon_i$ i=1,..,238, j=0,..,4

Where $Pr(Y_p = j)$ is the probability of the consumer purchasing pet service in each range of expense, where j=0 is when expenditure is less than 500THB, j=1 is when expenditure is from 500 to 1,000THB, j=2 when expenditure is from 1,001 to 1,500THB, j=3 when expenditure is from 1,501 to 2,000THB, j=4 when expenditure is more than 2,000THB

Specification 3: $Pr(Y_E = j) = D_{ji}\,\beta_j + P_{ji}\gamma_j + L_{ji}\delta_j + \varepsilon_i$ i=1,..,238, j=1,..,4

Where $Pr(Y_E=j)$ is the probability of the consumer purchasing pet product and service in each range of expenditure, where j=1 is when expenditure is from 500 to 1,000THB, j=2 when expenditure is from 1,001 to 1,500THB, j=3 when expenditure is from 1,501 to 2,000THB, j=4 when expenditure is more than 2,000THB. In this speculation, the range of expenditure started from 500THB per month while the previous two equations started from below 500THB because in combining the data set, the combined expenditure on pet product and service was at least equal to 500THB per month. Therefore, we choose to ignore the first range and start from the next range of expenditure which is a range of 500 to 1,000 THB per month.

For all of the above equation, we computed the marginal effects after Probit Regression in order to see the probability of the outcome variable changes when there is a change in the value of the repressors. As in this case, we try to estimate the probability of the expenditure in each range when there is a change in the independence variables which are demographic factors, pet information and lifestyle of the pet owners.

The description of the dependent variables is shown in appendix as we specified into three models and the independent variables separated according to its category.

<u>Finding and Analyzing result</u>

Result from survey

According to the survey with 238 respondents, from all respondents, 204 respondents are female, while 31 are male and 3 are other genders. Also, 158 out of 238 are age between 21 to 30. As shown in table1, the variable “age1” has a mean value of 0.668. Furthermore, the survey shows that the majority of them are female and around 60% of the respondents live with a single family. Around 70% of the respondents don’t have their family members younger than 18 years old and higher than 60 years old.

Moreover, More than 74% of respondents have an academic bachelor degree. The reason to have a pet of most respondents are their pleasure. About their lifestyle, More than 50% of respondents use social media more than 7 hours per day for their entertainment purposes.

Table 1: Descriptive statistics of independent variables

Variable	Obs	Mean	Std. Dev.	Min	Max	Variable	Obs	Mean	Std. Dev.	Min	Max
age1	238	0.668067	0.471899	0	1	ndog4	238	0.021008	0.143714	0	1
age2	238	0.07563	0.264963	0	1	ndog5	238	0.004202	0.06482	0	1
age3	238	0.02521	0.157093	0	1	ngdog1	238	0.306723	0.462105	0	1
age4	238	0.021008	0.143714	0	1	ngdog2	238	0.155462	0.363108	0	1
age5	238	0.029412	0.169314	0	1	ngdog3	238	0.016807	0.128818	0	1
genmale	238	0.12605	0.332606	0	1	ngdog4	238	0	0	0	0
genother	238	0.012605	0.111798	0	1	ngdog5	238	0	0	0	0
eduhs	238	0.092437	0.290252	0	1	ncat1	238	0.260504	0.439835	0	1
eduvc	238	0.033613	0.180612	0	1	ncat2	238	0.176471	0.382024	0	1
eduungrad	238	0.777311	0.416928	0	1	ncat3	238	0.033613	0.180612	0	1
edugrad	238	0.071429	0.258082	0	1	ncat4	238	0	0	0	0
eduhgrad	238	0	0	0	0	ncat5	238	0.016807	0.128818	0	1
inc1	238	0.340336	0.474821	0	1	ngcat1	238	0.172269	0.37841	0	1
inc2	238	0.176471	0.382024	0	1	ngcat2	238	0.063025	0.24352	0	1
inc3	238	0.016807	0.128818	0	1	ngcat3	238	0.004202	0.06482	0	1
inc4	238	0.046219	0.2104	0	1	ngcat4	238	0	0	0	0
inc5	238	0.084034	0.278023	0	1	ngcat5	238	0.004202	0.06482	0	1
fammem18_1	238	0.184874	0.389013	0	1	hpp1	238	0.10084	0.301752	0	1
fammem18_2	238	0.067227	0.250942	0	1	hpp2	238	0.130252	0.33729	0	1
fammem18_3	238	0.029412	0.169314	0	1	hpp3	238	0.138656	0.346315	0	1
fammem18_4	238	0.012605	0.111798	0	1	hpp4	238	0.05042	0.219272	0	1

fammem18_5	238	0.012605	0.111798	0	1	hpp5	238	0.012605	0.111798	0	1
fammem65_1	238	0.189076	0.392394	0	1	hpp6	238	0.079832	0.271604	0	1
fammem65_2	238	0.12605	0.332606	0	1	exptpm1	238	0.289916	0.454679	0	1
fammem65_3	238	0.021008	0.143714	0	1	exptpm2	238	0.315126	0.465545	0	1
fammem65_4	238	0.004202	0.06482	0	1	exptpm3	238	0.147059	0.354911	0	1
fammem65_5	238	0.008403	0.091476	0	1	exptpm4	238	0.054622	0.22772	0	1
beauty	238	0.714286	0.452706	0	1	exptpm5	238	0.088235	0.284235	0	1
goout	238	0.252101	0.435134	0	1	expservice	238	1.42437	1.43515	0	4
ndog1	238	0.306723	0.462105	0	1	expproduct	238	1.701681	1.314989	0	4
ndog2	238	0.310924	0.463847	0	1	exptotal	238	2.533613	1.210417	1	4
ndog3	238	0.046219	0.2104	0	1						

Inferential analysis

For the inferential analysis of the specification 1 as presented in table 2, the marginal effects of the Ordered Probit estimation for the groups of independent variables regarding the expenditure of pet products in each range with various variables statistically significant to the model. Firstly looking at variables in demographic sets of variables, the marginal effect of “master degree variable” shows that a change in value of the variable from zero to one, it negatively change the probability of expenditure of 500-1,000THB by 44.29% and also positively change the probability of expenditure of more than 2,000 THB by 67.09% with both statistically significant at 0.01 significance level. Moreover, the marginal effect of “bachelor degree variable” also positively changes the probability of expenditure of 1,001-1,500THB by 21.26% and 1,501-2,000THB by 14.88% with statistically significant at 0.05 and 0.10 significant levels. This could imply that the pet owners are not paying low pet product expenditure when their education level is higher but instead they are willing to pay higher.

Table 2: Specification 1 using Ordered Probit estimation showing marginal effects
(Standard error in parentheses)

Different range of expenditure on pet product in THB (Thai Baht)					
	(1)	(2)	(3)	(4)	(5)
Variables	500-1,000THB	1,001-1,500THB	1,501-2,000THB	2,001-2,500THB	more than 2,500THB
Age 20-30 years old	0.0572	0.0762	-0.0351	-0.0433	-0.0550
	(0.0706)	(0.0893)	(0.0576)	(0.0352)	(0.0729)

Age 31-40 years old	0.2213	0.0700	-0.1270	-0.0880	-0.0763
	(0.2005)	(0.2420)	(0.0800)	(0.0566)	(0.0981)
Age 41-50 years old	0.3565	0.0045	-0.1769**	-0.1037	-0.0804
	(0.3130)	(0.3596)	(0.0885)	(0.0758)	(0.1083)
Age 51-60 years old	-0.0552	-0.0975	0.0293	0.0492	0.0742
	(0.0922)	(0.1906)	(0.0715)	(0.0798)	(0.1689)
Age more than 60 years old	0.2848	0.0390	-0.1521	-0.0951	-0.0766
	(0.2756)	(0.3016)	(0.0935)	(0.0685)	(0.1020)
Male	-0.0090	-0.0110	0.0057	0.0065	0.0078
	(0.0477)	(0.0614)	(0.0305)	(0.0350)	(0.0436)
Other gender	0.0792	0.0559	-0.0507	-0.0427	-0.0417
	(0.1915)	(0.1132)	(0.1157)	(0.0761)	(0.0774)
High school	-0.1183	-0.3132**	-0.0050	0.1136	0.3229
	(0.1429)	(0.1487)	(0.2233)	(0.0963)	(0.3058)
Vocational Certificate	-0.1135	-0.3857***	-0.0904	0.0837	0.5058
	(0.1436)	(0.1171)	(0.2519)	(0.1767)	(0.3463)
Bachelor Degree	-0.4409	-0.0654	0.2126**	0.1488*	0.1449
	(0.3114)	(0.4015)	(0.0921)	(0.0796)	(0.1720)
Master Degree	-0.1357	-0.4429***	-0.1412	0.0489	0.6709**
	(0.1654)	(0.1032)	(0.2295)	(0.2087)	(0.2955)
Income 10,001-20,000 THB	0.0248	0.0275	-0.0160	-0.0169	-0.0194
	(0.0466)	(0.0512)	(0.0319)	(0.0271)	(0.0365)
Income 20,001-30,000 THB	-0.0278	-0.0370	0.0173	0.0211	0.0264
	(0.0490)	(0.0685)	(0.0351)	(0.0333)	(0.0519)
Income 30,001-40,000 THB	-0.0942	-0.2547	0.0042	0.0981	0.2466
	(0.1172)	(0.1760)	(0.1924)	(0.0769)	(0.2960)
Income 40,001-50,000 THB	0.0748	0.0560	-0.0481	-0.0415	-0.0413
	(0.1312)	(0.1010)	(0.0801)	(0.0530)	(0.0641)
Income more than 50,000 THB	-0.0157	-0.0202	0.0099	0.0117	0.0143
	(0.0637)	(0.0888)	(0.0405)	(0.0485)	(0.0641)
1 member aged below 18 years old	0.0569	0.0523	-0.0368	-0.0350	-0.0374
	(0.0699)	(0.0752)	(0.0465)	(0.0283)	(0.0490)
2 members aged below 18 years old	0.0398	0.0371	-0.0259	-0.0247	-0.0263
	(0.0840)	(0.0723)	(0.0551)	(0.0423)	(0.0499)
3 members aged below 18 years old	-0.0449	-0.0725	0.0257	0.0381	0.0536
	(0.0772)	(0.1410)	(0.0572)	(0.0628)	(0.1172)
4 members aged below 18 years old	0.4314	-0.0446	-0.1974**	-0.1085	-0.0809
	(0.3354)	(0.4071)	(0.0802)	(0.0818)	(0.1107)

More than 4 members aged below 18 years old	0.6850**	-0.2371	-0.2433***	-0.1194	-0.0852
	(0.3124)	(0.4417)	(0.0755)	(0.0964)	(0.1184)
1 member aged more than 60 years old	-0.0013	-0.0016	0.0008	0.0009	0.0011
	(0.0385)	(0.0457)	(0.0247)	(0.0273)	(0.0322)
2 members aged more than 60 years old	-0.0574	-0.0924	0.0324	0.0485	0.0689
	(0.0673)	(0.0879)	(0.0658)	(0.0318)	(0.0839)
3 members aged more than 60 years old	-0.0250	-0.0350	0.0154	0.0195	0.0251
	(0.0833)	(0.1340)	(0.0517)	(0.0685)	(0.0996)
4 members aged more than 60 years old	0.3926	-0.0241	-0.1862	-0.1042	-0.0781
	(0.5363)	(0.4620)	(0.1468)	(0.0862)	(0.1076)
More than 4 members aged more than 60 years old	0.0831	0.0570	-0.0531	-0.0442	-0.0428
	(0.2309)	(0.1214)	(0.1388)	(0.0902)	(0.0864)
Beauty	0.0209	0.0261	-0.0132	-0.0153	-0.0185
	(0.0384)	(0.0493)	(0.0270)	(0.0249)	(0.0364)
Outdoor activity	-0.0280	-0.0363	0.0176	0.0209	0.0258
	(0.0429)	(0.0566)	(0.0320)	(0.0263)	(0.0431)
1 dog	-0.0492	-0.0657	0.0304	0.0373	0.0472
	(0.0691)	(0.0918)	(0.0534)	(0.0404)	(0.0727)
2-4 dogs	-0.0506	-0.0675	0.0312	0.0383	0.0486
	(0.0678)	(0.0887)	(0.0535)	(0.0377)	(0.0709)
5-7 dogs	0.2512	0.0554	-0.1392	-0.0913	-0.0760
	(0.2358)	(0.2698)	(0.0858)	(0.0630)	(0.0997)
8-10 dogs	-0.0722	-0.1491	0.0304	0.0697	0.1212
	(0.0935)	(0.1732)	(0.1063)	(0.0641)	(0.1889)
More than 10 dogs	0.8997***	-0.4358***	-0.2569***	-0.1213*	-0.0857
	(0.0954)	(0.1233)	(0.0677)	(0.0723)	(0.0852)
1 pedigree dog	0.0235	0.0259	-0.0152	-0.0160	-0.0183
	(0.0528)	(0.0567)	(0.0357)	(0.0317)	(0.0401)
2-4 pedigree dogs	0.0321	0.0324	-0.0208	-0.0208	-0.0229
	(0.0751)	(0.0703)	(0.0500)	(0.0415)	(0.0493)
5-7 pedigree dogs	-0.0987	-0.2866*	-0.0122	0.1014	0.2960
	(0.1236)	(0.1718)	(0.2179)	(0.0928)	(0.3319)
1 cat	-0.0223	-0.0283	0.0141	0.0164	0.0200
	(0.0478)	(0.0631)	(0.0326)	(0.0329)	(0.0464)
2-4 cats	-0.0587	-0.0905	0.0339	0.0483	0.0669
	(0.0717)	(0.0973)	(0.0654)	(0.0377)	(0.0879)
5-7 cats	-0.0957	-0.2490*	0.0099	0.0986	0.2362
	(0.1166)	(0.1319)	(0.1798)	(0.0705)	(0.2336)
More than 10 cats	-0.1004	-0.3004	-0.0207	0.1017	0.3197
	(0.1273)	(0.2201)	(0.2469)	(0.1021)	(0.4294)
1 pedigree cat	-0.0354	-0.0491	0.0218	0.0275	0.0352
	(0.0525)	(0.0738)	(0.0404)	(0.0334)	(0.0583)

2-4 pedigree cats	0.0194	0.0203	-0.0126	-0.0128	-0.0143
	(0.0869)	(0.0821)	(0.0572)	(0.0528)	(0.0579)
5-7 pedigree cats	-0.1077	-0.4437	-0.2435	-0.0887	0.8835
	(0.1014)	(0.4734)	(2.8181)	(6.9290)	(10.2067)
More than 10 pedigree cats	0.3072	0.0218	-0.1591	-0.0954	-0.0744
	(0.6195)	(0.4105)	(0.2134)	(0.0982)	(0.1049)
Highest price of pet of 1-5,000THB	-0.0567	-0.0932	0.0317	0.0485	0.0698
	(0.0681)	(0.0935)	(0.0666)	(0.0347)	(0.0889)
Highest price of pet of 5,001-10,000THB	-0.0752	-0.1338	0.0382	0.0669*	0.1039
	(0.0856)	(0.1011)	(0.0944)	(0.0346)	(0.1127)
Highest price of pet of 10,001-15,000THB	-0.1228	-0.2853***	0.0203	0.1161	0.2717
	(0.1409)	(0.0923)	(0.1973)	(0.0726)	(0.2045)
Highest price of pet of 15,001-20,000THB	-0.1107	-0.3259***	-0.0269	0.1065	0.3570
	(0.1360)	(0.0799)	(0.2198)	(0.1136)	(0.2379)
Highest price of pet of 20,001-25,000THB	-0.1106	-0.4344***	-0.1937	-0.0061	0.7448***
	(0.1434)	(0.1367)	(0.1869)	(0.2156)	(0.2245)
Highest price of pet of more than 25,000THB	-0.1130	-0.2995***	-0.0016	0.1108	0.3033
	(0.1352)	(0.0913)	(0.2071)	(0.0899)	(0.2271)
Spending on pet product 1 time per month	-0.0871	-0.1297	0.0495	0.0698*	0.0975
	(0.0974)	(0.1164)	(0.0918)	(0.0381)	(0.1111)
Spending on pet product 2 time per month	-0.1384	-0.2166	0.0673	0.1110***	0.1767
	(0.1445)	(0.1459)	(0.1505)	(0.0395)	(0.1686)
Spending on pet product 3 time per month	-0.1243	-0.2837***	0.0230	0.1168	0.2682
	(0.1425)	(0.1066)	(0.1968)	(0.0712)	(0.2148)
Spending on pet product 4 time per month	-0.1136	-0.3391***	-0.0350	0.1061	0.3816
	(0.1396)	(0.0860)	(0.2271)	(0.1227)	(0.2539)
Spending on pet product more than 4 times per month	-0.1341	-0.4045***	-0.0779	0.0956	0.5209**
	(0.1614)	(0.0695)	(0.2407)	(0.1651)	(0.2514)
Observations	238	238	238	238	238
Standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

For pet related information variables, we found that the marginal effect of “more than 10 dogs” variable is statistically significant with 0.01 and 0.05 significant level. If the variable value changes from zero to one, it positively change the probability of expenditure of less than 500THB by 89.97% and negatively change the probability of

expenditure range 501-1,000THB by 43.58%, expenditure range 1,001-1,500 by 25.69% and 1,501-2,000 by 12.13%. This means that, as the owner has more dogs, they are willing to pay at only less than 500THB on pet products per dog and not willing to pay more in the upper range of expense. Moreover, we also found that as the owner bought a higher price of a pet, they are willing to pay more for their pet product.

According to Specification 2 as presented in table3, only variable "more than 4 members aged below 18 years old" is statistically significant in the demographic group of variables. For the marginal effect of the variable, it has a negative significant relationship toward service expenditure of 1,001-1,500THB. Meaning that, the family with more than 4 members aged below 18 years old are not willing to pay at this range of expense.

Table3: Specification2 using Ordered Probit estimation showing marginal effects

(Standard error in parentheses)

Different range of expenditure on pet service in THB (Thai Baht)					
	(1)	(2)	(3)	(4)	(5)
Variables	Less than 500 THB	500-1,000THB	1,001-1,500THB	1,501-2,000THB	More than 2,000THB
Age 20-30 years old	0.0671	0.0077	-0.0266	-0.0152	-0.0330
	(0.1082)	(0.1076)	(0.0445)	(0.0224)	(0.0803)
Age 31-40 years old	0.1409	-0.0130	-0.0545	-0.0260	-0.0474
	(0.1910)	(0.2047)	(0.0654)	(0.0363)	(0.1140)
Age 41-50 years old	0.3976	-0.1322	-0.1336	-0.0522	-0.0796
	(0.2813)	(0.4223)	(0.0943)	(0.0780)	(0.2025)
Age 51-60 years old	0.2530	-0.0560	-0.0925	-0.0396	-0.0650
	(0.3423)	(0.3441)	(0.1049)	(0.0599)	(0.1626)
Age more than 60 years old	0.1230	-0.0108	-0.0478	-0.0229	-0.0416
	(0.2571)	(0.1849)	(0.0926)	(0.0442)	(0.1112)
Male	0.0551	0.0006	-0.0218	-0.0114	-0.0225
	(0.1109)	(0.0846)	(0.0429)	(0.0216)	(0.0603)
Other gender	0.1243	-0.0117	-0.0482	-0.0229	-0.0415
	(0.2726)	(0.1880)	(0.0982)	(0.0459)	(0.1123)
High school	-0.0620	-0.0104	0.0244	0.0146	0.0333
	(0.1971)	(0.1119)	(0.0784)	(0.0481)	(0.1340)
Vocational Certificate	-0.2846	-0.2942	-0.0116	0.0595	0.5309
	(0.4619)	(0.2579)	(0.4200)	(0.1816)	(0.4462)
Bachelor Degree	-0.2142	0.0194	0.0820	0.0395	0.0733
	(0.2648)	(0.3050)	(0.0876)	(0.0511)	(0.1725)
Master Degree	-0.0915	-0.0207	0.0356	0.0225	0.0542
	(0.2337)	(0.1712)	(0.0939)	(0.0590)	(0.1901)
Income 10,001-20,000 THB	0.0644	0.0028	-0.0256	-0.0137	-0.0279
	(0.0924)	(0.0999)	(0.0360)	(0.0183)	(0.0655)
Income 20,001-30,000 THB	0.0470	0.0013	-0.0187	-0.0099	-0.0198

	(0.0997)	(0.0726)	(0.0390)	(0.0199)	(0.0546)
Income 30,001-40,000 THB	-0.0162	-0.0017	0.0064	0.0036	0.0078
	(0.2214)	(0.0387)	(0.0879)	(0.0508)	(0.1124)
Income 40,001-50,000 THB	0.1540	-0.0178	-0.0592	-0.0277	-0.0493
	(0.2135)	(0.2215)	(0.0721)	(0.0399)	(0.1200)
Income more than 50,000 THB	-0.0587	-0.0097	0.0232	0.0138	0.0314
	(0.1332)	(0.0996)	(0.0545)	(0.0309)	(0.0957)
1 member aged below 18 years old	0.1577	-0.0106	-0.0612	-0.0299	-0.0560
	(0.1356)	(0.2283)	(0.0421)	(0.0305)	(0.1254)
2 members aged below 18 years old	0.0773	-0.0019	-0.0305	-0.0154	-0.0295
	(0.1419)	(0.1169)	(0.0535)	(0.0268)	(0.0760)
3 members aged below 18 years old	-0.1668	-0.0733	0.0577	0.0457	0.1368
	(0.2321)	(0.2802)	(0.1475)	(0.0368)	(0.2573)
4 members aged below 18 years old	0.3475	-0.1054	-0.1200	-0.0479	-0.0741
	(0.3095)	(0.4044)	(0.0945)	(0.0712)	(0.1878)
more than 4 members aged below 18 years old	0.7405	-0.3936***	-0.1896	-0.0649	-0.0925
	(0.4755)	(0.0770)	(0.1908)	(0.1113)	(0.2438)
1 member aged more than 60 years old	0.0857	-0.0005	-0.0338	-0.0174	-0.0340
	(0.1042)	(0.1299)	(0.0380)	(0.0205)	(0.0777)
2 members aged more than 60 years old	0.0806	-0.0013	-0.0318	-0.0162	-0.0314
	(0.1108)	(0.1219)	(0.0409)	(0.0215)	(0.0739)
3 members aged more than 60 years old	-0.2398	-0.1836	0.0478	0.0672	0.3084
	(0.3631)	(0.3385)	(0.3125)	(0.0869)	(0.4150)
4 members aged more than 60 years old	-0.1767	-0.0894	0.0577	0.0496	0.1588
	(0.3226)	(0.3792)	(0.1729)	(0.0778)	(0.4555)
More than 4 members aged more than 60 years old	0.2675	-0.0643	-0.0968	-0.0407	-0.0658
	(0.3315)	(0.3536)	(0.1009)	(0.0609)	(0.1648)
Beauty	0.0419	0.0045	-0.0166	-0.0094	-0.0203
	(0.0745)	(0.0672)	(0.0303)	(0.0157)	(0.0520)
Outdoor activity	0.0501	0.0018	-0.0199	-0.0106	-0.0214
	(0.0845)	(0.0776)	(0.0329)	(0.0169)	(0.0535)
1 dog	0.1562	-0.0025	-0.0610	-0.0313	-0.0614
	(0.1665)	(0.2328)	(0.0584)	(0.0331)	(0.1366)
2-4 dogs	0.0213	0.0013	-0.0085	-0.0046	-0.0095
	(0.1041)	(0.0337)	(0.0414)	(0.0222)	(0.0489)
5-7 dogs	0.3403	-0.0947	-0.1193*	-0.0488	-0.0775
	(0.2140)	(0.3888)	(0.0672)	(0.0674)	(0.1920)
8-10 dogs	-0.1114	-0.0327	0.0423	0.0286	0.0733
	(0.1885)	(0.1976)	(0.0882)	(0.0425)	(0.1839)
?ore than 10 dogs	0.7288**	-0.3951***	-0.1849	-0.0622	-0.0867
	(0.3356)	(0.0637)	(0.1352)	(0.0761)	(0.1593)
1 pedigree dog	-0.2064	-0.0461	0.0776	0.0499**	0.1250
	(0.2231)	(0.3250)	(0.1197)	(0.0247)	(0.2286)

2-4 pedigree dogs	-0.2337	-0.1025	0.0768	0.0625*	0.1969
	(0.2952)	(0.3607)	(0.2039)	(0.0336)	(0.3098)
5-7 pedigree dogs	-0.2177	-0.1434	0.0568	0.0621	0.2421
	(0.3261)	(0.3534)	(0.2560)	(0.0635)	(0.4101)
1 cat	-0.0525	-0.0063	0.0208	0.0119	0.0260
	(0.0977)	(0.0848)	(0.0400)	(0.0210)	(0.0685)
2-4 cats	-0.1251	-0.0289	0.0482	0.0308	0.0750
	(0.1540)	(0.2043)	(0.0778)	(0.0244)	(0.1498)
5-7 cats	0.0218	0.0009	-0.0087	-0.0046	-0.0094
	(0.2002)	(0.0339)	(0.0794)	(0.0413)	(0.0837)
More than 10 cats	-0.2949	-0.3916***	-0.1553	-0.0314	0.8733***
	(0.5063)	(0.0431)	(0.2706)	(0.1796)	(0.1332)
1 pedigree cat	-0.0095	-0.0008	0.0038	0.0021	0.0045
	(0.0874)	(0.0173)	(0.0348)	(0.0195)	(0.0424)
2-4 pedigree cats	0.2040	-0.0322	-0.0769	-0.0348	-0.0601
	(0.2010)	(0.2783)	(0.0612)	(0.0441)	(0.1433)
5-7 pedigree cats	-0.2845	-0.3961***	-0.1795	-0.0591	0.9193***
	(0.3648)	(0.0433)	(0.1573)	(0.1551)	(0.2498)
More than 10 pedigree cats	0.7277	-0.3948***	-0.1846	-0.0620	-0.0863
	(0.4857)	(0.0616)	(0.1957)	(0.1098)	(0.2315)
Highest price of pet of 1-5,000THB	-0.1083	-0.0265	0.0418	0.0269	0.0661
	(0.1385)	(0.1785)	(0.0702)	(0.0230)	(0.1340)
Highest price of pet of 5,001-10,000THB	-0.2064	-0.0861	0.0705	0.0553**	0.1667
	(0.2580)	(0.3242)	(0.1744)	(0.0271)	(0.2679)
Highest price of pet of 10,001-15,000THB	-0.2408	-0.1163	0.0755	0.0652*	0.2164
	(0.3092)	(0.3636)	(0.2243)	(0.0380)	(0.3201)
Highest price of pet of 15,001-20,000THB	-0.2659	-0.2145	0.0415	0.0712	0.3676
	(0.4012)	(0.3276)	(0.3509)	(0.1092)	(0.4017)
Highest price of pet of 20,001-25,000THB	-0.2872	-0.3765***	-0.1219	-0.0009	0.7866***
	(0.4964)	(0.0718)	(0.3470)	(0.2204)	(0.2050)
Highest price of pet of more than 25,000THB	-0.3310	-0.3329	-0.0378	0.0494	0.6524*
	(0.5128)	(0.2263)	(0.4165)	(0.2039)	(0.3467)
Spending on pet product 1 time per month	-0.0067	-0.0005	0.0027	0.0015	0.0031
	(0.1087)	(0.0141)	(0.0432)	(0.0240)	(0.0510)
Spending on pet product 2 time per month	-0.1175	-0.0180	0.0461	0.0274	0.0621
	(0.1483)	(0.1885)	(0.0658)	(0.0268)	(0.1322)
Spending on pet product 3 time per month	-0.1993	-0.0758	0.0700	0.0527*	0.1524
	(0.2488)	(0.3177)	(0.1587)	(0.0281)	(0.2603)
Spending on pet product 4 time per month	-0.1084	-0.0291	0.0415	0.0274	0.0686
	(0.1657)	(0.1850)	(0.0793)	(0.0341)	(0.1578)
Spending on pet product more than 4 times per month	-0.1739	-0.0682	0.0616	0.0466	0.1340
	(0.2294)	(0.2855)	(0.1424)	(0.0324)	(0.2442)
Observations	238	238	238	238	238

Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

In pet relating information variable, the variable “more than 10 dogs" exhibits similar effect as in pet product expenditure, as the owners has more number of dogs, they are willing to pay at only less than 500THB on pet service per a dog and not willing to pay more in the upper range of expense. However, the result from the total number of dogs seems to contradict to the number of pedigree dogs and cats. As shown in “5-7 pedigree cat variable”, the marginal effect of the variable negatively affect to pet service expenditure in range 500-1,000THB by 39.61% in and positively affect range more than 2,000THB by 91.93%, meaning that as the owner as more number of pedigree cats, they are willing to pay more at pet service.

By looking at the variable “highest price of pet of 20,001-25,000THB”. It is statistically significant with a 0.01 significant level in two ranges of expenditure. The marginal effect of the variable negatively affects expenditure range 1,000-1,500THB by37.65% and positively affects expenditure of more than 2,000THB by 78.66%. This could imply that the owner who bought a high range price of a pet is more willing to pay for their pet service more.

Specification 3 as presented in table4, specified the combination of the expenditure including pet product and pet service. Firstly, looking at the demographic group of variables, the variable “age 41-50 years old” is significant with 0.05 and 0.1 significant level. The variable positively affects the expenditure range 500-1,000THB by 59.84% while it negatively affects the expenditure range 1,501-2,000THB by 21.42%.

Table 4: Specification 3 using Ordered Probit estimation showing marginal effects

(Standard error in parentheses)

Different range of expenditure on pet product and service in THB (Thai Baht)				
	(1)	(2)	(3)	(4)
VARIABLES	500-1,000THB	1,001-1,500THB	1,501-2,000THB	more than 2,000THB
Age 20-30 years old	0.0789	0.0412	-0.0156	-0.1045
	(0.2064)	(0.1564)	(0.1950)	(0.1808)
Age 31-40 years old	0.2494	0.0335	-0.0881	-0.1947
	(0.3950)	(0.5246)	(0.2951)	(0.4609)

Age 41-50 years old	0.5984**	-0.1076	-0.2142*	-0.2766
	(0.2534)	(0.8495)	(0.1142)	(0.8261)
Age 51-60 years old	0.0077	0.0035	-0.0019	-0.0093
	(0.1861)	(0.0822)	(0.0499)	(0.2196)
Age more than 60 years old	0.2083	0.0323	-0.0735	-0.1671
	(0.4071)	(0.4452)	(0.2756)	(0.4080)
Male	-0.0412	-0.0221	0.0079	0.0553
	(0.1250)	(0.0898)	(0.1042)	(0.1310)
Other gender	0.0395	0.0154	-0.0109	-0.0440
	(0.2209)	(0.1052)	(0.1023)	(0.2199)
High school	-0.1107	-0.0778	0.0067	0.1818
	(0.3335)	(0.2064)	(0.3306)	(0.3165)
Vocational Certificate	-0.1979	-0.2420**	-0.1398	0.5797**
	(0.7066)	(0.1144)	(0.6047)	(0.2756)
Bachelor Degree	-0.2996	-0.0539	0.0986	0.2548
	(0.5177)	(0.6137)	(0.3992)	(0.5594)
Master Degree	-0.1869	-0.1872	-0.0581	0.4322
	(0.6178)	(0.1526)	(0.6346)	(0.3032)
Income 10,001-20,000 THB	0.0031	0.0014	-0.0007	-0.0038
	(0.0604)	(0.0284)	(0.0159)	(0.0737)
Income 20,001-30,000 THB	-0.0758	-0.0440	0.0121	0.1077
	(0.2054)	(0.1444)	(0.2008)	(0.1732)
Income 30,001-40,000 THB	-0.1207	-0.0976	-0.0044	0.2227
	(0.3787)	(0.2043)	(0.3942)	(0.3433)
Income 40,001-50,000 THB	0.0639	0.0226	-0.0186	-0.0679
	(0.2024)	(0.1411)	(0.1329)	(0.1887)
Income more than 50,000 THB	-0.0550	-0.0316	0.0092	0.0773
	(0.1674)	(0.1184)	(0.1450)	(0.1767)
1 member aged below 18 years old	0.1620	0.0450	-0.0509	-0.1561
	(0.3118)	(0.3450)	(0.2691)	(0.3169)
2 members aged below 18 years old	0.1418	0.0356	-0.0464	-0.1310
	(0.2845)	(0.3060)	(0.2268)	(0.2866)
3 members aged below 18 years old	-0.0645	-0.0398	0.0088	0.0955
	(0.2024)	(0.1417)	(0.1780)	(0.2248)
4 members aged below 18 years old	0.4634	-0.0429	-0.1717	-0.2488
	(0.4122)	(0.8144)	(0.2136)	(0.7124)
More than 4 members aged below 18 years old	0.8062	-0.2582	-0.2600*	-0.2879
	(0.6023)	(0.4466)	(0.1390)	(0.9095)
1 member aged more than 60 years old	0.0401	0.0166	-0.0105	-0.0462
	(0.1109)	(0.0865)	(0.0873)	(0.1064)
2 members aged more than 60 years old	-0.0210	-0.0105	0.0045	0.0270
	(0.0845)	(0.0549)	(0.0522)	(0.0995)
3 members aged more than 60 years old	-0.1914	-0.2374**	-0.1378	0.5666**
	(0.6898)	(0.1190)	(0.5980)	(0.2760)

4 members aged more than 60 years old	-0.0347	-0.0189	0.0065	0.0471
	(0.3142)	(0.2017)	(0.0967)	(0.4579)
More than 4 members aged more than 60 years old	0.2220	0.0287	-0.0796	-0.1711
	(0.4430)	(0.4727)	(0.2817)	(0.4315)
Beauty	0.0096	0.0045	-0.0022	-0.0119
	(0.0582)	(0.0322)	(0.0253)	(0.0701)
Outdoor activity	0.0211	0.0094	-0.0052	-0.0253
	(0.0781)	(0.0503)	(0.0496)	(0.0824)
1 dog	0.0209	0.0094	-0.0051	-0.0251
	(0.1031)	(0.0579)	(0.0522)	(0.1149)
2-4 dogs	-0.0470	-0.0237	0.0100	0.0607
	(0.1376)	(0.1009)	(0.1145)	(0.1386)
5-7 dogs	0.2861	0.0234	-0.1038	-0.2057
	(0.4179)	(0.5909)	(0.2903)	(0.5128)
8-10 dogs	-0.1083	-0.0820	0.0016	0.1887
	(0.3314)	(0.1892)	(0.3399)	(0.2954)
More than 10 dogs	0.8171	-0.2731	-0.2606*	-0.2834
	(0.6456)	(0.3218)	(0.1452)	(0.8248)
1 pedigree dog	-0.0279	-0.0136	0.0062	0.0353
	(0.0956)	(0.0654)	(0.0676)	(0.1045)
2-4 pedigree dogs	-0.0877	-0.0536	0.0120	0.1294
	(0.2440)	(0.1647)	(0.2400)	(0.2082)
5-7 pedigree dogs	-0.1904	-0.2397*	-0.1436	0.5737*
	(0.6908)	(0.1390)	(0.5932)	(0.3282)
1 cat	-0.0394	-0.0200	0.0083	0.0511
	(0.1170)	(0.0853)	(0.0964)	(0.1194)
2-4 cats	-0.0967	-0.0596	0.0127	0.1436
	(0.2649)	(0.1759)	(0.2655)	(0.2102)
5-7 cats	-0.0360	-0.0196	0.0068	0.0488
	(0.1573)	(0.1058)	(0.0932)	(0.2043)
More than 10 cats	-0.1977	-0.2662	-0.2001	0.6640
	(0.7315)	(0.2299)	(0.4661)	(0.5268)
1 pedigree cat	-0.0065	-0.0031	0.0015	0.0081
	(0.0730)	(0.0369)	(0.0220)	(0.0908)
2-4 pedigree cats	0.2417	0.0327	-0.0856	-0.1888
	(0.3916)	(0.5102)	(0.2887)	(0.4493)
5-7 pedigree cats	-0.1936	-0.2780	-0.2557	0.7273
	(0.6670)	(0.3821)	(1.8789)	(2.2591)
More than 10 pedigree cats	-0.1917	-0.2707	-0.2253	0.6877
	(0.8831)	(4.9497)	(17.4482)	(22.9837)
Highest price of pet of 1-5,000THB	-0.1057	-0.0723	0.0082	0.1699

	(0.2997)	(0.1757)	(0.3100)	(0.2127)
Highest price of pet of 5,001-10,000THB	-0.1372	-0.1008	0.0032	0.2348
	(0.3973)	(0.2040)	(0.4167)	(0.2453)
Highest price of pet of 10,001-15,000THB	-0.2020	-0.1790	-0.0363	0.4174*
	(0.6255)	(0.1831)	(0.6429)	(0.2200)
Highest price of pet of 15,001-20,000THB	-0.1845	-0.1946**	-0.0705	0.4496***
	(0.6224)	(0.0872)	(0.6261)	(0.1540)
Highest price of pet of 20,001-25,000THB	-0.2113	-0.2855	-0.2534	0.7502
	(0.5522)	(0.2120)	(0.1587)	(0.6064)
Highest price of pet of more than 25,000THB	-0.2255	-0.2573***	-0.1436	0.6264***
	(0.7703)	(0.0746)	(0.6309)	(0.2249)
Spending on pet product 1 time per month	-0.0591	-0.0307	0.0119	0.0779
	(0.1655)	(0.1225)	(0.1463)	(0.1591)
Spending on pet product 2 time per month	-0.1422	-0.0819	0.0212	0.2030
	(0.3706)	(0.2567)	(0.3704)	(0.2822)
Spending on pet product 3 time per month	-0.1923	-0.1625	-0.0233	0.3781
	(0.5850)	(0.2074)	(0.6079)	(0.2588)
Spending on pet product 4 time per month	-0.1388	-0.1155	-0.0095	0.2637
	(0.4275)	(0.1828)	(0.4534)	(0.2589)
Spending on pet product more than 4 times per month	-0.1978	-0.1979*	-0.0643	0.4600***
	(0.6484)	(0.1160)	(0.6519)	(0.1781)
Observations	238	238	238	238
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1				

The variable “highest price of pet of 15,001-20,000THB” is statistically significant with 0.01 significant level in two range of the expenditure. The change in the value of variable from zero to one negatively changed the probability of expenditure of pet product and service range 500-1,000THB by 19.46% and positively change the probability on expenditure of more than 2,000THB by 44.96%. The variable “highest price of pet of more than 25,000THB” result also went the same way with 25.73% and 62.64% respectively. This could imply that as the owner brought a higher price of a pet, they are willing to spend more on both aspects of pet food and pet service.

For all of the three models above, none of the lifestyle variables is significant in the model, which could imply that the lifestyle doesn’t affect the probability that the pet owners spend in pet product, pet service and pet product and service. In other words, different pet owners have different interests and activities. The results among the three

specifications by looking at pseudo-R2 at Diagram1, the third specification shows the highest value of Pseudo R2, which is the total expenditure on product and service. With the higher pseudo-R2 values, the variables are better to explain the model. As in this case, the third model has pseudo-R2 value of 0.1984 that is higher than the other two models of 0.1842 and 0.1991. Therefore, by using a similar set of variables, expenditure of product and service of pets is more able to be explained.

Diagram 1: Ordered Probit regression of three specifications

```
. oprobit expproduct age1 age2 age3 age4 age5 genmale genother eduhs eduvc eduungrad edugrad eduhgrad inc1 inc2 inc3 inc4 inc5 fammem18_1 fammem18_
> 2 fammem18_3 fammem18_4 fammem18_5 fammem65_1 fammem65_2 fammem65_3 fammem65_4 fammem65_5 beauty goout ndog1 ndog2 ndog3 ndog4 ndog5 ngdog1 ngdog
> 2 ngdog3 ngdog4 ngdog5 ncat1 ncat2 ncat3 ncat4 ncat5 ngcat1 ngcat2 ngcat3 ngcat4 ngcat5 hpp1 hpp2 hpp3 hpp4 hpp5 hpp6 exptpm1 exptpm2 exptpm3 exp
> tpm4 exptpm5

Ordered probit regression                       Number of obs     =        238
                                                LR chi2(55)       =     134.04
                                                Prob > chi2       =     0.0000
Log likelihood = -296.75281                     Pseudo R2         =     0.1842

. oprobit expservice age1 age2 age3 age4 age5 genmale genother eduhs eduvc eduungrad edugrad eduhgrad inc1 inc2 inc3 inc4 inc5 fammem18_1 fammem18_
> 2 fammem18_3 fammem18_4 fammem18_5 fammem65_1 fammem65_2 fammem65_3 fammem65_4 fammem65_5 beauty goout ndog1 ndog2 ndog3 ndog4 ndog5 ngdog1 ngdog
> 2 ngdog3 ngdog4 ngdog5 ncat1 ncat2 ncat3 ncat4 ncat5 ngcat1 ngcat2 ngcat3 ngcat4 ngcat5 hpp1 hpp2 hpp3 hpp4 hpp5 hpp6 exptpm1 exptpm2 exptpm3 exp
> tpm4 exptpm5

Ordered probit regression                       Number of obs     =        238
                                                LR chi2(55)       =     139.34
                                                Prob > chi2       =     0.0000
Log likelihood = -280.22888                     Pseudo R2         =     0.1991

. oprobit exptotal age1 age2 age3 age4 age5 genmale genother eduhs eduvc eduungrad edugrad eduhgrad inc1 inc2 inc3 inc4 inc5 fammem18_1 fammem18_2
> fammem18_3 fammem18_4 fammem18_5 fammem65_1 fammem65_2 fammem65_3 fammem65_4 fammem65_5 beauty goout ndog1 ndog2 ndog3 ndog4 ndog5 ngdog1 ngdog2
> ngdog3 ngdog4 ngdog5 ncat1 ncat2 ncat3 ncat4 ncat5 ngcat1 ngcat2 ngcat3 ngcat4 ngcat5 hpp1 hpp2 hpp3 hpp4 hpp5 hpp6 exptpm1 exptpm2 exptpm3 exptp
> m4 exptpm5

Ordered probit regression                       Number of obs     =        238
                                                LR chi2(55)       =     128.62
                                                Prob > chi2       =     0.0000
Log likelihood = -259.77504                     Pseudo R2         =     0.1984
```

By comparing the existing work as stated in the literature review part, the recent paper by Yuying Shan used a regression model to identify different pet care expenditures across income levels. The author only used income as the independent variable in the model while this paper recognized other variables other than income, including age, gender, number of family members, number of dogs, cats and etc. However, there is no information of the coefficient of independent variables from the past paper to be compared. Therefore this paper contains more variables that make the model more comprehensive and better to be understood.

Conclusion

Pets have become more important in the family for the past decade. From the change of social living in Thailand, the size of the family becomes smaller, either because of being late married, or not having kids. These reasons make pets become their alternation.

The different characteristics and background of the pet owner influence the spending on pet product and services. Therefore, this paper wants to study the relationship between Bangkokian pet owners' expense on pet business and the influential factors. Most of the pet owner in Bangkok are millennial, to analyze the relationship, the author had conduct quantitative research, for finding the objective of study which is the factors affect purchasing on pet business of pet owner in Bangkok. Moreover, there are 3 model constructed including the factors with pet product expense, pet service expense and pet product combine pet service expense. In each model, the influential factors are different in each type of expenses. The different demographic and characteristic of pet owners have various preferences on their spending on pet products and services. However, the lifestyle variables are not statistically significant for 3 models.

In the future, the factors affecting the pet business expense can be changed due to the social movement and economic condition. Therefore, the growth of pet business may have positive and negative trends.

Limitation

In this research, there are 2 main limitations related to the availability of information. First, the number of respondents is small compared with the number of population living in Bangkok which made the data collection may not be enough to analyze the exact factors that are significant for the pet business expense. Second, the social situation, covid-19, which come with economic problem in Thailand at this moment. The expense of the pet owner in Bangkok could change from the normal situation.

The authors would suggest the more amount of time to collect the larger respondent in the normal situation to analyze more accurate results.

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Appendix

Description of the dependent and independent variables

variables	Variables titles	Description of Variables
Dependent variables	ExpProduct (Y_p)	Amount of monthly expense on pet product : less than 500THB =0, between 500 and 1000THB =1, between 1000 and 1500THB =2, between 1500 and 2000THB=3, more than 2000THB =4

	ExpService (Y_S)		Amount of monthly expense on pet service : less than 500THB =0, between 500 and 1000THB =1, between 1000 and 1500THB =2, between 1500 and 2000THB=3, more than 2000THB =4
	Exptotal (Y_E)		Amount of monthly expense on pet product and service : between 500 and 1000THB =1, between 1000 and 1500THB =2, between 1500 and 2000THB=3, more than 2000THB =4
Demographic factors (D_{ji})	Age	Age1	Age 21-30 =1 , otherwise =0
		Age2	Age 31-40 =1 , otherwise =0
		Age3	Age41-50 =1 , otherwise =0
		Age4	Age 51-60 =1 , otherwise =0
		Age5	Age more than 60 =1, otherwise =0
	Gender	GenMale	Male =1, otherwise=0
		GenOther	Other than male and female =1, otherwise=0
	Education	EduHs	The highest level of education is Highschool=1, otherwise=0
		EduVc	The highest level of education is Vocational Certificate=1, otherwise=0
		EduBach	The highest level of education is Bachelor's degree=1, otherwise=0
		EduMaster	The highest level of education is Master Degree=1, otherwise=0
		EduHMaster	The highest level of education is higher than Master Degree=1, otherwise=0
	Income	Inc1	Income of 10001-20000THB = 1, otherwise = 0
		Inc2	Income of 20001-30000THB = 1, otherwise = 0
		Inc3	Income of 30001-40000THB = 1, otherwise = 0

		Inc4	Income of 40001-50000THB = 1, otherwise = 0
		Inc5	Income more than 50000THB = 1, otherwise = 0
	Number of family member age less than 18 year sold	FamMem18_1	1 person = 1, otherwise = 0
		FamMem18_2	2 persons = 1, otherwise = 0
		FamMem18_3	3 persons = 1, otherwise = 0
		FamMem18_4	4 persons = 1, otherwise = 0
		FamMem18_5	more than 4 persons = 1, otherwise = 0
	Number of family member age more than 60 years old	FamMem65_1	1 person = 1, otherwise = 0
		FamMem65_2	2 persons = 1, otherwise = 0
		FamMem65_3	3 persons = 1, otherwise = 0
		FamMem65_4	4 persons = 1, otherwise = 0
		FamMem65_5	more than 4 persons = 1, otherwise = 0
Pet Information (P_{ji})	Number of dogs in household	NDog1	1 dog = 1, otherwise = 0
		NDog2	2-4 dogs = 1, otherwise = 0
		NDog3	5-7 dogs = 1, otherwise = 0
		NDog4	8-9 dogs = 1, otherwise = 0
		NDog5	more than 9 dogs = 1, otherwise = 0
	Number of pedigree	NgDog1	1 dog = 1, otherwise = 0

	dogs in household	NgDog2	2-4 dogs = 1, otherwise = 0
		NgDog3	5-7 dogs = 1, otherwise = 0
		NgDog4	8-9 dogs = 1, otherwise = 0
		NgDog5	more than 9 dogs = 1, otherwise = 0
	Number of cats in household	NCat1	1 cat = 1, otherwise = 0
		NCat2	2-4 cats = 1, otherwise = 0
		NCat3	5-7 cats = 1, otherwise = 0
		NCat4	8-9 cats = 1, otherwise = 0
		NCat5	more than 9 cats = 1, otherwise = 0
	Number of pedigree cats in household	NgCat1	1 cat = 1, otherwise = 0
		NgCat2	2-4 cats = 1, otherwise = 0
		NgCat3	5-7 cats = 1, otherwise = 0
		NgCat4	8-9 cats = 1, otherwise = 0
		NgCat5	more than 9 cats = 1, otherwise = 0
	Estimation of the most expensive pet price	Hpp1	price of 1001-5000THB = 1, otherwise = 0
		Hpp2	price of 5001-10000THB = 1, otherwise = 0
		Hpp3	price of 10001-15000THB = 1, otherwise = 0
		Hpp4	price of 15001-20000HB = 1, otherwise = 0

		Hpp5	price of 20001-25000THB = 1, otherwise = 0
		Hpp6	price more than 25000THB = 1, otherwise = 0
	Expense time per month	ExpTpm1	1 time per month = 1, otherwise = 0
		ExpTpm2	2 time per month = 1, otherwise = 0
		ExpTpm3	3time per month = 1, otherwise = 0
		ExpTpm4	4 time per month = 1, otherwise = 0
		ExpTpm5	more than 4 times per month = 1, otherwise = 0
Life style	Beauty		The respondent like to spend on beauty products =1, otherwise=0
	GoOut		The respondent like to spend time outside during weekend=1, otherwise=0

Ordered Probit Regression of specification1

```
. oprobit expproduct age1 age2 age3 age4 age5 genmale genother eduhs eduvc eduungrad edugrad eduhgrad inc1 inc2 inc3 inc4 inc5 fammem18_1 fammem18_
> 2 fammem18_3 fammem18_4 fammem18_5 fammem65_1 fammem65_2 fammem65_3 fammem65_4 fammem65_5 beauty goout ndog1 ndog2 ndog3 ndog4 ndog5 ngdog1 ngdog
> 2 ngdog3 ngdog4 ngdog5 ncat1 ncat2 ncat3 ncat4 ncat5 ngcat1 ngcat2 ngcat3 ngcat4 ngcat5 hpp1 hpp2 hpp3 hpp4 hpp5 hpp6 exptpm1 exptpm2 exptpm3 exp
> tpm4 exptpm5

note: eduhgrad omitted because of collinearity
note: ngdog4 omitted because of collinearity
note: ngdog5 omitted because of collinearity
note: ncat4 omitted because of collinearity
note: ngcat4 omitted because of collinearity
Iteration 0:   log likelihood = -363.77285
Iteration 1:   log likelihood = -297.55005
Iteration 2:   log likelihood = -296.80777
Iteration 3:   log likelihood = -296.76018
Iteration 4:   log likelihood =  -296.7539
Iteration 5:   log likelihood = -296.75296
Iteration 6:   log likelihood = -296.75283
Iteration 7:   log likelihood = -296.75281

Ordered probit regression                       Number of obs     =        238
                                                LR chi2(55)       =     134.04
                                                Prob > chi2       =     0.0000
Log likelihood = -296.75281                     Pseudo R2         =     0.1842
```

expproduct	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age1	-.3366884	.2688406	-1.25	0.210	-.8636064	.1982296
age2	-.8351462	.4163176	-2.01	0.045	-1.651114	-.0191788
age3	-1.172292	.6780795	-1.73	0.084	-2.501304	.1567192
age4	.3860113	.6568976	0.59	0.557	-.9814844	1.673507
age5	-.9885455	.6052142	-1.63	0.102	-2.174744	.1976526
genmale	.0504297	.2702163	0.19	0.852	-.4791844	.5800438
genother	-.3549216	.6816885	-0.52	0.603	-1.691086	.9811632
eduhs	1.225759	.6611467	1.85	0.064	-.0700646	2.521583
eduvc	1.658786	.7582476	2.18	0.029	.1646484	3.136925
eduungrad	1.594482	.6630181	2.40	0.016	.2949989	2.893974
edugrad	2.167325	.7963438	2.72	0.006	.6065201	3.728131
eduhgrad	0	(omitted)				
inc1	-.1323275	.2106349	-0.63	0.530	-.5451643	.2805092
inc2	.1628629	.2556127	0.64	0.524	-.3381288	.6638547
inc3	.9595796	.6955614	1.38	0.168	-.4036957	2.322855
inc4	-.3419679	.4523579	-0.76	0.450	-1.228573	.5446374
inc5	.0901747	.3736543	0.24	0.809	-.6421743	.8225238
fammem18_1	-.2805522	.2184156	-1.28	0.199	-.708639	.1475346
fammem18_2	-.1971189	.3431514	-0.57	0.566	-.8696833	.4754455
fammem18_3	.2953973	.49445	0.60	0.550	-.6737069	1.264501
fammem18_4	-1.353441	.740374	-1.83	0.068	-2.804547	.0976658
fammem18_5	-2.069452	1.034281	-2.00	0.045	-4.096606	-.0422989
fammem65_1	.0072979	.2123331	0.03	0.973	-.4088672	.4234631
fammem65_2	.3777342	.2467476	1.53	0.126	-.1058823	.8613507
fammem65_3	.1507254	.527981	0.29	0.775	-.8840983	1.185549
fammem65_4	-1.249551	1.283025	-0.97	0.330	-3.764234	1.265132
fammem65_5	-.3692936	.8229192	-0.45	0.654	-1.982185	1.243598
beauty	-.1182058	.1909488	-0.62	0.536	-.4924586	.2560469
goout	.1619407	.2015197	0.80	0.422	-.2330306	.5569121
ndog1	.2895435	.3116226	0.93	0.353	-.3212255	.9003125
ndog2	.2978093	.2908351	1.02	0.306	-.272217	.8678356
ndog3	-.9059812	.5053666	-1.79	0.073	-1.896482	.0845191
ndog4	.5687777	.5760859	0.99	0.323	-.56033	1.697885
ndog5	-6.643621	127.3024	-0.05	0.958	-256.1518	242.8645
ngdog1	-.125381	.2486919	-0.50	0.614	-.6128082	.3620462
ngdog2	-.1643007	.3316114	-0.50	0.620	-.8142472	.4856458
ngdog3	1.094515	.7498977	1.46	0.144	-.3752574	2.564288
ngdog4	0	(omitted)				
ngdog5	0	(omitted)				
ncat1	.1274179	.2525863	0.50	0.614	-.3676422	.622478
ncat2	.376106	.2924194	1.29	0.198	-.1970256	.9492376
ncat3	.9395394	.4933792	1.90	0.057	-.0274661	1.906545
ncat4	0	(omitted)				
ncat5	1.156966	1.020075	1.13	0.257	-.8423436	3.156276
ngcat1	.2124121	.2553746	0.83	0.406	-.2881129	.712937
ngcat2	-.1006613	.4199436	-0.24	0.811	-.9237356	.7224131
ngcat3	3.195211	126.1531	0.03	0.980	-244.0604	250.4508
ngcat4	0	(omitted)				
ngcat5	-1.033221	1.542791	-0.67	0.503	-4.057035	1.990593
hpp1	.3782069	.2745133	1.38	0.168	-.1598292	.916243
hpp2	.5318322	.2670741	1.99	0.046	.0083766	1.055288
hpp3	1.1165	.2747955	4.06	0.000	.5779102	1.655089
hpp4	1.281436	.3694798	3.47	0.001	.5572685	2.005603
hpp5	2.347372	.7996794	2.94	0.003	.7800294	3.914715
hpp6	1.160695	.3641919	3.19	0.001	.4468923	1.874498
exptpm1	.5502301	.3010901	1.83	0.068	-.0398957	1.140356
exptpm2	.9227849	.303143	3.04	0.002	.3286354	1.516934
exptpm3	1.112832	.3429124	3.25	0.001	.4407364	1.784928
exptpm4	1.34978	.4233888	3.19	0.001	.5199531	2.179607
exptpm5	1.755846	.4030222	4.36	0.000	.9659371	2.545755
/cut1	1.425886	.6793721			.0943407	2.75743
/cut2	2.796587	.6965085			1.431456	4.161719
/cut3	3.522706	.7026142			2.145608	4.899805
/cut4	4.073535	.7076745			2.686518	5.460551

Ordered Probit Regression of specification2

```
. oprobit expservice age1 age2 age3 age4 age5 genmale genother eduhs eduvc eduungrad edugrad eduhgrad inc1 inc2 inc3 inc4 inc5 fammem18_1 fammem18_
> 2 fammem18_3 fammem18_4 fammem18_5 fammem65_1 fammem65_2 fammem65_3 fammem65_4 fammem65_5 beauty goout ndog1 ndog2 ndog3 ndog4 ndog5 ngdog1 ngdog
> 2 ngdog3 ngdog4 ngdog5 ncat1 ncat2 ncat3 ncat4 ncat5 ngcat1 ngcat2 ngcat3 ngcat4 ngcat5 hpp1 hpp2 hpp3 hpp4 hpp5 hpp6 exptpm1 exptpm2 exptpm3 exp
> tpm4 exptpm5

note: eduhgrad omitted because of collinearity
note: ngdog4 omitted because of collinearity
note: ngdog5 omitted because of collinearity
note: ncat4 omitted because of collinearity
note: ngcat4 omitted because of collinearity
Iteration 0:   log likelihood = -349.89845
Iteration 1:   log likelihood = -282.20294
Iteration 2:   log likelihood = -280.29305
Iteration 3:   log likelihood = -280.23842
Iteration 4:   log likelihood = -280.23063
Iteration 5:   log likelihood = -280.22922
Iteration 6:   log likelihood = -280.22894
Iteration 7:   log likelihood = -280.22889
Iteration 8:   log likelihood = -280.22888

Ordered probit regression                       Number of obs     =        238
                                                LR chi2(55)       =     139.34
                                                Prob > chi2       =     0.0000
Log likelihood = -280.22888                     Pseudo R2         =     0.1991
```

expservice	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age1	-.2046148	.2782768	-0.74	0.462	-.7500273	.3407978
age2	-.388667	.4427437	-0.88	0.380	-1.256429	.4790947
age3	-1.046394	.7626419	-1.37	0.170	-2.541145	.4483568
age4	-.6691377	.8272751	-0.81	0.419	-2.290567	.9522917
age5	-.3396546	.6389716	-0.53	0.595	-1.592016	.9127068
genmale	-.1591818	.2866387	-0.56	0.579	-.7209676	.402604
genother	-.3422823	.6784931	-0.50	0.614	-1.672024	.9876197
eduhs	.1945379	.6229649	0.31	0.755	-1.026451	1.415527
eduvc	1.7073	.7151987	2.39	0.017	.3055516	3.109047
eduungrad	.5948355	.6140586	0.97	0.333	-.6086816	1.798352
edugrad	.2973084	.7649688	0.39	0.698	-1.201987	1.796604
eduhgrad	0	(omitted)				
inc1	-.1890846	.2193843	-0.86	0.389	-.6190699	.2409007
inc2	-.1369505	.2627564	-0.52	0.602	-.6519435	.3780425
inc3	.0490852	.6785944	0.07	0.942	-1.288935	1.379106
inc4	-.4205732	.4984768	-0.84	0.399	-1.39757	.5564234
inc5	.1839955	.3973237	0.46	0.643	-.5947447	.9627357
fammem18_1	-.4484253	.2368779	-1.87	0.062	-.9031295	.0222788
fammem18_2	-.219392	.3550741	-0.62	0.537	-.9153244	.4765405
fammem18_3	.6190378	.5003997	1.24	0.216	-.3617275	1.599803
fammem18_4	-.9101861	.7938232	-1.15	0.252	-2.466051	.6456789
fammem18_5	-4.369738	1.44398	-3.03	0.002	-7.199887	-1.539588
fammem65_1	-.2455315	.2267886	-1.08	0.279	-.690029	.1989659
fammem65_2	-.2298977	.2564695	-0.90	0.370	-.7325687	.2727733
fammem65_3	1.121062	.6120597	1.83	0.067	-.0785533	2.320677
fammem65_4	.6839153	1.254748	0.55	0.586	-1.775345	3.143175
fammem65_5	-.7043815	.8045226	-0.88	0.381	-2.281137	.8725338
beauty	-.127074	.1978005	-0.64	0.521	-.5147559	.2606079
goout	-.1465882	.2127576	-0.69	0.491	-.5635854	.2704091
ndog1	-.4472845	.3375124	-1.33	0.185	-1.108797	.2142276
ndog2	-.0630619	.301659	-0.21	0.834	-.6543027	.528179
ndog3	-.8956733	.5125941	-1.75	0.081	-1.900339	.1089926
ndog4	.3765256	.5582463	0.67	0.500	-.7176171	1.470668
ndog5	-4.572715	254.8804	-0.02	0.986	-504.1292	494.9838
ngdog1	.6770942	.2732567	2.48	0.013	.1415289	1.212667
ngdog2	.8786625	.3470584	2.53	0.011	.1984485	1.558884
ngdog3	.9382758	.7655215	1.23	0.220	-.5621187	2.43867
ngdog4	0	(omitted)				
ngdog5	0	(omitted)				
ncat1	.1603093	.2665115	0.60	0.548	-.3620437	.6826623
ncat2	.4084527	.2951391	1.38	0.166	-.1700094	.9869147
ncat3	-.0638262	.575298	-0.11	0.912	-1.19139	1.063737
ncat4	0	(omitted)				
ncat5	3.070309	1.141345	2.69	0.007	.8333137	5.307303
ngcat1	.0285895	.2624501	0.11	0.913	-.4858032	.5429821
ngcat2	-.5496577	.4395733	-1.25	0.211	-1.411285	.3118901
ngcat3	4.924891	238.3234	0.02	0.984	-462.1884	472.0382
ngcat4	0	(omitted)				
ngcat5	-3.980267	1.645218	-2.42	0.016	-7.204834	-.7557
hpp1	.3557191	.2828387	1.26	0.209	-.1986345	.9100727
hpp2	.7610397	.2759174	2.76	0.006	.2202515	1.301828
hpp3	.9329399	.2810387	3.32	0.001	.3821141	1.483766
hpp4	1.29947	.3898795	3.34	0.001	.5368886	2.062052
hpp5	2.517651	.8267479	3.05	0.002	.8972552	4.138047
hpp6	2.111557	.3920334	5.39	0.000	1.343186	2.879928
exptpm1	.0201768	.3253577	0.06	0.951	-.6175127	.6578662
exptpm2	.366929	.3176899	1.15	0.248	-.2557317	.9895897
exptpm3	.7173526	.3537146	2.03	0.043	.0240848	1.410621
exptpm4	.360977	.4409043	0.82	0.413	-.5031796	1.225134
exptpm5	.6279315	.4297054	1.46	0.144	-.2142757	1.470139
/cut1	.4294941	.6442337			-.8331887	1.692169
/cut2	1.468422	.6481093			.1981508	2.738693
/cut3	2.080164	.651214			.8038077	3.35652
/cut4	2.480423	.6549157			1.116812	3.844034

```
Note: 3 observations completely determined.  Standard errors questionable.
```

Ordered Probit Regression of specification 3

```
. oprobit exptotal age1 age2 age3 age4 age5 genmale genother eduhs eduvc eduungrad edugrad eduhgrad inc1 inc2 inc3 inc4 inc5 fammem18_1 fammem18_2
> fammem18_3 fammem18_4 fammem18_5 fammem65_1 fammem65_2 fammem65_3 fammem65_4 fammem65_5 beauty goout ndog1 ndog2 ndog3 ndog4 ndog5 ngdog1 ngdog2
> ngdog3 ngdog4 ngdog5 ncat1 ncat2 ncat3 ncat4 ncat5 ngcat1 ngcat2 ngcat3 ngcat4 ngcat5 hpp1 hpp2 hpp3 hpp4 hpp5 hpp6 exptpm1 exptpm2 exptpm3 exptp
> m4 exptpm5

note: eduhgrad omitted because of collinearity
note: ngdog4 omitted because of collinearity
note: ngdog5 omitted because of collinearity
note: ncat4 omitted because of collinearity
note: ngcat4 omitted because of collinearity
Iteration 0:   log likelihood = -324.08345
Iteration 1:   log likelihood = -261.91261
Iteration 2:   log likelihood = -259.92571
Iteration 3:   log likelihood = -259.79022
Iteration 4:   log likelihood = -259.77782
Iteration 5:   log likelihood = -259.77558
Iteration 6:   log likelihood = -259.77515
Iteration 7:   log likelihood = -259.77506
Iteration 8:   log likelihood = -259.77504

Ordered probit regression                       Number of obs     =        238
                                                LR chi2(55)       =     128.62
                                                Prob > chi2       =     0.0000
Log likelihood = -259.77504                     Pseudo R2         =     0.1984
```

exptotal	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age1	-.3050323	.2825811	-1.08	0.280	-.858881	.2488165
age2	-.744105	.4381668	-1.70	0.089	-1.602896	.1146861
age3	-1.682745	.7824412	-2.15	0.032	-3.216382	-.1491084
age4	-.0281912	.667653	-0.04	0.966	-1.336767	1.280385
age5	-.6260809	.6795907	-0.92	0.357	-1.958054	.7058924
genmale	.1683645	.293148	0.55	0.584	-.4141951	.7349241
genother	-.1377314	.6739008	-0.20	0.838	-1.458553	1.18309
eduhs	.4970244	.6562646	0.76	0.449	-.7892386	1.783279
eduvc	1.633686	.7505687	2.18	0.030	.1626145	3.104758
eduungrad	.9388499	.6586152	1.41	0.158	-.3600121	2.221712
edugrad	1.149002	.7983451	1.44	0.150	-.4157258	2.713729
eduhgrad	0	(omitted)				
inc1	-.011303	.2207034	-0.05	0.959	-.4438736	.4212677
inc2	.3867222	.269404	1.14	0.255	-.2213	.8347444
inc3	.5938857	.7353295	0.81	0.419	-.8474136	2.035025
inc4	-.2172578	.4838129	-0.45	0.653	-1.165514	.7309981
inc5	.2287325	.3911354	0.56	0.573	-.5458788	.9873437
fammem18_1	-.5264907	.2380887	-2.21	0.027	-.9931359	-.0598455
fammem18_2	-.4511869	.3614409	-1.25	0.212	-1.159598	.2572242
fammem18_3	.2681537	.5071472	0.53	0.597	-.7258366	1.262144
fammem18_4	-1.277067	.826848	-1.54	0.122	-2.897659	.3435257
fammem18_5	-3.099773	1.275776	-2.43	0.015	-5.600248	-.5992971
fammem65_1	-.1424636	.2261617	-0.63	0.529	-.5857323	.3008052
fammem65_2	.0794275	.2638238	0.30	0.763	-.4360896	.5949446
fammem65_3	1.587484	.7568275	2.10	0.036	.1041295	3.070839
fammem65_4	.1359622	1.264547	0.11	0.914	-2.342504	2.614429
fammem65_5	-.6574189	.7977616	-0.82	0.410	-2.221083	.9061652
beauty	-.0355218	.2005428	-0.18	0.859	-.4285784	.3575349
goout	-.0766674	.2184878	-0.35	0.726	-.5048956	.3515608
ndog1	-.0760201	.3276956	-0.23	0.817	-.7182916	.5662513
ndog2	.178684	.3016221	0.59	0.554	-.4124845	.7698525
ndog3	-.8310409	.5359711	-1.55	0.121	-1.881525	.2194432
ndog4	.508464	.6023297	0.84	0.399	-.6720885	1.689008
ndog5	-6.053757	259.7333	-0.02	0.981	-515.1216	503.0141
ngdog1	.1046449	.261723	0.40	0.689	-.4083228	.6176126
ngdog2	.3641881	.3521376	1.03	0.301	-.325989	1.054365
ngdog3	1.618055	.9744339	1.66	0.097	-.2918003	3.52791
ngdog4	0	(omitted)				
ngdog5	0	(omitted)				
ncat1	.15006	.2644269	0.57	0.570	-.3682071	.6683272
ncat2	.4036604	.3053295	1.32	0.186	-.1947745	1.002095
ncat3	.1411168	.5373208	0.26	0.793	-.9120128	1.194246
ncat4	0	(omitted)				
ncat5	2.088827	1.118371	1.87	0.062	-.1031409	4.280794
ngcat1	.0240258	.2669649	0.09	0.928	-.4992158	.5472673
ngcat2	-.7209581	.4669805	-1.54	0.123	-1.636223	.1943068
ngcat3	3.40624	263.0758	0.01	0.990	-512.2128	519.0253
ngcat4	0	(omitted)				
ngcat5	2.351005	263.0777	0.01	0.993	-513.2718	517.9738
hpp1	.4669143	.2809366	1.66	0.097	-.0837114	1.01754
hpp2	.6376547	.2836386	2.25	0.025	.0817332	1.193576
hpp3	1.119767	.2879039	3.89	0.000	.5554861	1.684049
hpp4	1.196463	.4076877	2.93	0.003	.3974097	1.995516
hpp5	6.108983	148.0041	0.04	0.967	-283.9737	296.1917
hpp6	1.882113	.4252479	4.24	0.000	.9686424	2.635584
exptpm1	.2276726	.3169899	0.72	0.473	-.3936163	.8489614
exptpm2	.5799984	.3151705	1.84	0.066	-.0377244	1.197721
exptpm3	1.015016	.3580934	2.83	0.005	.3131656	1.716866
exptpm4	.7016197	.4388085	1.60	0.110	-.1584292	1.561669
exptpm5	1.230846	.4308465	2.86	0.004	.3864022	2.075289
/cut1	.9246606	.6772628			-.4027582	2.252071
/cut2	1.718639	.6833177			.3793686	3.057917
/cut3	2.401799	.6898133			1.051358	3.75224

Note: 5 observations completely determined. Standard errors questionable.