THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

RECIPIENCY HISTORY AND LEFT-CENSORED SPELLS IN AFDC USING SIPP

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Recipiency History and Left-Censored Spells of Program Participation in the SIPP

by Kathleen Short and Judith Eargle

The SIPP is a longitudinal survey that follows individuals over a period of approximately two and a half years, collecting monthly information on participation in social programs, as well of course, a large array of other items. This paper presents information about estimating durations of program participation using data from the SIPP. For illustration, the focus is on the program Aid to Families with Dependent Children or AFDC.

I begin with a brief description of the sample design of the survey followed by a discussion of some of the problems faced when durations are estimated, particularly the problem of left-censored spells. I will then describe the recipiency history topical module, which was introduced in the 1986 panel in order to address the problem of left censoring, and present information about how well we feel it performs this function. Finally, I will present further changes we are planning to improve the collection of this information.

Most of the data presented here are from the 1987 panel, the longitudinal panel and the recipiency history module from wave 2 of that panel. All estimates presented here are unweighted and are not

intended to be interpreted as unbiased duration estimates.

Figure l illustrates the interview pattern of the SIPP 1987 panel. X's represent interview months and o's reference months. The sample in SIPP is divided into four rotation groups, each interviewed in a different month in order to smooth interviewing workloads over time. So, in figure 1 we see that rotation group 2 was the first to be interviewed in Feb. 1987. Individuals in this group provided information about Oct, Nov and Dec of 1986 and Jan of 1987. This staggered pattern continues over the life of the panel until May of 1989, when the last interview, of the first rotation group, gathers information about Jan - April of 1989.

In all of these interviews information about program participation is collected on a monthly basis. So, for this approximate 2 1/2 year period we observe individuals enter and leave various government programs, such as AFDC, and we can attempt to estimate the length of time people tend to spend participating in these programs. However, when we attempt to do this we encounter some problems, most importantly, the problem of censored data.

Data can be censored on the right, on the left, or both. Figure 2 illustrates right-censored data. Person i, whose program participation in AFDC is shown at the bottom of the panel by the capital letter P's, participated in AFDC from Nov 1988 to March 1989, that is, for 5 months.

Depending upon the timing of the final interview, her spell of participation may be right-censored. In this case, with the staggered design, the duration participating differs by rotation group. If she were interviewed in the first rotation group we see the spell end in the reference period, we observe all five months of participation and we see that the spell was completed.

In all other rotation groups, this spell would be considered right-censored. In rotation 2 we would count 3 months duration. In rotation 3 we would count 4 months duration. In rotation 4, we would observe all of the months participating, 5 months, but we would not observe the end of the spell. We would not know that the spell was complete and would classify it as a right-censored spell.

Right-censored data present a problem for estimates of durations, simple estimates of mean durations are biased by right-censoring. But there are relatively straightforward methods of handling right censoring; such as life table models. Other types of duration analyses such as hazard modelling are not affected by right censoring.

Note that all estimates of durations presented here are biased by right-censored data. No efforts have been made in this analysis to take right censoring into account.

Figure 3 illustrates a left-censored spell of AFDC participation. Person i in this case has participated in AFDC from Nov 86 to Mar

87, a period of 5 months. If this person were interviewed in rotation group 2 the spell is not left-censored, because we observe the beginning of the spell. All other rotation groups censor the spell, although, rotation group 3 captures the full duration of the spell, all 5 months are recorded, the analyst cannot know the spell began at that time and will label this spell left-censored.

Estimates of spell durations based on left-censored spells are biased. Though there are some ways of handling left-censored data, typically analysts deal with these spells by throwing them away. Since many spells in AFDC are longer than 2 years, this practice results in a large loss of information. Most importantly, persons who spend long periods of time in a program, are not included in our analyses.

In order to correct this problem of left-censoring, a history of recipiency is collected for all individuals who report program participation in the first wave of the survey. This set of questions ascertain a beginning date for each spell of program participation and thus provide a bounding date for all left-censored observations.

In the 1984 panel questions about welfare history were included in a topical module with questions about child support. In 1986 and subsequent modules the second wave consisted of a collection of personal history topical modules; they were recipiency, employment, work disability, education and training, family background,

marital, migration, and fertility history. The major intent of these modules was to provide information on statuses in progress at the beginning of the panel reference period.

The recipiency history module collects information on participation in government programs prior to the first interview reference period. This design is shown in figure 4. The RH represents when the recipiency history module is administered.

As shown, currently, all personal history topical modules are collected in the second wave of interview. The recipiency history module, asked of all persons interviewed in wave 1, lists the income sources received, and asks the respondent to provide a beginning date.

In figure 4 we can see that in wave 2, person i would have provided Nov 86 as the date when recipiency of AFDC began. In all rotations the date information can be used in order to compute the length of spell observed when interviewing commenced.

Because it is collected in the second interview the questionnaire structure is quite clumsy. Also, consistent and accurate recall is difficult for the respondent. Figure 5 shows the income roster section of the recipiency history module as it currently is asked in the second wave. The difficulty of asking about beginning dates of durations that were in process four months ago, and may or may not be in process in this reference period, should be apparent.

I. Spells of Recipiency: AFDC

Before examining the dates in the recipiency history module, let's first look at the spells of AFDC that we find in the longitudinal monthly variables.

Figure 6 shows frequency distributions of spell durations for all spells observed in the panel, regardless of censoring, and for non-left-censored spells. Beginning dates have not been included in these spells at this point.

All of the spells reported in month 1 of the reference period are left-censored, that is, we do not observe the beginning of the spell. In the 1987 panel we found 436 persons who reported participating in AFDC in month 1.

Similarly, all of the spells reported in month 28 are right-censored, that is, we do not observe their completion.

An important point to note in this figure are the high number of spells of 28 month duration. All of these spells are both left- and right- censored.

Of all the left-censored spells that we have in our sample, 156 of them are also right-censored, that is, we do not observe either the beginning or the end of the spell of participation. This represents 36 percent of all left-censored spells. These are the

longest of recipiency spells and would usually be deleted from most analyses of program participation spells.

Typically, when analyses of durations in a given state are conducted left-censored spells are ignored. Particularly for this exercise, where our window of observation is so short, eliminating left-censored observations is not trivial. Removing left-censored spells from our calculations leaves us with 416 spells of participation in AFDC observed beginning in our 28-month reference period.

The distribution of non-left-censored spells is also shown in Figure 6. Since, by definition, none of these spells can be 28 months long, the vast majority of these are very short with a mean duration of only 7 months. This mean is highly influenced by the length of the reference period. Figure 6 shows the distribution of all spells and the distribution of non-left censored spells. The area between the two curves represents the information thrown away when left-censored spells are ignored.

Spells on AFDC tend to be relatively long, other research (Bane and Elwood) estimate that 50% are over 2 years, 17% over 7 years. In some cases it is the longest spells that are of greatest interest to program analysts. In order to alleviate the problems that arise from discarding the left-censored spells, we use the information in the recipiency history module to calculate durations for the left-censored spells.

II. Recipiency History Topical Module

Table 3,shows the durations of all left-censored spells for which beginning dates have been reported. By attaching the beginning dates collected in the topical module to monthly information collected in waves 1 and 2, the duration of all left-censored spells can be calculated. For AFDC the mean duration of all left-censored spells is 58 months, or nearly 5 years. Recall that these estimated durations include right-censored spells, and are therefore, biased estimates of durations.

Of these Left-censored spells, many are also right-censored. On average, spells that are also right censored are 86 months in duration (7 years) while those that we observe ending in the 28 month reference period, completed spells, are shorter, 42 months long (or about 4 years) on average.
If we combine left-censored spells with all spells we observe beginning in the 8 month reference period, we have a total of 852 spells with mean duration of about 33 months, or almost 3 years.

Figure 7 shows the information we really miss from excluding left-censored spells from our analyses. While non-left-censored spells are restricted to 28 months, the left-censored spell, when dates are attached, are seen to be very long indeed relative to the window of observation in the SIPP survey. Again, in the figure, the difference between the curves represents the left-censored spells

that we often lose.

Also note the bunching at 28 months could suggest that people misreport starting''date as coincident with survey start.

A. Data quality

As useful as these data may be for allowing us to improve our estimates of durations in programs, another important issue is the quality of the data. Many respondents have difficulty providing the information required in the recipiency history module. They cannot provide the dates which we are requesting. The dates are then imputed at census using a hot deck procedure based on such characteristics as age, race, sex, education, labor force status, and income.

The imputation rates for the 1986, 1987, and the 1988 panel are quite high (table 4), over 70 percent in some cases. These highest rates apply to the responses about the MONTH of beginning dates. In some cases these responses are changed in our edit programs in order to achieve more consistent responses.

Table 5 shows that imputation rates also vary by income source. For some sources, such as Federal Supplemental Security Income (SSI), Black Lung payments, Veterans compensation and food stamps imputation rates for months are over 30 percent. Participation in

these particular programs is often of very long duration. Imputation rates for the year in which the recipiency began are quite low. Programs for which both month and year are imputed at a high rate are state administered SSI, Black lung, National Guard, and Medicare.

For AFDC imputation rates are; 27 percent (beginning month), 2 percent (beginning year), and 11 percent (both month and year imputed).

Imputation rates for month responses are higher as duration lengthens, and thus less important (table 6). As we go back in time the month in which the recipiency began is less likely to be recalled by the respondent. Of course, it is also less crucial to our estimate of duration, since a 2-month mistake in beginning date is less important for a spell that lasts 10 years than for one that lasts only 1 year.

IV. Future plans and conclusions

An additional finding of this examination of the seemingly left-censored spells is that some, indeed, are not. As we saw in figure 3, the respondent interviewed in rotation group 3, had just begun participating in the program in the first month of the interview.

Without the information provided in the history module about the date when the spell began there was no way to know that some of

these spells are in fact new spells. A relatively large number of spells that appear to be left-censored are not. Of the 436 spells that seem to be left-censored 145 are reported as actually beginning in month 1 of wave 1 in the history module. That is about one-third of the spells many analysts would be unable to use without this additional information.

This large number of spells reported as beginning coincident with the beginning of the panel seems suspicious. Even more disturbing is the fact that some respondents report starting dates after the spell is reported for a given month within the reference period. Several left-censored spells are reported in the history module as beginning in a month following the first month of the reference period. In other cases the date assigned is the last month in the reference period. Many of these, though not all, are imputed. Part of the problem is the difficulty in responding to the questions, another is that all editing and imputation is done without wave 1 information available.

In order to obtain more consistent responses future plans include moving the recipiency history module, as well as the employment history module, to the first wave of the survey. While the first spell retrospective questions will remain together in a section, the questions about beginning dates will be moved into the core (figure 8).

The new design is such that, when a person reports receiving a

particular income type four months ago, which is the first month of the reference period, an additional question about when the recipiency began is asked.

After reporting the amounts in each month, in question 5a near the bottom of the page, check item a4.1 asks if the item was received in the first month of the reference period. Then for the income types of interest, beginning dates are asked, both month and year. It is hoped that this will yield more accurate and consistent responses about this important information.

To summarize, then, we have demonstrated the potential problems that the analyst faces when attempting to estimate durations of program recipiency using the SIPP. We have described the problems arising from the presence of left-censored data and shown the importance of this information to analyses of durations of spells on programs.

In addition we've shown some measure of the quality of the data. That imputation rates are quite high, but that the highest rates occur in responses to the month when the spell began and particularly for programs that have very long durations. Situations when that information is less important.

Finally, we have suggested that at least some of the high nonresponse rates are due to the placement of the questions in the

second wave of the survey and presented our plans to move the questions to the first wave and incorporate them in such a way that the respondent will find it easier to provide accurate information. Our hope is that this important information will be improved and become more accessible to researchers interested in dynamic analyses of program recipiency.

Figure 1: Design of the 1987 SIPP Panel

	Year	1987				1987									…	1988			1989				
	Month	S	O	N	D	J	F	M	A	M	J	J	A	S	…	O	N	D	J	F	M	A	M
Rotations	One					o	o	o	o	X_1	o	o	o	X_2	…	o	o	o	X_6	o	o	o	X_7
	Two		o	o	o	o	X_1	o	o	o	X_2	o	o	o	…	X_6	o	o	o	X_7			
	Three			o	o	o	o	X_1	o	o	o	X_2	o	o	…	o	X_6	o	o	o	X_7		
	Four				o	o	o	o	X_1	o	o	o	X_2	o	…	o	o	X_6	o	o	o	X_7	

X_n = Interview Month, Wave n
o = Reference Month

Figure 2: Right-Censored Data

	Year	1987				1987									…	1988			1989				
	Month	S	O	N	D	J	F	M	A	M	J	J	A	S	…	O	N	D	J	F	M	A	M
Rotations	One					o	o	o	o	X_1	o	o	o	X_2	…	o	o	o	X_6	o	o	o	X_7
	Two		o	o	o	o	X_1	o	o	o	X_2	o	o	o	…	X_6	o	o	o	X_7			
	Three			o	o	o	o	X_1	o	o	o	X_2	o	o	…	o	X_6	o	o	o	X_7		
	Four				o	o	o	o	X_1	o	o	o	X_2	o	…	o	o	X_6	o	o	o	X_7	
AFDCi																	P	P	P	P	P		

X_n = Interview Month, Wave n
o = Reference Month
P = AFDC Participation of Person i

Figure 3: Left-Censored Data																							
	Year	1987				1987									…	1988			1989				
	Month	S	O	N	D	J	F	M	A	M	J	J	A	S	…	O	N	D	J	F	M	A	M
Rotations	One					o	o	o	o	X_1	o	o	o	X_2	…	o	o	o	X_6	o	o	o	X_7
	Two		o	o	o	o	X_1	o	o	o	X_2	o	o	o	…	X_6	o	o	o	X_7			
	Three			o	o	o	o	X_1	o	o	o	X_2	o	o	…	o	X_6	o	o	o	X_7		
	Four				o	o	o	o	X_1	o	o	o	X_2	o	…	o	o	X_6	o	o	o	X_7	
AFDCi				P	P	P	P	P															

X_n = Interview Month, Wave n

o = Reference Month

P = AFDC Participation of Person i

Figure 3: Left-Censored Data																							
	Year	1987				1987									…	1988			1989				
	Month	S	O	N	D	J	F	M	A	M	J	J	A	S	…	O	N	D	J	F	M	A	M
Rotations	One					o	o	o	o	X_1	o	o	o	R_H	…	o	o	o	X_6	o	o	o	X_7
	Two		o	o	o	o	X_1	o	o	o	R_H	o	o	o	…	X_6	o	o	o	X_7			
	Three			o	o	o	o	X_1	o	o	o	R_H	o	o	…	o	X_6	o	o	o	X_7		
	Four				o	o	o	o	X_1	o	o	o	R_H	o	…	o	o	X_6	o	o	o	X_7	
AFDCi				P	P	P	P	P															

X_n = Interview Month, Wave n

o = Reference Month

P = AFDC Participation of Person i

R_H = Recipiency History Topical Module

Figure 6
All Spells, without Dates

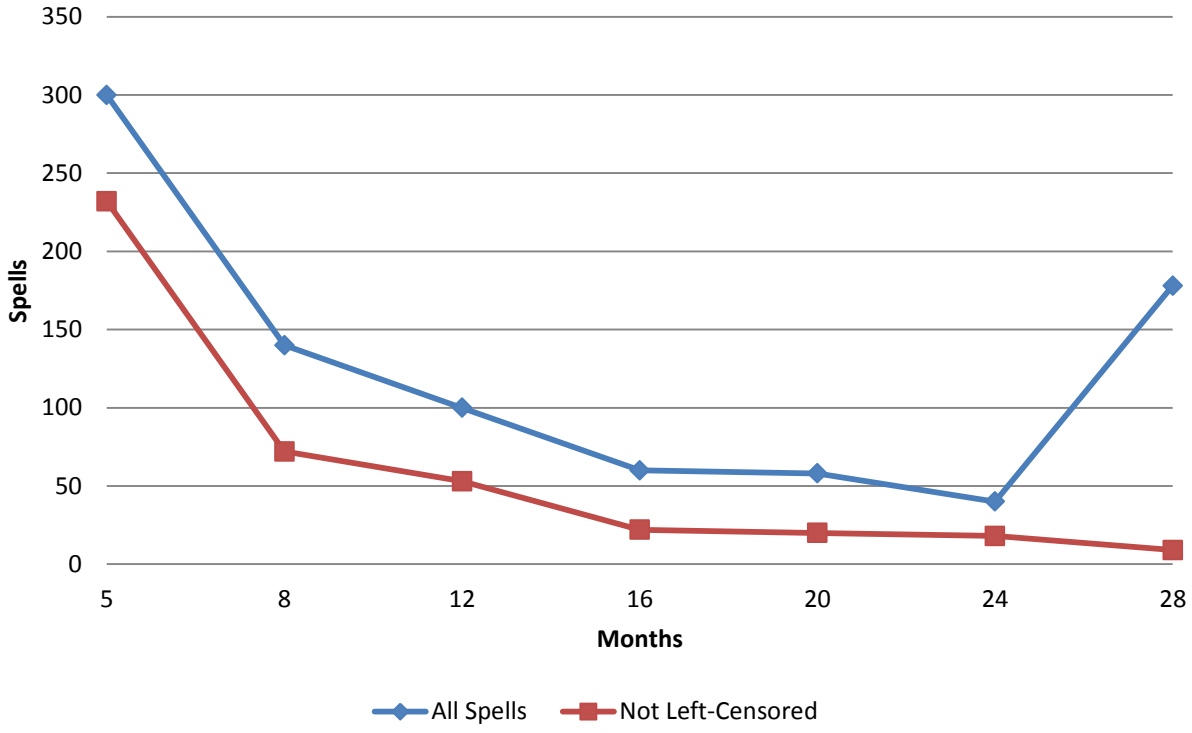

Figure 7
All Spells with Dates

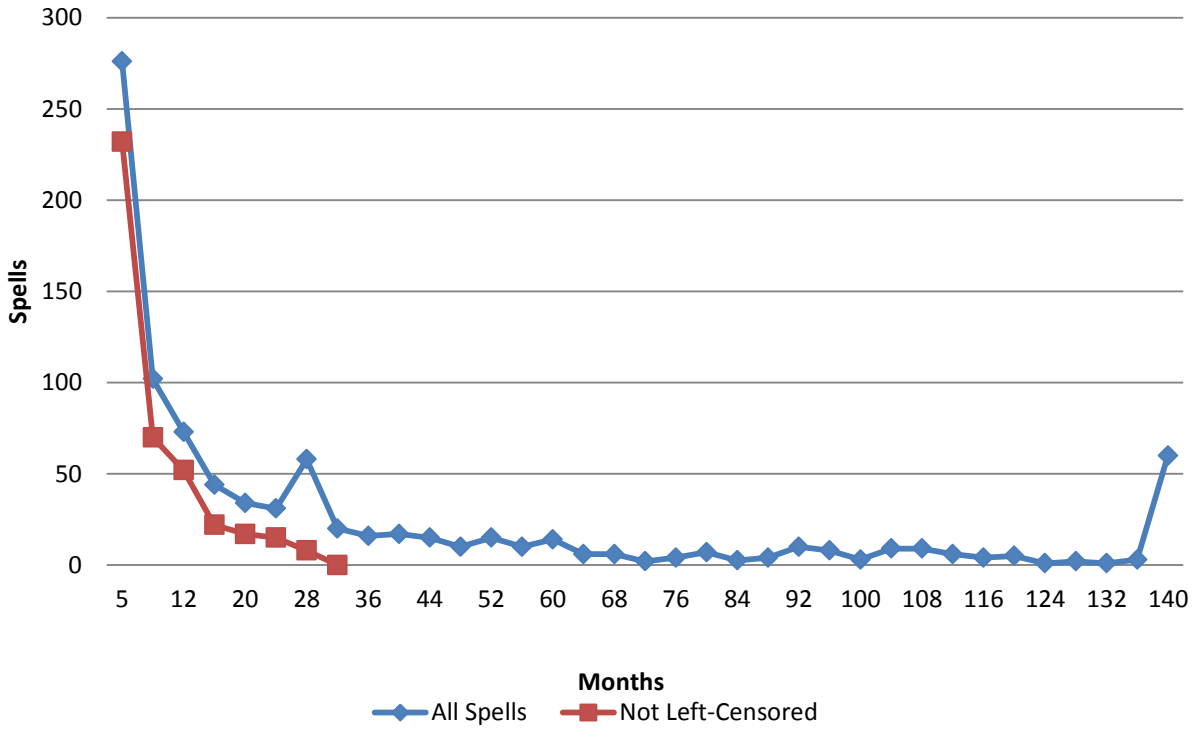

Table 3: Durations of Left-Censored Spells of AFDC Redipiency Using Beginning Dates		
Spell	**Number**	**Months**
Left- Censored Spells	436	57.57
Right-Censored	156	85.96
Completed	280	41.69
Not Left-Censored Spells	416	6.94
All Spells	852	32.85

Table 4: Recipiency history topical module: 1986, 1987, and 1988				
Source Code		Imputation Rates		
		1986	1987	1988
8006	Month	36.9	37.4	33.5
8008	Year	16.2	15.8	14.9
8012	Month	51.2	52.5	42.4
8014	Year	33.2	35.0	21.3
8018	Month	59.5	64.6	49.3
8020	Year	46.6	52.3	29.6
8024	Month	65.0	73.6	53.0
8026	Year	51.6	58.6	31.1
8030	Month	78.6	76.9	38.5
8032	Year	64.3	53.8	30.8
8058	Ever applied for food stamps	4.8	5.7	6.9
8060	Ever authorized food stamps	2.6	3.6	4.3
8062	Month	65.0	61.8	64.2
8064	Year	21.8	21.7	20.6
8066	How long	17.1	15.2	15.8
8072	How many times	11.0	9.6	12.1
8080	Ever applied AFDC	6.9	8.2	8.9
8082	Ever received AFDC	2.0	5.2	3.7
8084	Month	51.6	54.9	56.1
8086	Year	16.6	20.0	18.3
8088	How long	17.1	17.2	15.5
8094	How many times	13.2	13.8	11.8
8100	Ever applied SSI	4.4	5.2	5.7
8102	Ever received SSI	3.8	8.2	5.7
8104	Month	72.0	70.3	74.9
8106	Year	43.6	47.0	45.7
8108	How long	36.7	38.9	39.0
8118	Medicaid beginning/ month	50.5	52.9	56.1
8120	Year	28.0	25.1	30.4
8126	Covered by health insurance	11.2	9.9	9.7
8132	Not covered/ month	45.8	49.9	51.0
8134	Year	8.7	8.6	11.9
8142	Public housing	31.6	30.6	24.8
8150	On waiting list	12.9	16.0	15.8

Table 5: Imputation Rates by Income Source:					
			Percent Imputed		
	ISS Codes	Total	Month	Year	Both
Social Security	1	4092	26.1	1.0	12.2
Railroad Retirement	2	106	22.6	0.9	24.5
SSI	3	421	46.3	0.2	23.3
SSI (state only)	4	15	13.3	0.0	40.0
Unemplyment compensation	5	512	6.3	5.9	13.7
Supplemental unemployment	6	20	5.0	0.0	5.0
Other unemployment	7	9	0.0	11.1	22.2
Veterans comp/pension	8	345	42.0	1.2	18.0
Black Lung	9	24	33.3	0.0	41.7
Workers compensation	10	129	12.4	3.1	14.7
AFDC	20	329	26.1	2.4	10.9
General assistance	21	95	25.3	3.2	16.8
Indian, Cuban, Refugee	22	2	0.0	0.0	50.0
Foster child care	23	14	14.3	0.0	14.3
Other welfare	24	20	40.0	0.0	30.0
WIC	25	156	9.0	2.6	11.5
Foodstamps	27	757	32.0	2.4	14.8
Child support	28	464	22.6	1.1	17.0
Alimony	29	72	20.8	0.0	18.1
Pension, company or union	30	1047	22.4	0.6	16.0
Pension, federal	31	231	17.3	0.9	13.4
Pension, military	32	156	14.7	0.0	13.5
Pension, National Guard	33	4	25.0	0.0	0.0
Pension, state	34	215	22.3	0.5	14.0
Pension, local	35	110	20.0	0.0	11.8
G.I. Bill	40	29	10.3	0.0	17.2
VA educational assist	41	14	21.4	0.0	21.4
Medicare	172	2630	14.9	5.3	73.5
PELL Grant	176	170	2.9	1.8	71.2

Table 6: Imputation Rates of MONTHS by Beginning Years; All Programs			
Year	Responses	Imputations	Rates
1937	1	1	100.0
1938	2	1	50.0
1940	2	2	100.0
1941	1	1	100.0
1942	2	1	50.0
1943	2	1	50.0
1944	5	3	60.0
1945	26	16	61.5
1946	31	18	58.1
1947	15	12	80.0
1948	7	6	85.7
1949	2	2	100.0
1950	3	2	66.7
1951	2	2	100.0
1952	4	3	75.0
1953	4	3	75.0
1955	10	5	50.0
1956	5	2	40.0
1957	7	6	85.7
1958	13	6	46.2
1959	22	11	50.0
1960	40	31	77.5
1961	32	12	37.5
1962	89	48	53.9
1963	51	25	49.0
1964	62	33	53.2
1965	184	112	60.9
1966	109	52	47.7
1967	164	72	43.9
1968	206	132	64.1
1969	181	97	53.6
1970	249	141	56.6
1971	261	152	58.2
1972	449	288	64.1
1973	390	221	56.7
1974	436	239	54.8
1975	568	307	54.0
1976	439	234	53.3
1977	567	295	52.0
1978	418	204	48.8
1979	504	252	50.0
1980	639	332	52.0
1981	635	315	49.6
1982	875	419	47.9
1983	777	336	43.2
1984	782	367	46.9
1985	1410	774	54.9
1986	1775	560	31.5
1987	743	0	0.0