SCHEDULING INITIAL CALLS IN A TELEPHONE SURVEY OF BUSINESSES

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1. Background

For most household surveys conducted over the telephone, the prime calling hours are evenings and weekends, both for making contact and for completing interviews (e.g., Weeks et al, 1987). Telephone survey organizations thus typically staff more heavily in the evening and weekend hours for household surveys, which affects the composition of the interviewing force. Telephone interviewers often have other jobs during the day, or are only interested in part-time work.

One reason for the greater efficiency of evening and weekend calls is that many potential respondents are at work during the day. One would expect, then, that telephone surveys of businesses would most efficiently be conducted during weekdays. Indeed, many businesses are only open and reachable by telephone during "business hours," such as 9:00 a.m. to 5:00 p.m. or some similar period. The survey methods literature has not gone much beyond this general view of call scheduling for business, or establishment, surveys (Weeks, 1988).

However, not all businesses may be approachable at the same times. In particular, small businesses may have different patterns of optimal call times from large businesses. Retail establishments, for example, may have different patterns from other kinds of businesses. Further, all times during "business hours" may not be equally appropriate for making survey contacts or completing interviews. Lunch hours may be less productive for survey calls, for example. If such differences exist, survey costs could be reduced and data quality increased by tailoring initial call schedules for establishment surveys.

2. The Robert Wood Johnson Foundation Employer Survey

Westat, Inc., conducted a survey of employers for the Robert Wood Johnson Foundation (RWJF) in 1993, with telephone interviews of private employers asking about health benefits offered to employees. The survey sample comprised business establishments in ten states -- Colorado, Vermont, New York, Oregon, Florida, New Mexico, Washington (State), Oklahoma, North Dakota, and Minnesota. The sample in eight of the states was selected from Dun and Bradstreet's "Dun's Market Identifiers" (DMI) file. In Oregon and Minnesota, the states supplied a sample from the ES-202, or State Unemployment Insurance files. About 500 interviews were completed in each of four establishment size cells in each state. The establishment size cells were 2-4 employees (including the owner), 5-9 employees, 10-24 employees, and 25 employees or more. Thus, the sample included significant representation of small businesses. Initial contacts were attempted with up to 5,000 establishments in each state because of relatively high-out-of-scope rates among small businesses.

Each contact began with verification of the establishment, and for verified establishments (same name and location as the sample frame) continued with identifying a suitable respondent. All initial calls were randomly scheduled during local business hours (8:00 a.m. to 6:00 p.m.). The distribution of initial calls to different days and times of day depended upon the number of interviewers available at any given time and the number of callbacks and appointments in the scheduler queues. Interviewer schedules were not randomized, but many interviewers worked close to 40-hour weeks. Well over 100 interviewers worked on the survey altogether.

3. Analysis Methods

The analysis will focus on first call results for all cases attempted. Across the ten states, some 40,000 initial calls were made. An "initial call" means that an interviewer attempted to reach a sampled establishment at a telephone number provided from the sample frame or from Directory Assistance. Some number of additional sample establishments were never called because telephone numbers were never found; these establishments are not included in this paper.

Table 3-1 shows the distribution of initial call results. "No contact" calls, including "ring no answer," busy, and answering machines, comprised just over one-quarter of all initial call attempts. Contacts of one kind or another comprised most of the rest of the calls. The "other" results are either cases that required tracing or problems of some sort. These cases, comprising just 1.8 percent of all initial calls, cannot be defined as contacts or non-contatcs, and so will be

excluded from the analysis. Among contacts, interviews were completed with 8.8 percent of the cases, 5.5 percent refused, 7.4 percent were ineligible, and just over half of all initial calls resulted in an appointment or other callback result.

Table 3-1. Results of Initial Calls		
	N	Percent
No Contact	9811	25.6
Callback	19447	50.7
Refusal	2126	5.5
Completed Interview	3386	8.8
Ineligible	2839	7.4
Other	716	1.8
TOTAL	38325	100

This paper will examine three primary statistics: (1) the percentage of all calls (excluding the "others" in Table 3-1) that resulted in contacts (callbacks, refusals, completed interview, and ineligible); (2) the percentage of contacts (as just defined) that were refusals; and (3) the percentage of contacts that were completed interviews. The objectives of a scheduling algorithm would be to maximize the contact percentage and (usually) the percentage of completed interviews, and to minimize the percentage of refusals. We will examine variations in call results by time of day and by day of week. In addition, we will explore how differences in establishment size and type of business affect the distributions by time. These two characteristics are typically available on establishment sample frames, and thus could be used in an *a priori* scheduling algorithm.

4. Results

Results of initial call attempts are presented in Tables 4-1 through 4-9. The first three tables cross day of week and time of day, while the remainder cross time of day with an establishment characteristic.

Table 4-1 shows the percentage of calls that resulted in contacts.[1] Overall, 74.1 percent of call results were in the group we have labeled "contacts."

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[1]A few calls were erroneously scheduled outside of the 8:00 a.m. - 6:00 p.m. period, and a few were made on weekends. Hence, the totals may not correspond exactly from one table to another.

The column totals show that there was little variation by day of the week, with Monday having the lowest contact rate (72.8 percent) and Tuesday the highest (75.2 percent). The row totals also show little variation in the 9:00 a.m. to 5:00 p.m. range, with the hour between 2:00 and 3:00 p.m. having the highest contact rate (77.3 percent). However, before 9:00 a.m. and after 5:00 p.m., the contact rate drops off considerably, to 67.7 percent and 63.4 percent, respectively. The contact rates by hour for each day of the week generally follows the pattern of total column.

As shown in Table 4-2, refusals represented 7.7 percent of contacts overall. As with contact rates, there was little variation by day of the week. However, the rates by time of day of the contact show a clear and strong trend, with the proportion of refusals steadily diminishing during the day, starting at over 10 percent before 9:00 a.m., and dropping to just over 5 percent from 4:00 p.m. on. A similar pattern appears for each weekday, with Monday having the most dramatic decline in refusal rate, from 13.8 percent before 9:00 a.m. to 4.1 percent after 5:00 p.m.

In Table 4-3, we do not see a corresponding increase in completed interviews as a percentage of contacts. For the week as a whole, the rate of completed interviews during the day stays fairly constant until late afternoon. The overall rate was 12.2 percent, with dips between noon and 1:00 p.m. (11.2 percent), between 4:00 and 5:00 p.m. (11.3 percent), and between 5:00 and 6:00 p.m. (7.8 percent). The rates of completed interviews were significanty lower on Thursdays (10.8 percent) and Fridays (10.9 percent), and significantly higher on Tuesdays (14.0 percent) than overall.

The remaining presentation of results will focus on calls in different times of day by establishment size and business type. Variations across these dimensions by day of week are unremarkable.

Tables 4-4, 4-5, and 4-6 show results by time of day and establishment size. The overall pattern for contact from Table 4-1 generally holds across establishment size strata (Table 4-4), with calls before 9:00 a.m. and after 5:00 p.m. resulting in fewer contacts. The early morning calls show more of a drop-off for small establishments than for large. The overall pattern of decreasing proportions of refusals during the day holds for small establishments (Table 4-5), but not so consistently for establishments with more than 100 employees. In contrast, the overall tendency for completion rates, that they are lower after 5:00 p.m., holds more for large establishments than for small ones (Table 4-6). For the largest establishments,

there is also a slump in completion rate during the middle of the day, between noon and 2:00 p.m.

Tables 4-7, 4-8, and 4-9 present results of calls by time of day and type of business. Patterns of contact rates vary somewhat across business types (Table 4-7). In particular, retail establishments are less likely to be contacted before 10:00 a.m., reach a peak after noon, and continue strong right through the 5:00 - 5:59 p.m. hour. Contact rates drop off after 5:00 p.m. drop off most dramatically for finance establishments, but are also significantly lower for construction, manufacturing, services, and wholesale. Only construction has a contact rate before 9:00 a.m. as high as its overall rate, but only finance and retail have a significantly lower contact rate for that hour. Retail and wholesale establishments demonstrate the clearest reflection of the overall pattern for refusal rates declining throughout the day (Table 4-8), although the 8:00-8:59 hour is significantly higher in refusal rate for construction and manufacturing as well. Finally, in Table 4-9, we see that completion rates drop off markedly after 5:00 p.m. for all business types except construction and retail, with significant drop-offs beginning at 3:00 p.m. for transportation establishments and at 4:00 p.m. for finance.

5.   Discussion

The analysis of effectiveness of initial calls in an establishment survey at different times of the day and days of the week has shown some clear differences -- differences that probably warrant consideration of customized scheduling when planning an establishment survey. Some caution should be applied in generalizing the results presented here. First, refusal and completion rates, and the patterns of when these results occur, may be different for other surveys covering different subject areas. These rates may also differ for shorter or longer surveys. Contact rates, on the other hand, should not be affected by these factors. Second, since the survey did not randomly schedule interviewers to shifts, we cannot say definitively that the differences seen in our analysis are not the result, at least in part, of interviewer differences. However, the large number of interviewers and the fact that many worked nearly full-time leads us to believe that the effects seen are due to more than interviewer differences. Further, differences such as those between establishment size strata and business type should not be affected by any artifact of interviewer scheduling, since the case served to any interviewer at a given time was randomly determined.

Overall, the hours of 8:00-8:59 a.m. and 5:00-5:59 p.m. were not as productive as the hours between 9:00 a.m. and 4:49 p.m. Contact rates and completion rates were generally lower at these times. An important exception to these patterns was for retail establishments, which showed lower contact rates before 10:00 a.m., but for whom contact rates then continued high until 6:00 p.m. Refusal rates overall became lower as the hour became later. This pattern held particularly strongly for small establishments and for those in retail and wholesale trade. For finance and transportation establishments, completion rates dropped earlier than 5:00 p.m.

There were few interesting differences by the day of the week. Thursday and Friday were the worst days for completion rates, while Tuesday showed the highest contact and completion rates. However, the differences across weekdays was not large, even when significant.

A survey organization may have flexibility in scheduling interviewers for different shifts, and in scheduling initial calls according to sample characteristics. Most business sample frames provide number of employees and type of business, so these characteristics could be used in planning initial call schedules. From the results of this study, it appears that initial calls generally should not be started before 9:00 a.m. (time local to the sampled establishment), and for most types of establishments should end by 5:00 p.m. local time, except for retail businesses (which can go later) and perhaps finance and transportation (which should end earlier). To the extent possible, initial calls to small establishments and those in retail and wholesale trade should be made in the early afternoon or later. These kinds of scheduling decisions should increase the efficiency of a telephone survey operation, and may improve response rates as well.

References

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Table 4-1. Percentage of initial calls resulting in contact, by day of week and time of day

Day of week	Monday Contact %	SE	N	Tuesday Contact %	SE	N	Wednesday Contact %	SE	N	Thursday Contact %	SE	N	Friday Contact %	SE	N	Total Contact %	SE	N
Time of call																		
8:00-8:59	64.9	2.57	345	66.3	1.75	725	70.5	1.83	621	69.3	1.86	613	66.0	2.28	432	67.7	0.89	2736
9:00-9:59	70.1	1.82	635	72.7	1.27	1239	73.9	1.35	1058	73.6	1.28	1185	74.0	1.22	1287	73.1	0.60	5404
10:00-10:59	69.9	1.92	572	77.6	1.29	1042	74.1	1.54	804	74.8	1.32	1076	76.1	1.41	913	75.0	0.65	4407
11:00-11:59	71.6	1.62	774	77.6	1.20	1212	76.5	1.40	918	73.9	1.23	1284	75.9	1.14	1409	75.3	0.58	5597
12:00-12:59	75.4	1.48	842	75.1	1.25	1188	74.5	1.49	855	71.2	1.35	1130	75.5	1.25	1179	74.3	0.61	5194
1:00-1:59	74.7	1.41	947	78.4	1.34	944	73.6	1.58	774	75.4	1.29	1119	75.5	1.50	824	75.6	0.63	4608
2:00-2:59	76.8	1.46	833	79.3	1.46	772	78.5	1.72	571	77.5	1.57	703	75.1	1.52	810	77.3	0.69	3689
3:00-3:59	74.3	1.92	517	73.2	1.95	515	75.1	2.20	386	78.2	1.99	431	74.6	1.84	560	75.0	0.88	2409
4:00-4:59	72.8	2.06	467	77.7	2.16	372	75.8	2.48	298	76.9	2.13	390	72.5	1.92	539	74.8	0.95	2066
5:00-5:59	69.7	2.94	244	65.6	3.22	218	59.2	4.12	142	57.6	2.97	276	64.3	3.16	230	63.4	1.45	1110
Total	72.8	0.57	6176	75.2	0.48	8227	74.3	0.55	6427	73.6	0.49	8207	74.3	0.48	8183	74.1	0.23	37220

Table 4-2. Percentage of initial call contacts resulting in refusals, by day of week and time of day

Day of week	Monday Refusal %	SE	N	Tuesday Refusal %	SE	N	Wednesday Refusal %	SE	N	Thursday Refusal %	SE	N	Friday Refusal %	SE	N	Total Refusal %	SE
Time of call																	
8:00-8:59	13.8	2.31	224	10.4	1.39	481	8.7	1.34	438	9.4	1.42	425	11.2	1.87	285	10.3	0.71	1853
9:00-9:59	10.1	1.43	445	8.3	0.92	901	9.3	1.04	782	8.9	0.97	872	8.8	0.92	952	9.0	0.45	3952
10:00-10:59	10.3	1.52	400	7.2	0.91	809	9.4	1.20	596	8.8	1.00	805	7.9	1.02	695	8.5	0.49	3305
11:00-11:59	10.3	1.29	554	7.5	0.86	941	6.7	0.94	702	9.3	0.94	949	6.7	0.77	1069	7.9	0.42	4215
12:00-12:59	5.8	0.93	635	7.6	0.89	892	7.1	1.02	637	6.8	0.89	805	8.1	0.91	890	7.2	0.42	3859
1:00-1:59	6.5	0.93	707	6.9	0.93	740	6.3	1.02	570	9.2	1.00	844	6.8	1.01	622	7.3	0.44	3483
2:00-2:59	7.3	1.03	640	7.8	1.09	612	6.3	1.14	448	5.1	0.95	545	7.2	1.05	608	6.8	0.47	2853
3:00-3:59	7.8	1.37	384	6.9	1.31	377	5.9	1.38	290	5.3	1.22	337	6.0	1.16	418	6.4	0.58	1806
4:00-4:59	5.3	1.21	340	6.6	1.46	289	4.9	1.43	226	5.0	1.26	300	4.6	1.06	391	5.2	0.57	1546
5:00-5:59	4.1	1.52	170	5.6	1.92	143	4.8	2.32	84	6.3	1.93	159	5.4	1.86	148	5.3	0.84	704
Total	8.0	0.40	4499	7.7	0.34	6185	7.4	0.38	4773	8.0	0.35	6041	7.4	0.34	6078	7.7	0.16	27576

Table 4-3. Percentage of initial call contacts resulting in completed interviews, by day of week and time of day

Day of week	Monday Complete %	SE	N	Tuesday Complete %	SE	N	Wednesday Complete %	SE	N	Thursday Complete %	SE	N	Friday Complete %	SE	N	Total Complete %	SE	N
Time of call																		
8:00-8:59	15.6	2.43	224	11.6	1.46	481	11.6	1.53	438	12.7	1.62	425	13.0	1.99	285	12.6	0.77	1853
9:00-9:59	13.9	1.64	445	14.9	1.19	901	13.4	1.22	782	11.0	1.06	872	11.4	1.03	952	12.8	0.53	3952
10:00-10:59	10.8	1.55	400	14.8	1.25	809	13.9	1.42	596	9.7	1.04	805	10.2	1.15	695	12.0	0.56	3305
11:00-11:59	13.9	1.47	554	14.9	1.16	941	13.1	1.27	702	11.2	1.02	949	12.0	0.99	1069	12.9	0.52	4215
12:00-12:59	13.4	1.35	635	12.8	1.12	892	11.0	1.24	637	8.9	1.01	805	10.2	1.02	890	11.2	0.51	3859
1:00-1:59	12.7	1.25	707	16.2	1.35	740	15.3	1.51	570	10.9	1.07	844	12.1	1.31	622	13.3	0.58	3483
2:00-2:59	13.0	1.33	640	13.2	1.37	612	11.8	1.53	448	12.8	1.43	545	10.7	1.25	608	12.3	0.62	2853
3:00-3:59	11.7	1.64	384	14.3	1.80	377	13.8	2.02	290	12.2	1.78	337	9.8	1.45	418	12.2	0.77	1806
4:00-4:59	12.9	1.82	340	12.5	1.94	289	11.5	2.12	226	10.3	1.76	300	9.7	1.50	391	11.3	0.81	1546
5:00-5:59	6.5	1.89	170	6.3	2.03	143	14.3	3.82	84	9.4	2.32	159	5.4	1.86	148	7.8	1.01	704
Total	12.8	0.50	4499	14.0	0.44	6185	13.0	0.49	4773	10.8	0.40	6041	10.9	0.40	6078	12.2	0.20	27576

Source: 1993 Robert Wood Johnson Foundation Employer Survey
Standard Errors calculated as $(p*(1-p)/N)^{.5}$
Shaded boxes hold values 2 or more standard errors from overall percentage of contacts (approximately a 95 percent confidence interval)

Table 4-4. Percentage of initial calls resulting in contact, by size of establishment and time of day

# employees Time of call	2 to 5 Contact %	SE	N	6 to 9 Contact %	SE	N	10 to 24 Contact %	SE	N	25 to 99 Contact %	SE	N	100 to 249 Contact %	SE	N	250 to 999 Contact %	SE	N	1000+ Contact %	SE	N	Total Contact %	SE	N
8:00-8:59	57.3	1.68	868	65.2	1.74	749	75.3	1.76	603	82.5	2.91	171	75.9	3.55	145	82.8	2.90	169	74.2	7.86	31	67.7	0.89	2736
9:00-9:59	60.2	1.18	1707	73.8	1.22	1303	81.1	1.14	1184	84.1	1.66	484	83.7	2.13	300	82.5	2.08	332	75.5	4.43	94	73.1	0.60	5404
10:00-10:59	61.4	1.25	1509	76.4	1.33	1018	85.7	1.15	928	86.0	1.84	357	86.3	2.15	256	83.8	2.22	277	72.6	5.67	62	75.0	0.65	4407
11:00-11:59	61.8	1.14	1811	77.9	1.12	1384	83.2	1.04	1297	86.0	1.59	473	87.5	2.04	263	82.2	2.26	286	79.5	4.43	83	75.3	0.58	5597
12:00-12:59	63.5	1.16	1717	74.5	1.25	1207	81.3	1.11	1236	85.0	1.65	467	85.2	2.27	244	83.2	2.42	238	71.8	4.88	85	74.3	0.61	5194
1:00-1:59	63.0	1.25	1485	76.8	1.22	1191	83.0	1.13	1100	88.1	1.82	318	88.1	2.10	236	83.8	2.54	210	73.7	5.05	76	75.5	0.63	4616
2:00-2:59	63.8	1.44	1113	79.8	1.27	1007	85.3	1.23	829	85.1	2.15	275	82.4	2.59	216	84.7	2.57	196	83.6	4.53	67	77.0	0.69	3703
3:00-3:59	62.3	1.81	718	75.6	1.71	630	81.4	1.76	489	84.5	2.56	200	83.4	2.86	169	83.3	2.98	156	78.0	5.40	59	74.6	0.88	2421
4:00-4:59	63.0	1.92	630	74.6	1.90	527	80.2	1.89	445	87.0	2.59	169	84.0	3.28	125	89.4	2.58	142	70.6	7.81	34	74.8	0.95	2072
5:00-5:59	52.3	2.89	298	66.3	2.71	303	67.3	3.00	245	69.0	4.62	100	73.1	5.02	78	65.2	5.73	69	64.7	11.59	17	63.4	1.45	1110
Total	61.6	0.45	11856	75.0	0.45	9319	81.8	0.42	8356	84.9	0.65	3014	84.1	0.81	2032	83.0	0.82	2075	75.5	1.74	608	74.0	0.23	37260

Table 4-5. Percentage of initial call contacts resulting in refusal, by size of establishment and time of day

# employees Time of call	2 to 5 Refusal %	SE	N	6 to 9 Refusal %	SE	N	10 to 24 Refusal %	SE	N	25 to 99 Refusal %	SE	N	100 to 249 Refusal %	SE	N	250 to 999 Refusal %	SE	N	1000+ Refusal %	SE	N	Total Refusal %	SE	N
8:00-8:59	11.1	1.41	497	14.5	1.60	488	8.4	1.30	454	5.7	1.95	141	7.3	2.48	110	6.4	2.07	140	8.7	5.88	23	10.3	0.71	1853
9:00-9:59	11.1	0.98	1028	10.0	0.97	961	8.5	0.90	960	7.9	1.33	407	4.4	1.29	251	6.6	1.50	274	2.8	1.96	71	9.0	0.45	3952
10:00-10:59	9.7	0.97	927	8.4	0.99	778	9.1	1.02	795	8.5	1.59	307	5.9	1.58	221	5.6	1.51	232	4.4	3.07	45	8.5	0.49	3305
11:00-11:59	8.7	0.84	1120	7.8	0.82	1078	8.4	0.85	1079	7.6	1.31	407	6.1	1.58	230	5.5	1.49	235	7.6	3.26	66	7.9	0.42	4215
12:00-12:59	8.5	0.85	1091	8.1	0.91	899	6.8	0.79	1005	5.3	1.12	397	5.3	1.55	208	3.0	1.22	198	8.2	3.51	61	7.2	0.42	3859
1:00-1:59	8.8	0.93	935	7.7	0.88	915	6.8	0.83	913	3.6	1.11	280	7.7	1.85	208	7.4	1.97	176	0.0	N/A	56	7.3	0.44	3483
2:00-2:59	9.7	1.11	710	8.2	0.97	802	5.0	0.82	707	2.6	1.03	234	3.9	1.46	178	5.4	1.76	166	5.4	3.01	56	6.8	0.47	2853
3:00-3:59	8.5	1.32	447	5.9	1.08	476	5.0	1.10	398	5.3	1.73	169	6.4	2.06	141	7.7	2.34	130	4.3	3.01	46	6.4	0.58	1807
4:00-4:59	6.5	1.24	397	6.4	1.23	393	4.5	1.10	357	2.7	1.34	147	5.7	2.27	105	3.1	1.55	127	0.0	N/A	24	5.2	0.57	1550
5:00-5:59	6.4	1.96	156	6.5	1.73	201	5.5	1.77	165	4.3	2.46	69	3.5	2.44	57	0.0	0.00	45	0.0	N/A	11	5.3	0.84	704
Total	9.2	0.34	7308	8.5	0.33	6991	7.2	0.31	6833	5.9	0.46	2558	5.7	0.56	1709	5.5	0.55	1723	4.6	0.98	459	7.7	0.16	27581

Table 4-6. Percentage of initial call contacts resulting in completed interviews, by size of establishment and time of day

# employees Time of call	2 to 5 Complete %	SE	N	6 to 9 Complete %	SE	N	10 to 24 Complete %	SE	N	25 to 99 Complete %	SE	N	100 to 249 Complete %	SE	N	250 to 999 Complete %	SE	N	1000+ Complete %	SE	N	Total Complete %	SE	N
8:00-8:59	13.1	1.51	497	10.9	1.41	488	13.9	1.62	454	12.8	2.81	141	13.6	3.27	110	13.6	2.89	140	0.0	0.00	23	12.6	0.77	1853
9:00-9:59	11.7	1.00	1028	12.9	1.08	961	14.9	1.15	960	12.8	1.65	407	12.0	2.05	251	10.2	1.83	274	12.7	3.95	71	12.8	0.53	3952
10:00-10:59	10.2	1.00	927	12.5	1.18	778	15.0	1.27	795	11.1	1.79	307	10.4	2.05	221	10.3	2.00	232	6.7	3.72	45	12.0	0.56	3305
11:00-11:59	14.2	1.04	1120	13.4	1.04	1078	12.3	1.00	1079	13.3	1.68	407	10.0	1.98	230	10.6	2.01	235	7.6	3.26	66	12.9	0.52	4215
12:00-12:59	10.4	0.93	1091	13.2	1.13	899	12.5	1.04	1005	8.3	1.39	397	12.0	2.25	208	7.1	1.82	198	1.6	1.63	61	11.2	0.51	3859
1:00-1:59	12.4	1.08	935	14.1	1.15	915	15.3	1.19	913	15.0	2.13	280	12.5	2.29	208	4.5	1.57	176	5.4	3.01	56	13.3	0.58	3483
2:00-2:59	11.3	1.19	710	12.3	1.16	802	12.7	1.25	707	15.8	2.39	234	15.2	2.69	178	7.8	2.09	166	10.7	4.13	56	12.3	0.62	2853
3:00-3:59	10.1	1.42	447	14.9	1.63	476	14.1	1.74	398	12.4	2.54	169	9.9	2.52	141	8.5	2.44	130	6.5	3.64	46	12.2	0.77	1807
4:00-4:59	12.8	1.68	397	11.5	1.61	393	10.1	1.59	357	12.9	2.77	147	6.7	2.43	105	11.0	2.78	127	12.5	6.75	24	11.3	0.80	1550
5:00-5:59	10.9	2.49	156	10.9	2.20	201	7.3	2.02	165	4.3	2.46	69	1.8	1.74	57	0.0	0.00	45	0.0	N/A	11	7.8	1.01	704
Total	11.8	0.38	7308	12.9	0.40	6991	13.4	0.41	6833	12.2	0.65	2558	11.2	0.76	1709	9.1	0.69	1723	7.2	1.21	459	12.2	0.20	27581

Source: 1993 Robert Wood Johnson Foundation Employer Survey
Standard Errors calculated as (p*(1-p)/N)^.5
Shaded boxes hold values 2 or more standard errors from column total percentage of contacts (approximately a 95 percent confidence interval)

Table 4-7. Percentage of initial calls resulting in contact, by type of industry and time of day

Industry	Agriculture Contact			Construction Contact			Finance Contact			Manufacturing Contact			Retail Contact			Services Contact			Transportation Contact			Wholesale Contact		
Time of call	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N
8:00-8:59	53.8	5.57	80	66.8	3.05	238	64.6	3.16	229	76.6	2.74	239	60.3	1.95	630	69.1	1.51	933	73.1	3.89	130	77.5	2.77	227
9:00-9:59	57.3	3.35	218	58.3	2.33	448	77.4	1.98	447	83.6	1.61	530	72.6	1.25	1263	72.8	1.05	1778	78.8	2.49	269	79.2	1.99	414
10:00-10:59	56.9	3.55	195	60.8	2.60	352	81.7	2.02	367	81.5	1.96	390	78.1	1.28	1050	73.7	1.16	1452	74.5	3.11	196	80.4	2.07	368
11:00-11:59	67.7	3.07	232	61.4	2.18	498	77.9	1.86	498	79.0	1.79	515	76.6	1.18	1288	74.9	1.03	1790	80.6	2.49	252	82.6	1.74	472
12:00-12:59	55.6	3.13	252	61.2	2.23	479	75.9	2.00	457	81.6	1.86	434	81.9	1.14	1146	71.5	1.11	1664	77.5	2.63	253	79.6	1.94	432
1:00-1:59	60.5	3.27	223	62.1	2.48	383	78.7	2.04	404	79.6	1.91	445	80.4	1.22	1063	73.7	1.17	1428	77.0	3.05	191	83.3	1.85	407
2:00-2:59	56.6	4.36	129	62.9	2.91	275	80.1	2.33	292	82.7	2.09	329	82.6	1.26	900	74.3	1.24	1252	76.9	3.52	143	85.1	2.00	316
3:00-3:59	59.0	4.92	100	59.7	3.38	211	76.5	3.10	187	82.1	2.29	280	82.4	1.65	535	69.8	1.64	788	79.8	3.94	104	82.9	2.80	181
4:00-4:59	57.0	4.95	100	63.9	3.73	166	75.2	3.41	161	82.3	2.57	220	83.7	1.69	479	71.9	1.72	686	73.0	4.44	100	75.8	3.79	128
5:00-5:59	54.8	6.32	62	50.0	5.00	100	45.9	5.79	74	68.6	4.53	105	82.9	2.32	263	58.9	2.60	358	54.3	7.34	46	62.5	5.16	88
Total	58.7	1.23	1591	61.1	0.87	3150	76.3	0.76	3116	80.7	0.67	3487	77.8	0.45	8617	72.4	0.41	12129	76.6	1.03	1684	80.6	0.72	3033

Table 4-8. Percentage of initial call contacts resulting in refusal, by type of industry and time of day

Industry	Agriculture Refusal			Construction Refusal			Finance Refusal			Manufacturing Refusal			Retail Refusal			Services Refusal			Transportation Refusal			Wholesale Refusal		
Time of call	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N
8:00-8:59	14.0	5.28	43	14.5	2.79	159	9.5	2.41	148	13.1	2.50	183	10.0	1.54	380	8.7	1.11	645	11.6	3.28	95	10.2	2.28	176
9:00-9:59	12.8	2.99	125	6.1	1.48	261	10.4	1.64	346	7.2	1.23	443	9.4	0.96	917	8.9	0.79	1295	9.4	2.01	212	9.8	1.64	328
10:00-10:59	6.3	2.31	111	9.8	2.03	214	9.7	1.71	300	6.6	1.39	318	7.4	0.92	820	9.0	0.87	1070	8.9	2.36	146	10.5	1.78	296
11:00-11:59	8.3	2.20	157	6.5	1.41	306	8.5	1.42	388	8.6	1.39	407	8.4	0.88	987	7.2	0.70	1340	9.9	2.09	203	8.7	1.43	390
12:00-12:59	7.1	2.18	140	5.5	1.33	293	6.1	1.28	347	9.9	1.59	354	7.9	0.88	939	6.6	0.72	1190	6.1	1.71	196	8.1	1.47	344
1:00-1:59	12.6	2.86	135	5.0	1.42	238	4.7	1.19	318	7.3	1.39	354	9.7	1.01	855	6.9	0.78	1052	4.8	1.76	147	5.3	1.22	339
2:00-2:59	5.5	2.66	73	6.9	1.93	173	9.4	1.91	234	7.0	1.55	272	6.1	0.88	743	6.7	0.82	930	6.4	2.33	110	7.8	1.64	269
3:00-3:59	5.1	2.86	59	9.5	2.62	126	9.1	2.40	143	4.3	1.34	230	7.0	1.22	441	5.1	0.94	550	9.6	3.24	83	6.0	1.94	150
4:00-4:59	7.0	3.38	57	7.5	2.57	106	5.0	1.97	121	5.0	1.62	181	6.0	1.18	401	4.5	0.93	493	2.7	1.91	73	5.2	2.25	97
5:00-5:59	2.9	2.90	34	6.0	3.36	50	8.8	4.86	34	6.9	3.00	72	5.5	1.54	218	4.7	1.46	211	0.0	0.00	25	5.5	3.06	55
Total	8.7	0.92	934	7.4	0.60	1926	8.1	0.56	2379	7.7	0.50	2814	8.0	0.33	6701	7.3	0.28	8776	7.8	0.74	1290	8.1	0.55	2444

Table 4-9. Percentage of initial call contacts resulting in completed interviews, by type of industry and time of day

Industry	Agriculture Complete			Construction Complete			Finance Complete			Manufacturing Complete			Retail Complete			Services Complete			Transportation Complete			Wholesale Complete		
Time of call	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N	%	SE	N
8:00-8:59	14.0	5.28	43	14.5	2.79	159	14.9	2.92	148	14.2	2.58	183	11.1	1.61	380	12.2	1.29	645	12.6	3.41	95	9.7	2.23	176
9:00-9:59	16.0	3.28	125	15.3	2.23	261	10.7	1.66	346	13.1	1.60	443	11.8	1.06	917	13.4	0.95	1295	11.3	2.18	212	13.4	1.88	328
10:00-10:59	20.7	3.85	111	11.2	2.16	214	11.0	1.81	300	14.2	1.95	318	9.4	1.02	820	10.8	0.95	1070	15.8	3.01	146	15.5	2.11	296
11:00-11:59	14.0	2.77	157	14.7	2.02	306	11.1	1.59	388	16.2	1.83	407	11.6	1.02	987	12.7	0.91	1340	13.8	2.42	203	13.1	1.71	390
12:00-12:59	10.7	2.61	140	14.3	2.05	293	11.0	1.68	347	15.0	1.90	354	10.4	1.00	939	10.3	0.88	1190	12.2	2.34	196	9.0	1.54	344
1:00-1:59	18.5	3.34	135	16.4	2.40	238	11.3	1.78	318	15.5	1.93	354	11.9	1.11	855	12.6	1.02	1052	8.8	2.34	147	16.8	2.03	339
2:00-2:59	15.1	4.19	73	12.1	2.48	173	9.0	1.87	234	15.4	2.19	272	11.8	1.19	743	12.8	1.10	930	12.7	3.18	110	11.2	1.92	269
3:00-3:59	15.3	4.68	59	11.9	2.89	126	9.8	2.49	143	15.2	2.37	230	13.8	1.64	441	11.3	1.35	550	4.8	2.35	83	12.0	2.65	150
4:00-4:59	14.0	4.60	57	14.2	3.39	106	5.0	1.97	121	11.6	2.38	181	12.7	1.66	401	11.6	1.44	493	4.1	2.32	73	11.3	3.22	97
5:00-5:59	5.9	4.04	34	12.0	4.60	50	2.9	2.90	34	5.6	2.70	72	11.0	2.12	218	6.2	1.66	211	4.0	3.92	25	3.6	2.52	55
Total	15.1	1.17	934	14.0	0.79	1926	10.6	0.63	2379	14.4	0.66	2814	11.4	0.39	6701	11.9	0.35	8776	11.3	0.88	1290	12.6	0.67	2444

Source: 1993 Robert Wood Johnson Foundation Employer Survey
Standard Errors calculated as (p*(1-p)/N)^.5
Shaded boxes hold values 2 or more standard errors from column total percentage of contacts (approximately a 95 percent confidence interval)