Chapter Four: National Trends in Program Participation and Error Rates

Recent national trends in food stamp participation and error are examined in this chapter. The annually estimated model is used here to examine the patterns that underlie year-to-year changes in the rate at which households participate in the program (the aggregate participation rate) and the rate at which active cases are incorrectly paid (the case error rate).

Underlying Trends in Participation Rates

The model produces a series of statistics pertaining to the monthly size, composition, and dynamics of the active food stamp caseload. The first of these is a general indicator of food stamp receipt within the household population, in a given month. (The definitions below use the notation from Exhibit 6.)

- *Aggregate participation rate*
  = percentage of all households that are active cases
  = $(C_2 + C_3 + C_4 + C_5)/Q$

For 1997 through 2001, Exhibit 13 shows the average monthly number of active food stamp cases, the total number of U.S. households, and the corresponding aggregate participation rate. (Recall that this is distinct from the "conditional" participation rate that shows the percentage of *eligible* households that participate in the program.) Estimates are shown separately for total households, households with earnings, and households without earnings.

There are three caseload share parameters, summing to one, that indicate the proportion of the active caseload comprised by first-month cases, ongoing cases, or expiring cases:

- *Caseload share: first-month cases*
  = percentage of active cases that are newly certified
  = $(Q_{12} + Q_{13})/(C_2 + C_3 + C_4 + C_5)$

- *Caseload share: ongoing cases*
  = percentage of active cases that are subject to interim action
  = $(C_2 + C_3 - Q_{12} - Q_{13})/(C_2 + C_3 + C_4 + C_5)$

- *Caseload share: expiring cases*
  = percentage of active cases that are subject to recertification
  = $(C_4 + C_5)/(C_2 + C_3 + C_4 + C_5)$

	1997	1998	1999	2000	2001
	Total households				
Number of food stamp cases (thousands)	9,393	8,196	7,612	7,289	7,403
Number of U.S. households (thousands)	101,018	102,528	103,874	104,705	106,418
Aggregate participation rate (%)	9.3%	8.0%	7.3%	7.0%	7.0%
	Households with earnings				
Number of food stamp cases (thousands)	2,273	2,158	2,048	1,985	1,989
Number of U.S. households (thousands)	79,790	81,248	82,611	84,184	85,257
Aggregate participation rate (%)	2.8%	2.7%	2.5%	2.4%	2.3%
	Households without earnings				
Number of food stamp cases (thousands)	7,120	6,038	5,564	5,304	5,414
Number of U.S. households (thousands)	21,228	21,280	21,263	20,521	21,161
Aggregate participation rate (%)	33.5%	28.4%	26.2%	25.8%	25.6%

Sources and notes: Number of food stamp cases–weighted count of participating cases, from the analysis sample shown in Exhibit 7.
Number of U.S. households–U.S. Department of Commerce, Bureau of the Census, Current Population Survey in March of each year.
(See www.census.gov/hhes/income/dinctabs.html.)
Aggregate participation rate—number of food stamp cases divided by the corresponding total number of U.S. households.

Exhibit 14 shows the annual estimates of these parameters, for 1998 through 2001. Over this period there was a slight increase in the caseload share associated with first-month cases and a slight decline in the share associated with expiring cases. These trends occurred both for households with earnings and without earnings. For both types of households, the caseload share associated with ongoing cases remained stable and large (more than three-fourths of active cases). In later explaining national error trends, it will be important to recognize that ongoing cases comprise so large a segment of the active caseload.

Exhibit 14: Caseload Shares, 1998-2001

	1998	1999	2000	2001
	Total households			
Caseload share (%):				
First-month cases	7.0	7.6	7.8	8.5
Ongoing cases	81.3	81.5	81.0	81.3
Expiring cases	11.8	10.8	11.2	10.2
	Households with earnings			
Caseload share (%):				
First-month cases	8.6	9.0	10.1	11.0
Ongoing cases	76.2	76.4	74.3	75.5
Expiring cases	15.2	14.6	15.6	13.5
	Households without earnings			
Caseload share (%):				
First-month cases	6.4	7.1	7.0	7.6
Ongoing cases	83.1	83.5	83.5	83.4
Expiring cases	10.5	9.4	9.5	9.0

One can also define the closure rates, indicating the percentage of cases that exit the active caseload in each month:

- *Closure rate: total cases*
  = closure rate among all active cases
  = $(Q_{21} + Q_{31} + Q_{41} + Q_{51})/(R_2 + R_3 + R_4 + R_5)$

- *Closure rate: ongoing cases*
  = closure rate among active cases subject to interim action
  = $(Q_{21} + Q_{31})/(R_2 + R_3)$

- *Closure rate: expiring cases*
  = closure rate among active cases subject to recertification
  = $(Q_{41} + Q_{51})/(R_4 + R_5)$

Exhibit 15 shows the estimated closure rates provided by the model. As noted earlier, the monthly closure rates for active cases are subject to considerable sampling error, as they are computed as the residual of sample-estimated values in each row of the matrix. The estimated monthly closure rate for total active cases ranged between 8.2 and 8.5 percent during this period. Estimated closure rates were somewhat higher for households with earnings (9.5 to 12.3 percent) than for households without earnings (7.4 to 7.9 percent).

Exhibit 15: Closure Rates, 1998-2001

	1998	1999	2000	2001
Total households				
Closure rate (%):				
Total cases	8.4	8.3	8.2	8.5
Ongoing cases	4.9	6.4	6.0	7.6
Expiring cases	33.6	24.5	26.2	16.2
Households with earnings				
Closure rate (%):				
Total cases	12.3	9.5	10.5	11.0
Ongoing cases	9.7	7.1	8.0	10.7
Expiring cases	27.2	23.4	23.9	13.0
Households without earnings				
Closure rate (%):				
Total cases	7.9	7.9	7.4	7.9
Ongoing cases	4.4	6.1	5.3	7.0
Expiring cases	36.9	24.7	27.5	17.4

For total active cases, the model yields monthly closure rates higher than those for June 2000 shown in *Food Stamp Program Access Study: Local Office Policies and Practices*.[19] Compared to the estimates here for fiscal year 2000, Bartlett et al. found the closure rate to be 5.4 percent for total cases (versus the 8.2 percent above), 2.9 percent for ongoing cases (versus the 6.0 percent above), and 21.9 percent for expiring cases (versus the 26.2 percent above).

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[19] See Bartlett et al. (2004). The study derived its nationally representative estimates for June 2000 from data collected at 109 local food stamp offices.

The higher rates here for total closures and interim closures appear to reflect some overstatement in the number of first-month (newly certified) cases and a corresponding understatement in the number of second-month (ongoing) cases and expiring cases. As noted earlier, the share of the caseload comprised by first-month cases was estimated here at 7.8 percent in FY 2000 (compared to 4.9 percent for Bartlett et al.). This higher-than-expected proportion of new openings may result from the way in which QC reviewers enter information on the timing of the initial certification in relation to the review month. Some of these cases (now classified in cells Q_{12} and Q_{13} of Exhibit 6) should perhaps be classified as in their second month and thus as ongoing cases. Any misclassifications of this type have the effect of raising the rate of new openings, the total closure rate, and the interim closure rate. In other instances, cases that are overdue for recertification (and should be classified as expiring) may be misclassified as first-month cases, given the instructions to QC reviewers for entering information on "sample month in certification."[20]

Can any other data be used to indicate whether the closure rates estimated here are indeed higher than one should have expected? For any given fiscal year, it is possible to derive an "implied monthly closure rate" based on information regarding the monthly active caseload and the number of monthly case openings. To do this, one starts with the following identity: the net monthly change in active cases equals monthly case openings minus monthly case closings. Rearranging terms, it follows that: monthly case closings equal monthly case openings minus the net monthly change in active cases.

We have applied this relationship to compute implied monthly closure rates for 1998 through 2001, using national administrative data from FNS on monthly caseloads and also using the counts of monthly case openings calculated in this study from the annual QC data. As shown in Exhibit 16, the implied monthly closure rates are in the range of 7.7 to 8.0 percent during this period, compared to 8.2 to 8.5 percent for the model. This suggests that the monthly closure rates provided by the model may be somewhat overstated, but not to the degree suggested by the comparison with Abt's other recently completed study. We acknowledge that the implied closure rates calculated in Exhibit 16 do not provide a truly independent test, as they rely on the counts of case openings computed from the QC data analyzed here. To our knowledge, however, there is no independent source of data on food stamp case openings.

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[20] For the data element "sample month in certification," FNS Handbook 310 instructs QC reviewers that "this entry should indicate how far into the certification period the sample month occurs." The instructions go on to say, however, that "for households that are participating in months for which they have not been certified, enter the number of months beyond the end of the household's certification period." This implies that a case one month overdue for recertification could be misclassified as a newly certified case. Consistent with this logic, the 11.2 percent caseload share for expiring cases in 2000 (shown in Exhibit 14) is lower than the corresponding 12.5 percent from Bartlett et al. (2004).

Exhibit 16: Monthly Closure Rates Implied by Year-to-Year Change in National Caseload

Fiscal Year	Monthly caseload at start of current year	Monthly caseload at start of next year	Change in caseload over 12 months	Average monthly caseload change	Average monthly openings	Implied average monthly closings	Average monthly caseload	Implied monthly closure rate
	(a)	(b)	(c) =(b)-(a)	(d) =(c)/12	(e)	(f) =(e)-(d)	(g)	(h) =(f)/(g)
1998	8,658,521	7,858,938	-799,583	-66,632	571,574	638,206	8,248,741	0.077
1999	7,858,938	7,440,073	-418,865	-34,905	580,617	615,522	7,668,372	0.080
2000	7,440,073	7,315,526	-124,547	-10,379	571,395	581,774	7,324,628	0.079
2001	7,315,526	7,812,305	496,779	41,398	630,323	588,925	7,446,981	0.079

Sources:

(a) Food and Nutrition Service, National Data Bank, caseload in first month of current fiscal year.

(b) Food and Nutrition Service, National Data Bank, caseload in first month of next fiscal year.

(e) Abt Associates, Exhibits C-1 through C-4 of this report, sum of cell counts Q_{12} and Q_{13} for total households.

(g) Food and Nutrition Service, National Data Bank, average caseload over the twelve months of current fiscal year.

Underlying Trends in Error Rates

Study findings are derived from the five-by-five transition matrices calculated nationwide and by state, using the annual QC data. The matrices are used to compute a series of parameters that underlie the total case error rate. These parameters are defined below, using the notation from Exhibit 6 relating to cell counts (Q_{ij}), column totals (C_j), and row totals (R_i) in the transition matrix.

- *Total error rate*
  - $=$ case error rate among all active cases
  - $=$ $(C_3 + C_5)/(C_2 + C_3 + C_4 + C_5)$

- *First-month error rate*
  - $=$ case error rate among first-month (newly certified) cases
  - $=$ $Q_{13}/(R_1 - Q_{11})$

- *Next-month error rate: ongoing correct cases*
  - $=$ next-month case error rate among current-month ongoing correct cases
  - $=$ $(Q_{23} + Q_{25})/(R_2 - Q_{21})$

- *Next-month error rate: ongoing error cases*
  - $=$ next-month case error rate among current-month ongoing error cases
  - $=$ $(Q_{33} + Q_{35})/(R_3 - Q_{31})$

- *Next-month error rate: expiring correct cases*
  - $=$ next-month case error rate among current-month expiring correct cases
  - $=$ $Q_{43}/(R_4 - Q_{41})$

- *Next-month error rate: expiring error cases*
  - $=$ next-month case error rate among current-month expiring error cases
  - $=$ $Q_{53}/(R_5 - Q_{51})$

The denominator for each error rate is the number of cases that are active in the next month, within the corresponding caseload group.[21]

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[21] Several aspects of this study should be re-emphasized, to avoid confusion. First, for expositional ease we refer to case transitions as occurring from the "current" month to the "next" month. The expected pattern of these month-to-month transitions is derived from QC data, indicating case status in the review month and enabling us to infer the case status in the prior month. One should thus regard the QC review month as the "next" month; the month preceding the QC review is the "current" month. Second, the term "expiring cases" refers to cases that are not necessarily closing; instead, these are cases that are at the end of their certification period and are thus subject to a recertification.

The first-month error rate is a measure of payment accuracy at initial certification. The next-month error rates for ongoing cases indicate the effectiveness of interim actions at preventing errors (among ongoing correct cases) and at detecting and correcting errors (among ongoing error cases). Similarly, the next-month error rates for expiring cases indicate the effectiveness of recertifications at preventing errors (among cases that are correct as they enter recertification) and at detecting and correcting errors (among cases that are in error as they enter recertification).

In general, the modeling approach yields parameter estimates at the national level that either remain stable or trend progressively upward or downward over the period 1998 to 2001. Exhibit 17 shows the above-defined key error indicators by year, for total households and for the two subgroups (households with and without earnings). The major descriptive findings are as follows:

- *Total error rate*—On a consistently measured basis, the total error rate steadily declined during these years, from 16.7 percent in 1998 to 12.8 percent in 2001 for the total caseload.[22] As typically observed in QC data, the error rate for cases with earnings (19.4 percent in 2001) was consistently about twice as high as that for cases without earnings (10.4 percent in 2001).

- *First-month error rate*—The error rate for newly certified cases (reflecting the errors that occur at initial certification) declined markedly during these years (from 12.2 percent in 1998 to 9.0 percent in 2001 for total cases). This was partly responsible for the reduction in the case error rate, especially in light of the growing caseload share comprised by first-month cases (as explained below, from 7.0 percent in 1998 to 8.5 percent in 2001). As with the total error rate, the first-month error rate was about twice as high for cases with earnings (13.2 percent in 2001) as for cases without earnings (6.6 percent in 2001).

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[22] These model-derived case error rates differ from those shown in Exhibit 2 for several reasons. First and most importantly, the model applies a consistent $25 error threshold for all years. (In Exhibit 2, the error rates prior to 2000 reflect a $5 error threshold. As shown in Exhibit 8, in those years approximately one-third of recorded errors amounted to less than $25 for eligible cases.) Second, Guam and the Virgin Islands are excluded from the model-derived estimates.

Exhibit 17: Error Rates, 1998-2001

	1998	1999	2000	2001
Total households				
Total error rate (%)	16.7	14.7	13.3	12.8
First-month error rate (%):	12.2	10.8	8.9	9.0
Next-month error rate (%):				
Ongoing correct cases	9.6	8.2	7.7	7.4
Ongoing error cases	75.5	61.8	57.0	52.5
Expiring correct cases	11.8	11.5	9.4	10.2
Expiring error cases	38.6	29.4	25.0	20.0
Households with earnings				
Total error rate (%)	25.9	23.3	21.5	19.4
First-month error rate (%)	18.9	16.8	13.5	13.2
Next-month error rate (%):				
Ongoing correct cases	20.0	17.5	17.3	15.2
Ongoing error cases	66.1	54.6	50.5	44.8
Expiring correct cases	19.3	19.5	15.6	16.3
Expiring error cases	35.5	18.9	19.4	12.1
Households without earnings				
Total error rate (%)	13.4	11.5	10.3	10.4
First-month error rate (%)	9.0	8.1	6.5	6.6
Next-month error rate (%):				
Ongoing correct cases	6.4	5.3	4.7	5.0
Ongoing error cases	80.4	66.0	61.3	57.1
Expiring correct cases	7.7	7.3	5.8	6.8
Expiring error cases	40.7	36.4	30.6	26.3

- *Next-month error rate: ongoing correct cases*—During these years there was a decline in the rate at which, in the midst of a certification period, correct cases became in error the following month. This might reflect greater month-to-month stability in household circumstances among food stamp cases. It also may reflect some improvement in the extent to which interim actions prevented errors from occurring. This rate dropped from 9.6 percent in 1998 to 7.4 percent in 2001. The decline was especially pronounced among cases with earnings, from 20.0 percent in 1998 to 15.2 percent in 2001. Even with this lowering, the rate for earnings cases remained approximately three times the rate for cases without earnings (5.0 percent in 2001).

- *Next-month error rate: ongoing error cases*—There was also a marked decline in the rate at which ongoing error cases remained in error the next month, a measure of the extent to which interim actions serve to detect and correct errors). This rate was 52.5 percent for total cases in 2001, and it was much lower for cases with earnings (44.8 percent) than for cases without earnings (57.1 percent). For both caseload segments, these rates dropped by more than 20 percentage points between 1998 and 2001. It is interesting to note that errors among cases with earnings appear less likely to persist from one month to the next (in comparison to the errors among cases without earnings). It may be that reporting systems are better at capturing income changes than other changes in household circumstances.

- *Next-month error rate: expiring correct cases*—The percentage of correct cases that became in error upon recertification remained stable during this period, equaling 10.2 percent for total cases in 2001 (16.3 percent for cases with earnings and 6.8 percent for cases without earnings). This measure reflects the extent to which errors are newly created in the course of a recertification. Errors can arise at recertification if, for instance, a caseworker misapplies policies in acting on new information about the household's circumstances. It is seemingly for this reason (i.e., agency-related errors at recertification) that the onset of error occurs at a higher rate among expiring correct cases than among ongoing correct cases (10.2 percent versus 7.4 percent for 2001), as recertifications presumably serve to reduce the onset of client-related errors. Note also that the rate of error onset is higher among newly-recertified cases than among those initially certified (10.2 percent versus 9.0 percent in 2001). This may reflect a greater degree of attention (and caseworker labor) devoted by program offices to initial certifications than to recertifications, on a per-case basis.

- *Next-month error rate: expiring error cases*—The percentage of expiring error cases that remained in error in the course of recertification was 20.0 percent in 2001, showing a dramatic reduction from 38.6 percent in 1998. This "error survival rate at recertification" (the rate at which errors escape detection and correction at recertification) was less than half as large for cases with earnings (12.1 percent) than for cases without earnings (26.3 percent). As was noted above for ongoing cases, errors among cases without earnings tend to be more persistent than errors among cases with earnings.

To summarize these results, the reduction in the national case error rate from 16.7 percent in 1998 to 12.8 percent in 2001 reflected improvements both for cases with earnings and for cases without earnings. For both caseload segments, one minor factor was the drop in error rates at initial certification, accentuated by the fact that first-month cases came to comprise an increasing share of the caseload. Far more important, however, was the reduction in next-month error rates for ongoing cases. As noted earlier, such cases comprise the bulk of the

active caseload. The major contributing factor was the dramatic decline in the next-month error rate for ongoing error cases. It appears that interim action procedures became much better at detecting and correcting errors between formal case actions. Also noteworthy, but of lesser importance in explaining the national error trend, was the drop in the next-month error rate for expiring error cases. Both for cases with and without earnings, recertification procedures appeared to capture and correct more errors.

To the extent that there was a reduction in the next-month error rates for ongoing cases, it is difficult to know whether this occurred more as a result of (a) the adoption by states of new client reporting systems that were more error-tolerant or (b) the improved administrative performance of states under client reporting systems that remained largely unchanged. In 1998-2001, the Food and Nutrition Service increasingly granted waivers allowing states to adopt reporting systems that were more forgiving.[23] For instance, quarterly or semiannual reporting systems tended to ease the burdens upon both clients and agencies to respond to household changes affecting the monthly benefit, by extending the time interval allowed for reporting circumstantial changes. States could also adopt "status reporting", which limited the household's obligation to report changes in earnings to those situations involving major shifts in employment status. However, not until 2001 did the Food and Nutrition Service collect systematic information on the client reporting systems used by states, making it impossible to assess the effect of changes in reporting systems on error rate trends.

The comparison of error patterns between cases with and without earnings is informative. The higher case error rate among cases with earnings results from the higher probability that such cases will be in error at initial certification or (if correct at intake) will later fall into error. Errors among cases with earnings tend not to persist as long, however, as such error cases are more likely (than error cases without earnings) to leave the caseload during interim months or at recertification. Stated otherwise, errors tend to both start and end at a higher rate among cases with earnings than among cases without earnings.

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[23] See, for instance, Rosenbaum (2000).