Let's do lunch: expenditures on meals away from home

Lunch is the most frequently purchased meal away from home: income, age, and ethnicity are among the most important predictors of the probability of eating out; however, regardless of meal purchased, family type is a less important predictor

Geoffrey D. Paulin

The restaurant business is clearly one of the most important industries in the United States today, regardless of the economic measure used. For example, in 1995, nearly one-third (31) percent of all employees in retail trade worked for eating places (restaurants, lunchrooms, cafeterias, and refreshment places).[1] More recently, in 1997, retail sales from eating places amounted to $222.0 billion, or nearly 9 percent of total retail trade ($2,566.2 billion). The figure is all the more impressive when compared with total nondurable goods sales ($1,508 billion). More than $1 in every $7 spent on nondurable goods in 1997 went to eating places.[2] According to the Bureau of Labor Statistics Consumer Expenditure Survey,[3] more than 71 percent of all "consumer units" (or families)[4] reported buying meals at restaurants, carryouts, and other eating establishments during an average week in 1997.[5] The average annual expenditure was about $1,477 per family,[6] or nearly 31 percent ($4,801) of total expenditures for food.[7]

Changes in family income, number of earners, age of reference person, and other demographic factors will undoubtedly influence future spending for meals away from home.[8] To understand and anticipate the effects of these potential changes, it is important to analyze not only the types of consumers who are purchasing these meals away from home, but also the types of meals they are purchasing. This article examines expenditures for meals away from home for several demographic groups using data from the Consumer Expenditure Survey. In addition to family characteristics, this survey collects data on four categories of meals purchased from restaurants, carry-outs, and other eating establishments (henceforth referred to as "meals away from home," or "eating out"). These categories are: breakfast and brunch; lunch; dinner; and snacks and nonalcoholic beverages.

Preliminary analysis

Although breakfast is often called "the most important meal of the day," this does not appear to be true in terms of expenditures for meals away from home. The following tabulation shows expenditures and percent of families reporting meals away from home (data are from the Consumer Expenditure Survey, 1997):

	Percent of families	Average weekly expenditure
Total meals at restaurants, carry-outs, and other	71.4	$28.41
Breakfast and brunch	28.2	2.22
Lunch	60.7	9.65
Dinner	55.1	14.2
Snacks and nonalcoholic beverages	45.6	2.30

Geoffrey Paulin is an economist in the Division of Consumer Expenditure Surveys, Bureau of Labor Statistics. All opinions expressed herein are the author's, and do not constitute policy of the Bureau of Labor Statistics.

On the one hand, the data show average weekly expenditures for breakfast and brunch away from home ($2.22) are even smaller than those reported for snacks and nonalcoholic beverages away from home ($2.30).[9] Breakfast and brunch expenditures also occur far less frequently. Only 28 percent of all families report expenditures for breakfast and brunch away from home each week, compared with 46 percent that report expenditures for snacks and nonalcoholic beverages away from home. However, based on the differences in average expenditure and the percent of families reporting, it would appear the average expenditure for breakfast and brunch, when it does occur, is much larger than the average for snacks and nonalcoholic beverages. Although expenditures for dinner ($14.24) are larger on average than expenditures for lunch ($9.65), more families report expenditures for lunch (61 percent) than for dinner (55 percent).

On the other hand, the overall percentage provides only limited information. Table 1 clearly shows that expenditures for eating out are related to a family's demographic characteristics. Not surprisingly, of those groups examined, the families most likely to purchase meals away from home are those in the highest income quintile. More than 8 in 10 of these families report expenditures for meals away from home. The second most likely purchasers are families with multiple earners. Nearly 8 in 10 of all families with two or more earners report such an expenditure. Both high-income families and multiple-earner families purchase the lunch meal most frequently. There is a relationship between number of earners and income (ranging from 0.7 earner per family in the lowest quintile to 2.1 earners per family in the highest quintile).[10] Both of these effects influence the probability of purchasing lunch away from home. The higher income makes the purchase more affordable. This may also be the result of the earners going out to lunch during the workday, rather than bringing food from home to the workplace. Both high-income and multiple-earner families are also more likely to purchase dinner away from home than are any of the other groups. This may be for convenience: if several members of the family work, then there is less likely to be someone available to prepare food at home. Similarly, single earners are more likely to eat out than are single nonearners, but this may also be due to an income effect, given that single earners presumably have higher incomes than single nonearners. (A nonearner is a person who draws an income from interest, dividends, or other nonlabor, nonretirement sources.) It should also be noted that families consisting of a husband, wife, and their own children only, have patterns that are very similar to the multiple-earner families.[11] This is not surprising, considering that the average family of this type has 2.1 earners and is also near the top end of the fourth income quintile. Again, this makes it difficult to say whether their higher probability of eating out is an income effect, an earner effect, or another type of effect. For example, convenience may be a factor if there are several meals to prepare. Also, there is more likelihood of scheduling conflicts as the family gets larger, and perhaps one or more of the members occasionally chooses to "grab a bite somewhere," rather than waiting to eat with the rest of the family.

The frequency of purchasing meals away from home also appears to be related to age. While 3 of 4 families in which the reference person is under age 65 report an expenditure for eating out, fewer than 2 of 3 families with a reference person 65 to 74 years old report such an expenditure, and approximately half of those with a reference person at least 75 years old report such an expenditure.[12] Lunch is the most frequently reported meal away from home for each age group, followed by dinner. For the group aged 65 to 74, there is a much smaller difference (about 2 percent) in frequency of reporting these meals than for the other groups. Reports of breakfast and brunch occur less frequently than reports of snacks and nonalcoholic beverages for all age groups, but especially for the under-65 age group. Only 30 percent of those under age 65 report expenditures for breakfast and brunch away from home, compared with 50 percent reporting snacks and nonalcoholic beverages.

Meals away from home account for a substantial share of total food expenditures, regardless of the demographic group examined. For the groups studied in this report, the share ranges from 23 percent (for families with two or more persons, but no earners) to 41 percent (for a single-person who is an earner). As might be expected, snacks and nonalcoholic beverages constitute the category of meals away from home that accounts for the smallest share of total food expenditures, ranging from about 1 to 4 percent for each group examined. Perhaps more surprising is that the category of breakfast and brunch away from home amounts to a similar share of total food expenditures, ranging from 2 to 3 percent of total food expenditures. Dinner away from home accounts for the largest share of total food expenditures for each group examined, ranging from 12 to 21 percent of total food expenditures.

The share of total food expenditure allocated to meals away from home rises with income. On average, the first quintile allocates fewer than 1 in 4 food dollars to meals away from home, while the fifth quintile allocates more than 1 in 3 food dollars to meals away from home. The share declines by age group, with the group under 65 allocating 31 percent of its food dollars to meals away from home, compared with 26 percent for the 75-and-older age group. It is also interesting to note that single persons allocate a larger share of total food expenditures to meals away from home (37 percent) than any other family type. By contrast, single parents and "other" husband and wife families[13] each allocate about 26 percent of their total food dollars to meals away from home. Also, the relationship of shares to number of earners warrants mention. For most cases, the share increases with number of earners. For example, single earners allocate 41 percent of their food dollars to meals away from home, compared with 26 percent

Table 1. Average weekly expenditures, percent reporting, and shares of total food expenditures for meals away from home, Consumer Expenditure Survey, 1997

[Standard error of mean in parentheses]

Characteristic	Average weekly expenditure						Percent reporting					Share of total food expenditure (percent)				
	Total food[1]	Meals away from home	Break-fast and brunch	Lunch	Dinner	Snacks and non-alco-holic bever-ages	Meal away from home	Break-fast and brunch	Lunch	Dinner	Snacks and non-alco-holic bever-ages	Meals away from home	Break-fast and brunch	Lunch	Dinner	Snacks and non-alco-holic bever-ages
All consumer units	$92.33 –	$28.41 (.50)	$2.22 (.10)	$9.65 (.18)	$14.24 (.30)	$2.30 (.06)	71.4	28.2	60.7	55.1	45.6	30.8	2.4	10.5	15.4	2.5
Income quintile[2]																
First	51.64 –	12.43 (.82)	0.87 (.11)	3.86 (.24)	6.57 (.53)	1.12 (.10)	54.7	17.1	43.0	40.0	31.5	24.1	1.7	7.5	12.7	2.2
Second	71.72 –	18.41 (.91)	1.58 (.18)	6.62 (.35)	8.60 (.61)	1.61 (.13)	66.0	25.2	53.6	46.8	39.5	25.7	2.2	9.2	12.0	2.2
Third	86.73 –	25.70 (1.07)	2.25 (.22)	8.96 (.42)	12.22 (.65)	2.27 (.17)	78.8	30.6	66.4	59.3	51.5	29.6	2.6	10.3	14.1	2.6
Fourth	109.23 –	37.14 (1.10)	3.08 (.26)	12.39 (.50)	18.52 (.81)	3.16 (.18)	85.4	34.9	74.5	68.2	59.1	34.0	2.8	11.3	17.0	2.9
Fifth	151.93 –	52.11 (1.24)	3.41 (.20)	17.96 (.52)	26.51 (.87)	4.24 (.19)	87.7	37.3	80.1	73.9	62.0	34.3	2.2	11.8	17.4	2.8
Number of earners																
Single consumers																
No earner	41.64 –	10.95 (.96)	.94 (.17)	3.65 (.33)	5.91 (.65)	.44 (.05)	49.1	15.7	36.8	31.2	19.9	26.3	2.3	8.8	14.2	1.1
One earner	54.18 –	22.23 (.87)	1.77 (.17)	7.14 (.31)	11.29 (.56)	2.04 (.17)	71.2	25.9	59.2	55.3	44.1	41.0	3.3	13.2	20.8	3.8
Households of two or more persons																
No earner	$81.57 –	18.80 (1.62)	1.81 (.39)	5.91 (.43)	10.24 (1.01)	085 (.12)	57.3	20.3	46.0	42.2	28.9	23.0	2.2	7.2	12.6	1.0
One earner	97.70 –	25.88 (1.11)	2.14 (.16)	8.36 (.37)	13.32 (.72)	2.05 (.14)	69.7	27.3	58.6	53.9	44.4	26.5	2.2	8.6	13.6	2.1
Two earners	111.70 –	36.00 (.88)	2.61 (.14)	12.39 (.38)	17.94 (.54)	3.06 (.11)	79.6	32.3	69.3	62.8	54.5	32.2	2.3	11.1	16.1	2.7
Three or more earners	140.75 –	41.71 (1.91)	3.35 (.31)	15.48 (.74)	19.43 (1.18)	3.45 (.33)	79.4	37.6	71.8	63.3	57.3	29.6	2.4	11.0	13.8	2.5
Age of reference person																
Under 65[3]	98.90 –	30.95 (.55)	2.32 (.09)	10.56 (.22)	15.37 (.32)	2.70 (.08)	75.0	30.2	64.5	58.9	50.5	31.3	2.3	10.7	15.5	2.7
65 to 74	78.20 –	22.64 (1.43)	2.38 (.33)	6.83 (.43)	12.41 (.92)	1.02 (.08)	61.6	25.0	49.9	47.3	32.9	29.0	3.0	8.7	15.9	1.3
75 and older	53.58 –	13.87 (1.11)	1.21 (.23)	5.35 (.44)	6.87 (.73)	.44 (.06)	52.6	15.1	41.3	32.3	19.7	25.9	2.3	10.0	12.8	0.8
Family type																
Single person	49.59 –	18.19 (.68)	1.47 (.13)	5.89 (.26)	9.36 (.42)	1.47 (.11)	63.3	22.2	51.2	46.7	35.4	36.7	3.0	11.9	18.9	3.0
Husband and wife only	101.26 –	31.35 (1.09)	2.56 (.20)	9.90 (.32)	16.89 (.80)	2.02 (.12)	74.2	28.5	61.9	58.1	45.1	31.0	2.5	9.8	16.7	2.0
Husband and wife with children	127.58 –	37.24 (1.10)	2.76 (.17)	13.38 (.47)	17.69 (.64)	3.41 (.15)	79.1	33.3	70.1	62.7	55.7	29.2	2.2	10.5	13.9	2.7
Other husband and wife consumer units ..	135.21 –	35.53 (2.54)	2.73 (.49)	12.79 (1.13)	16.75 (1.52)	3.26 (.45)	72.7	30.7	64.2	58.2	52.9	26.3	2.0	9.5	12.4	2.4
Single parent	77.98 –	20.43 (1.74)	1.88 (.38)	7.13 (.67)	9.45 (1.02)	1.62 (.31)	69.1	28.0	58.2	50.6	44.7	26.2	2.4	9.1	12.1	2.1

[1] Average weekly expenditure is derived by dividing average annual expenditure (from integrated results) by 52 (for weeks per year).

[2] Complete reporters only.

[3] Percent reporting is calculated from data results. (Multiply percent reporting for all consumer units (CUs) by number of CUs, then do same for over 65 age group, subtract total over 65 reports, then divide by total CUs under 65.)

NOTE: Dash indicates data are not available.

for single nonearners. Similarly, the percentage for families consisting of two or more persons increases from 23 percent for those with no earner to 32 percent for those with two earners. However, the share drops slightly—to 30 percent—for those with three or more earners. As noted earlier, the percent reporting meals away from home is nearly identical among multiple-earner families. It may be that those families with three or more earners are slightly more likely to eat at less expensive restaurants than are those with two earners.

Regression results

Thus far, the analysis has been limited to averages and frequency of reporting for selected groups. However, as noted, many characteristics, such as earners, income, and family size may be correlated to some extent; therefore, it is difficult to identify which characteristic is actually related to the probability of purchasing meals away from home. To address this issue, logistic regression analysis (logit) is used. This technique allows the analyst to ascertain how a change in characteristics is expected to affect the probability of purchasing meals away from home, *ceteris paribus*. The results of this technique are presented in table 2 (all meals away from home) and table 3, pages 42-43 (specific meals away from home).[14]

A few methodological issues must be addressed before describing the regression results. For example, although most of the previous data are obtained from the results of the integrated Consumer Expenditure Survey, the regressions are obtained from the Diary survey only. Unlike the previous results, the data used in the regressions are not weighted to reflect the population. When using Diary survey data in logistic regression, weighting often results in little change in parameter estimates, but a large reduction in standard errors, resulting in an increase in the statistical significance of parameter estimates.[15]

Nevertheless, there are many advantages to performing the logistic regressions. Not only can the relationships of specific demographics and probabilities of purchase be measured, *ceteris paribus,* but also several relationships can be tested at the same time. This allows for a much more informative analysis of the data than is possible by comparing averages for several groups. Furthermore, in some cases, more detail can be found in the logit results than is available using the publications format. For example, the data tables only describe expenditure patterns for single persons. However, with logit, one can analyze whether single men have different probabilities of purchasing certain meals away from home than do single women.

To perform the analysis, it is useful to describe a "control group" for which the probability of purchase can be calculated, and against which other groups can be compared. In this case, the control group consists of single men who are:

- earning incomes in the middle-income quintile;
- working primarily in positions for which a wage or salary is paid;
- under 65 years old;
- neither black nor Hispanic;
- high school graduates but who did not attend college; and
- homeowners with mortgages, residing in an urban area in the South.

According to table 2, such a person is quite likely to purchase at least one meal away from home each week, given that the probability of purchase is predicted to be nearly 80 percent for this group. However, a person who has otherwise similar characteristics, but earns a lower income, has a much lower probability of purchase—71 percent for members of the second-income quintile and 66 percent for the first-income quintile.

Apparently, though, whether the single man is currently earning an income has less of an effect than a change in income class. For a single-male nonearner in the middle-income quintile, the predicted probability of purchasing meals away from home drops from 80 percent (for the control group) to about 73 percent; in comparison, for a single-male earner in the second quintile, the predicted probability of purchase is less than 71 percent. However, this result should be interpreted with caution. Although both the "income" and "earner" effects are statistically significant, this only indicates that the probability of purchase for single men in the second quintile differs significantly from the probability for those in the middle quintile. Simultaneously, it indicates that the probability for single-male nonearners differs significantly from the probability for single-male earners. But it does not necessarily indicate that the probability for single-male *earners* in the *second* quintile is significantly different from single *nonearners* in the *third* quintile. However, the earner effect does appear to be less important than the income effect. Note that the probability of purchase for single nonearners includes the parameter estimate for "not working (other than retired)." This coefficient is negative, thereby lowering the predicted probability for nonearners, but it is not statistically significant. Because the income effect is statistically significant, and the predicted probability is lower for the second quintile even when the negative (but not statistically significant) "not working (other than retired)" coefficient is included, it seems reasonable to assume that the income effect dominates the earner effect.

As predicted from the preliminary results, age also plays a role in the probability of purchasing meals away from home. Single men aged 65 to 74 are about 6 percent less likely to purchase such meals than are single men under 65; single men aged 75 and older are about 9 percent less likely to purchase meals away from home.

Table 2.	Results of logistic regression, all meals away from home, Diary Component, Consumer Expenditure Survey, 1997			
	Meals away from home			
Variable	Parameter estimate	Standard error	Pr > chi-square	Probability (percent)
Intercept (control group):	1.3634	0.1063	0.0001	79.6
Income quintile:				
1st quintile	−.7215	.0814	.0001	65.5
2nd quintile	−.4731	.0776	.0001	70.9
4th quintile	.2114	.0887	.0171	82.8
5th quintile	.3234	.0946	.0006	84.4
Incomplete reporters	−.9315	.0712	.0001	60.6
Number of earners:				
No earners[1]	−.3848	.0980	.0001	72.5
Two earners[1]	.2886	.0691	.0001	82.7
Three or more earners[1]	.3354	.1139	.0032	79.7
Age of reference person:				
65 to 74	−.3130	.0803	.0001	74.1
75 and older	−.4890	.0908	.0001	70.6
Family type:				
Single woman	−.3079	.0807	.0001	74.2
Husband/wife only	−.0898	.0879	.3070	78.1
Husband/wife with own children[1]	−.2346	.1192	.0492	77.2
Other husband/wife[1]	−.2664	.1745	.1269	76.6
Single parent[1]	−.1781	.1362	.1909	78.2
Other families[1]	−.2565	.1430	.0728	76.8
Additional adults:[2]				
One adult	−.0938	.1058	.3749	73.8
Two adults	−.1800	.1514	.2342	72.1
Three or more adults	.3387	.2513	.1777	81.3
Number of children:[1,2]				
One child	.0907	.0923	.3256	77.2
Two children	.1919	.0988	.0521	78.9
Three or more children	.0687	.1212	.5710	76.8
Ethnic origin of reference person:				
Black	−.3909	.0739	.0001	72.6
Hispanic	−.3282	.0811	.0001	73.8
Education of reference person:				
Did not graduate high school	−.3528	.0650	.0001	73.3
Attended college	.2243	.0581	.0001	83.0
College graduate	.2923	.0626	.0001	84.0
Occupation category:				
Self-employed	−.0271	.0984	.7829	79.2
Retired[1]	.0608	.1065	.5682	73.9
Not working (other than retired)[1]	−.0069	.0972	.9433	72.5
Housing tenure:				
Owner, no mortgage	.2872	.0647	.0001	83.9
Renter	−.0242	.0567	.6689	79.2
Region of residence:				
Northeast	.0527	.0624	.3988	80.5
Midwest	.3368	.0609	.0001	84.6
West	−.1698	.0599	.0046	76.7
Degree urbanization:				
Rural	−.2362	.0714	.0009	75.5

[1] For explanation of how probability of purchase is calculated, see appendix.
[2] Probabilities calculated for husband and wife with own children only. Adding one adult in this case means that the child is 18 or older.

NOTE: For an explanation of "Pr > chi-square," see footnote 14.

Ethnicity is an important predictor of probability of purchase, with coefficients for black and Hispanic reference persons being negative and statistically significant. For each group, the probability of purchase is less than 74 percent, compared with nearly 80 percent for white and other reference persons.

Education also plays a statistically significant role, with the probability of purchasing meals away from home increasing from 73 percent for those who did not graduate high school to 84 percent for college graduates. In addition, the difference in predicted probability of purchase for owners with mortgages (79.2 percent) and renters (79.6 percent) is not statistically significant, but owners with no mortgage have a higher predicted probability of purchase (83.9 percent). This may be because, *ceteris paribus*, owners with no mortgage presumably have lower housing payments than owners with mortgages or renters, and, therefore, they have more income to allocate to meals away from home.

Region of residence also plays a role, with Westerners being least likely and Midwesterners being most likely to purchase meals away from home. Northeasterners are about as likely as Southerners to make these purchases. Similarly, degree of urbanization plays a role, with rural families less likely to purchase meals away from home. Restaurants may be fewer in number and less accessible in rural areas than urban areas.

Occupational status, however, plays little role in predicting the probability of purchasing meals away from home. None of the coefficients is statistically significant for occupation class. Similarly, family type does not appear to play a strong role in predicting purchases of meals away from home. Although single women are about 5 percent less likely to make these purchases, families consisting of a husband and wife only are quite similar to single men in their probability of purchase. And although the coefficient for a family consisting only of a husband and wife with their own children only is statistically significant, such families of three (two parents and one child under 18) are only slightly less likely (2 percent) than single men to purchase food away from home.

But what about specific meals? There may be different patterns by family type or other characteristics when type of meal away from home is examined. Indeed, dinner appears to be the meal away from home for which the probability of purchase varies most with family type. For families other than those composed of single men, predicted probabilities of purchase range from about 24 percent (single woman) to 30 percent (husband and wife only; or single parent with one child) for breakfast and brunch; from 62 percent (single woman) to 68 percent (single parent with one child) for lunch; and 46 percent (single woman) to 50 percent (husband and wife with one child) for snacks and beverages. However, the predicted probability of purchasing dinner away from home ranges from 53 percent (single woman) to 61 percent (husband and wife only). Single men have an even higher probability of purchasing dinner away from home (64 percent) and are much

more likely to purchase breakfast away from home (34 percent) than the other groups.

Ethnicity plays a major role in the probability of purchase of each of the meals. More than 1 in every 3 nonblack, non-Hispanic single men is predicted to purchase breakfast away from home, compared with more than 1 in 4 black and Hispanic single men. Similarly, the control group is much more likely to purchase lunch away from home (68 percent) than similar persons who are black (59 percent) or Hispanic (64 percent). Furthermore, while more than 5 of 8 control group members are predicted to purchase dinner away from home, only a little more than half of black or Hispanic single men are predicted to purchase dinner away from home. Members of the control group are also almost 10 percent more likely to purchase snacks and nonalcoholic beverages away from home (47.0 percent) than are blacks or Hispanics (37.5 percent).

Region of residence makes little difference in the probability of purchasing breakfast, with 1 in 3 single men predicted to purchase breakfast away from home, regardless of region. Similarly, the predicted probability of purchasing snacks and nonalcoholic beverages ranges only from 47 percent (South) to 52 percent (Midwest). However, Midwesterners have the highest predicted probabilities of purchase for both lunch (72 percent) and dinner (67 percent). Westerners have the lowest predicted probabilities of purchase for lunch (64 percent) and dinner (61 percent).

The relationship of education to probability of purchase is also interesting. Although the parameter estimates are statistically significant in each case except for breakfast and brunch for college graduates, the predicted probability for the control group (high school graduate) is much closer to those with higher education than those who did not graduate high school, regardless of the meal examined. Fewer than 3 in 10 single men who did not graduate high school are predicted to purchase breakfast and brunch away from home, compared with more than 1 in 3 for those who at least graduated high school. Similarly, 6 in 10 nongraduates are predicted to purchase lunch away from home, compared with between 68 and 73 percent of those who at least graduated high school. Only 56 percent of nongraduates are predicted to purchase dinner away from home, compared with 64 percent of high school graduates, 68 percent of those who attended college, and 71 percent of college graduates. Well under half (about 3 in 7) of the nongraduates are predicted to purchase snacks and nonalcoholic beverages away from home, compared with 47 percent to 52 percent of those who at least graduated high school.

Rural consumers are about 3 to 5 percent less likely than their urban counterparts to purchase specific meals away from home. This again may be due to a relative lack of restaurants of all kinds in rural areas, rather than to a lack of restaurants specializing in of one type of meal or another.

INCOME, AGE, AND ETHNICITY appear to be the most important factors in predicting probability of purchase of meals away from home, regardless of the type of meal. Surprisingly, family type appears to be of less importance, at least in probability of purchase. However, the share of total food expenditures allocated to meals away from home falls as family size increases. (Singles allocate about 37 percent of their food dollars to meals away from home, compared with 31 percent for husband/wife only families, and 29 percent for husband/wife and children families.) It is difficult to say whether this is due to a larger food-at-home budget in general, or whether larger families choose meals from less expensive restaurants (for example, "fast food," as opposed to "full service") when they do purchase meals away from home.

The category of breakfast and brunch is the least frequently purchased meal away from home, while lunch and dinner away from home are each of similar importance in the food budget. However, one should not be too quick to assume this means that Americans are skipping breakfast more frequently than other meals. They may be consuming something at home (or even taking a piece of fruit or a roll to work with them), or it may be that they are reporting "breakfast" foods under "snacks and nonalcoholic beverages." For example, would a morning doughnut or bagel and a cup of coffee be defined as breakfast or as a snack and nonalcoholic beverage? These and other issues warrant further investigation.

NOTES

[1] Data are from the *Statistical Abstract of the United States: 1998,* 118th ed. (U.S. Bureau of the Census, 1998), table 1276, "Retail Trade—Establishments, Employees, and Payroll: 1990 and 1995"; see also table 1279, "Retail Trade—Sales, by Kind of Business: 1980 to 1997" for a definition of eating and drinking places.

[2] Table 1279, "Retail Trade—Sales, by Kind of Business: 1980 to 1997."

[3] The Consumer Expenditure Survey is the most detailed source of consumer expenditures collected by the U.S. Government. The survey results are taken from two components: the Diary survey and the Interview survey. Participants in the Diary survey receive an instrument in which to record their expenditures for 1 week. At the end of that week, the original instrument is replaced by a new instrument, in which the participants record expenditures for their second (and final) survey week. In the Interview survey, participants are visited once every 3 months for five consecutive quarters, at which time they are asked to recall expenditures during the reference period for various items. When published, results from both surveys are integrated into a single tabular format. The data for meals at restaurants, carryouts, and others are selected from the Diary survey.

[4] A consumer unit is the standard unit of comparison in the Consumer Expenditure Survey. In general, a consumer unit is defined as members of a family related by blood, marriage, adoption, or other legal arrangement; a single person living alone or sharing a household with others but who is financially independent; or two or more persons living together who share responsibility for at least 2 out of 3 major types of expenses—food, housing, and other expenses. Students living in university-sponsored housing are con-

Table 3. Results of logistic regression, specific meals away from home, Diary Component, Consumer Expenditure Survey, 1997

Variable	Breakfast and brunch				Lunch			
	Parameter estimate	Standard error	Pr > chi-square	Probability (percent)	Parameter estimate	Standard error	Pr > chi-square	Probability (percent)
Intercept (control group):	−0.6645	0.1007	0.0001	34.0	0.7551	0.0963	0.0001	68.0
Income quintile:								
1st quintile	−.4455	.0884	.0001	24.8	−.5767	.0758	.0001	54.4
2nd quintile	−.0587	.0771	.4467	32.7	−.3239	.0709	.0001	60.6
4th quintile	.0707	.0741	.3401	35.6	.1855	.0755	.0140	71.9
5th quintile	.1407	.0762	.0650	37.2	.3604	.0804	.0001	75.3
Incomplete reporters	−.2639	.0699	.0002	28.3	−.6695	.0648	.0001	52.1
Number of earners:								
No earners[1]	−.1711	.1074	.1110	31.3	−.3481	.0937	.0002	59.4
Two earners[1]	.1556	.0667	.0196	32.9	.2376	.0633	.0002	70.8
Three or more earners[1]	.3815	.1024	.0002	40.7	.3608	.1037	.0005	70.0
Age of reference person:								
65 to 74	.0628	.0857	.4638	35.4	−.1911	.0767	.0127	63.7
75 and older	−.4004	.1101	.0003	25.6	−.3632	.0886	.0001	59.7
Family type:								
Single female	−.4749	.0879	.0001	24.2	−.2500	.0763	.0011	62.4
Husband/wife only	−.2057	.0887	.0204	29.5	−.1083	.0818	.1857	65.6
Husband/wife own children[1]	−.2492	.1147	.0298	27.9	−.1947	.1100	.0769	67.0
Other husband/wife[1]	−.2877	.1652	.0815	27.1	−.2075	.1613	.1983	66.7
Single parent[1]	−.1707	.1356	.2082	29.5	−.1382	.1273	.2774	68.2
Other families[1]	−.3078	.1372	.0249	26.7	−.1749	.1326	.1871	67.4
Additional adults:[2]								
One adult	.1578	.0964	.1016	32.0	−.0724	.0971	.4557	62.0
Two adults	−.1890	.1428	.1858	24.9	−.1475	.1396	.2905	60.2
Three or more adults	.2907	.2113	.1689	34.9	.3502	.2273	.1234	71.3
Number of children[1,2]								
One child	−.0372	.0865	.6675	27.9	.1463	.0850	.0851	67.0
Two children	.0967	.0901	.2829	30.6	.2846	.0905	.0017	70.0
Three or more children	.0882	.1131	.4354	30.5	.1486	.1119	.1844	67.0
Ethnic origin of reference person:								
Black	−.3616	.0824	.0001	26.4	−.4096	.0710	.0001	58.6
Hispanic	−.2851	.0867	.0010	27.9	−.1934	.0776	.0127	63.7
Education of the reference person:								
Did not graduate high school	−.1892	.0736	.0102	29.9	−.3521	.0631	.0001	59.9
Attended college	.1199	.0560	.0322	36.7	.1744	.0533	.0011	71.7
College graduate	.0543	.0583	.3518	35.2	.2481	.0567	.0001	73.2
Occupation category:								
Self–employed	−.0131	.0903	.8850	33.7	−.0826	.0884	.3505	66.2
Retired[1]	−.0919	.1125	.4139	28.3	−.0055	.1004	.9562	59.9
Not working (other than retired)[1]	.0494	.1007	.6235	31.3	−.0280	.0917	.7596	59.4
Housing tenure:								
Owner, no mortgage	.0237	.0631	.7073	34.5	.2110	.0597	.0004	72.4
Renter	−.0402	.0550	.4655	33.1	−.0375	.0522	.4723	67.2
Region of residence:								
Northeast	0205	.0615	.7390	34.4	−.0256	.0580	.6587	67.5
Midwest	0665	.0573	.2456	35.5	.1767	.0553	.0014	71.7
West	−.0304	.0591	.6073	33.3	−.1656	.0558	.0030	64.3
Degree urbanization:								
Rural	−.1585	.0728	.0295	30.5	−.2426	.0666	.0003	62.5

NOTE: For an explanation of "Pr > chi-square," see footnote 14 at the end of the article. In addition, notes for this table appear on the following page.

Table 3.	Continued—Results of logistic regression, specific meals away from home, Diary Component, Consumer Expenditure Survey, 1997							
	Dinner				Snacks/nonalcoholic beverages			
Variable	Parameter estimate	Standard error	Pr > chi-square	Probability (percent)	Parameter estimate	Standard error	Pr > chi-square	Probability (percent)
Intercept (control group):	0.5539	0.0942	0.0001	63.5	−0.1216	0.0942	0.1967	47.0
Income quintile:								
1st quintile	−.3994	.0753	.0001	53.9	−.4246	.0770	.0001	36.7
2nd quintile	−.3005	.0698	.0001	56.3	−.2387	.0706	.0007	41.1
4th quintile	.1771	.0718	.0136	67.5	.0969	.0700	.1664	49.4
5th quintile	.3311	.0758	.0001	70.8	.1004	.0728	.1678	49.5
Incomplete reporters	−.5652	.0636	.0001	49.7	−.7648	.0648	.0001	29.2
Number of earners:								
No earners[1]	−.3291	.0936	.0004	56.4	−.5109	.0968	.0001	38.3
Two earners[1]	.1299	.0618	.0356	64.0	.2462	.0616	.0001	55.6
Three or more earners[1]	.1899	.0994	.0561	64.2	.3201	.0976	.0010	57.3
Age of reference person:								
65 to 74	−.1565	.0764	.0405	59.8	−.4442	.0794	.0001	36.2
75 and older	−.5652	.0903	.0001	49.7	−.9066	.0991	.0001	26.3
Family type:								
Single female	−.4334	.0764	.0001	53.0	−.0297	.0791	.7077	46.2
Husband/wife only	−.1093	.0811	.1774	60.9	.1008	.0830	.2246	49.5
Husband/wife own children[1]	−.1649	.1076	.1254	58.8	.0198	.1076	.8537	50.2
Other husband/wife[1]	−.0998	.1570	.5251	60.4	.0052	.1558	.9736	49.9
Single parent[1]	−.2664	.1250	.0331	56.4	−.0802	.1253	.5220	47.8
Other families[1]	−.2352	.1294	.0692	57.1	−.1022	.1294	.4298	47.2
Additional adults:[2]								
One adult	.0060	.0936	.9486	59.7	.0766	.0921	.4053	49.4
Two adults	−.1369	.1347	.3095	56.3	.1725	.1328	.1940	51.8
Three or more adults	.2329	.2117	.2711	65.1	.0282	.2059	.8909	48.2
Number of children[1,2]								
One child	−.0320	.0824	.6976	58.8	.1118	.0812	.1685	50.2
Two children	.0767	.0870	.3779	61.4	.2573	.0854	.0026	53.9
Three or more children	−.0610	.1083	.5736	58.1	.1470	.1068	.1687	51.1
Black	−.5092	.0710	.0001	51.1	−.3878	.0729	.0001	37.5
Hispanic	−.3865	.0765	.0001	54.2	−.3878	.0778	.0001	37.5
Education of the reference person:								
Did not graduate high school	−.2962	.0634	.0001	56.4	−.1893	.0659	.0041	42.3
Attended college	1901	.0519	.0003	67.8	.1065	.0523	.0418	49.6
College graduate	.3439	.0550	.0001	71.0	.1838	.0546	.0008	51.6
Occupation category:								
Self–employed	−.0072	.0864	.9339	63.3	−.0580	.0853	.4961	45.5
Retired[1]	.0050	.0997	.9598	55.7	.1876	.1019	.0656	39.1
Not working (other than retired)[1]	0321	.0909	.7237	56.4	.1554	.0920	.0910	38.3
Housing tenure:								
Owner, no mortgage	.1346	.0584	.0212	66.6	.1067	.0590	.0705	49.6
Renter	−.0497	.0510	.3307	62.3	.0541	.0510	.2889	48.3
Region of residence:								
Northeast	.0086	.0569	.8793	63.7	.1396	.0572	.0147	50.4
Midwest	.1597	.0537	.0030	67.1	.2089	.0536	.0001	52.2
West	−.1294	.0547	.0180	60.5	.0385	.0548	.4822	47.9
Degree urbanization:								
Rural	−.1501	.0655	.0220	60.0	−.0950	.0663	.1521	44.6

[1]For explanation of how probability of purchase is calculated, see appendix.
[2]Probabilities calculated for husband and wife with own children only. Adding one adult in this case means that the child is 18 or older.

sidered to be separate consumer units. In this article, the term "family(ies)" will be considered "consumer unit(s)."

[5] Data are from the Diary component of the Consumer Expenditure Survey.

[6] The 95-percent confidence interval for this figure extends from about $1,426 to about $1,528, or $1,477 ± $51.

[7] Data are from the Consumer Expenditure Survey, integrated results. (This includes expenditures from both the Diary and Interview components of the survey; therefore, no confidence interval estimate is available.)

[8] The reference person is the first person mentioned when the respondent is asked to "Start with the name of the person or one of the persons who owns or rents this home."

[9] Note that the difference between these values is not statistically significant. The absolute value of the t-statistic comparing these two means is 0.69. At the 95-percent confidence level, the mean for breakfast and brunch away from home is approximately $2.22 ± $0.20; the mean for snacks and nonalcoholic beverages away from home is approximately $2.30 ± $0.12.

[10] The figure 0.7 of an earner reflects the fact that more families in this income quintile have no earner than have at least one earner.

[11] The phrase "husband, wife, and their own children only" specifically means that the husband, the wife, and their own child or children are the only people in this family, that is, there are no other members, such as uncles, aunts, grandchildren, and so forth; it is frequently termed the "nuclear family."

[12] For more information on spending by older age groups, see Geoffrey D. Paulin, "Expenditure patterns of older Americans, 1984–97," pp. 3-28, this issue.

[13] "Other" husband and wife families consist of a husband, wife, and at least one person who is not their child. This other person may be an elderly parent or other relative, a grandchild, or some other person in the family who is not financially independent of the husband and wife.

[14] In logit, the standard error of the parameter estimate is drawn from a chi-square distribution. The value "Pr > chi-square" then denotes the level of statistical significance of the parameter estimate. A value less than or equal to 0.05 indicates statistical significance at the 95-percent confidence level; a value less than or equal to 0.01 indicates statistical significance at the 99-percent confidence level.

[15] For further discussion, see Geoffrey D. Paulin, "The changing food-at-home budget: 1980 and 1992 compared," *Monthly Labor Review*, December 1998, pp. 3–32, especially p. 16.

APPENDIX: The logistic regression technique

Logistic regression.   Logistic regression, or logit, is often used to predict the probability that an event will occur, based on a series of observed variables. In this case, the probability of incurring an expenditure for meals away from home, given a series of demographic characteristics, is examined.

One of the advantages of logit is that the coefficients are easily converted into probabilities without having to resort to special tables or other means of calculation. The formula for such a probability is

$P = \exp(a + bX)/[1 + \exp(a + bX)]$
where
P is the probability of observing a positive outcome (that is, a purchase)
a is a parameter estimate
b is a vector of parameter estimates
X is a vector of characteristics.

In the simplest example in this study, suppose one wants to calculate the probability of purchasing meals away from home for the control group described in the paper (that is, single men in the middle-income group, and so forth). Because all the independent variables in this case are binary, the only coefficient of concern is that for the intercept. In other words, using the results in table 2,

$P = \exp(1.3634)/[1 + \exp(1.3634)] = 0.7963.$

However, suppose one wanted to know the predicted probability for single women instead of single men. The predicted probability is

$P = \exp(1.3634 - 0.3079)/[1 + \exp(1.3634 - 0.3079)] = 0.7418.$

The coefficient for single women (–0.3079) is simply added into the equation as appropriate.

Probabilities for numbers of earners.   In some cases, the situation is not so straightforward as it first appears. For example, it is pos-

sible for a single man to be an earner or nonearner. If a nonearner, the same procedure just outlined is applied—that is, the coefficient for nonearner (–0.3848) is added to the intercept coefficient (1.3634) before the equation is recalculated. However, note that the control group consists of single men earning a wage or salary. Therefore, if the single man is a nonearner, it is impossible for him to be earning a wage or salary. Therefore, he must either be retired or not working for another reason. Because his age is defined as under 65 for control group status, it is assumed that he is not working for a reason other than retirement. Therefore, an extra coefficient for occupation category (–0.0069) is included before the calculation is made. Note that the probability, then, for "no earner" and "not working (other than retired)" is the same, because the nonworker is also a nonearner, presumably.

Similarly, it is impossible for a single man to be a multiple earner. Therefore, the two-earner consumer units are assumed to consist of a husband and wife only, and the three-or-more-earner consumer units consist of a husband, wife, and one adult child (that is, the child is at least 18 years old). The appropriate coefficients are thus incorporated into the equation when calculating the probability of purchase for these groups.

Probabilities for different family types. As with number of earners, different family types can have different numbers of adults and children. Using the Diary data in this case can be quite tricky. This is because the survey results define "persons under 18 years of age" and "children" in different ways. The first categorization is obvious. But the second refers specifically to children of the reference person. These "children" could be well over the age of 18, but if they are living with their parents, they are still classified as "children." Similarly, consider a person under the age of 18 who is being raised by a grandparent, aunt or uncle, or some other relative. The "child" may be counted as a person under 18, but not necessarily as a "child" of the reference person. Or suppose that a very

young couple (for example, one person is 17 years old and the other is 18 years old) gets married, and lives with relatives. If the couple qualifies as a separate consumer unit, there is one person under 18 in that unit, even though there are no "children."

To solve these conundrums, the following definitions apply:

Husband and wife with own children only.　The parents are treated as "adults" (regardless of age) and it is assumed (unless otherwise specified) that there is one child, who is under the age of 18. Adding one "adult" means that the child is 18 or over. However, there are still three persons present in the consumer unit for these families. (Likewise, if two additional adults are present, there are two children over 18, and two parents.) To obtain the estimated probability for a family with one child, the coefficients for the intercept (1.3634), family type (–0.2346), and one child (0.0907) are added before exponentiating. If the family consists of a husband, wife, and one child who is at least 18 years old, the coefficient for one child is replaced by the coefficient for one added adult (–0.0938).

Other husband and wife families.　The only known factor of this composition is that there is a married couple present. There could also be at least one other adult (such as an elderly relative or sibling who is new to town), or there could be children present (for ex-ample, grandparents raising the grandchild). For ease of comparison with husband/wife and own children only, the probability is calculated assuming there is a married couple (two adults) and one other person who is under 18 (a child). (Again, note that a very young married couple could be temporarily raising a niece or nephew, and then there would be two persons under 18 in the consumer unit, using the example above. In each case, the husband and wife are treated as adults regardless of their actual age.)

Single parent families.　These are assumed to consist of one parent (adult) and one child (person under 18). The parent is counted as an adult regardless of actual age.

Other families.　For consistency, this family is assumed to consist of one adult and one child (person under 18) for ease of comparison with the other groups. An example is a grandparent and grandchild.

To calculate other family types.　Single persons (even if they are college students under the age of 18), single parents, all married persons, and anyone who is at least 18 years old are considered to be adults. Anyone under the age of 18 who is not included in the categories just described is considered to be a child in this study.