

"Anonymous Bank" Call-Center Data
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This document describes telephone data, recorded over 12 month (from 1/01/99 till 31/12/99), at the telephone call-center of "Anonymous Bank" in Israel.

The data was organized by Ilan Guedj, who was at the time a graduate student of the Faculty of Industrial Engineering and Management at the Technion, Haifa.

- The data is **free** for use. If used, please notify Avi Mandelbaum, at avim@ie.technion.ac.il and do acknowledge the data source in any of your work.
- A sample of the data, as an EXCEL worksheet, is included on the last page of the document.
- All files are zipped; after unzipping, they become an ASCII file, namely Plain Text (*.txt).
- The Internet site <http://ie.technion.ac.il/~serveng> contains a lot of material that is based on analysis of the present data.

General Description

The call center of "Anonymous Bank" provides several different services:

- Information on and transactions of checking and saving, to bank-customers
- Computer generated voice information (through VRU = Voice Response Unit)
- Information for prospective customers
- Support for the customers of "Anonymous Bank" web-site (internet customers)

The call center constitutes of:

- 8 agent positions
- 1 shift-supervisor position
- 5 agent positions for internet services (in an adjacent room)

During weekdays (Sunday to Thursday), the call center is staffed from 7:00am to midnight. During weekends (Friday-Saturday), it closes at 14:00 on Friday and reopens at around 20:00 on Saturday.

The automated service (VRU) operates 7 days a week, 24 hours a day.

Data Structure

The data archives all the calls handled by the call center, over the period of 12 months from January 1999 till December 1999.

The data consists of 12 files, a file per month. Each file consists of records (lines), a record per phone call (between 20,000 to 30,000 calls per month). Each record has 17 fields, which will now be described in details.

1) **vru+line - 6 digits**

Each entering phone-call is first routed through a VRU: There are 6 VRUs labeled AA01 to AA06. Each VRU has several lines labeled 1-16. There are a total of 65 lines. Each call is assigned a VRU number and a line number.

2) **Call_id - 5 digits**

Each entering call is assigned a call id. Although they are different, the id's are not necessarily consecutive due to being assigned to different VRUs.

3) **Customer_id - 0 to 12 digits**

This is the identification number of the caller, which identifies the customer uniquely; the ID is zero if the caller is not identified by the system (as is the case for prospective customers, for example).

4) **Priority - 1 digit**

The priority is taken from an off-line file.

There are two types of customers: (high-)priority and regular:

- 0 and 1 indicate unidentified customers or regular customers (to be elaborated on below)
- 2 indicates priority customers
- Customers are served in the order of their "Time in Queue".
- Priority customers are allocated at the outset of their call 1.5 minutes of waiting-time (in order to advance their position in the queue.) They are also exempt from paying a NIS 7 monthly fee, which regular customers must pay.
- Customers have not been told about the existence of priorities.
- Until August 1996, all the customers had the same priority - 0. Priorities 1 and 2 were introduced in August 1st, 1996. There still are 0 priority customers, but they are treated as Priority 1. (As we understand it, priority 0 corresponds to those customers that were assigned priority 0 before August 1st and whose priority has not been upgraded.)

- Due to a system bug, customer I.D. was not recorded for those who did not wait in queue, hence, their priority is 0.

5) **Type - 2 digits**

There are 6 different types of services:

- PS - regular activity (coded 'PS' for 'Peilut Shotefet')
- PE - regular activity in English (coded 'PE' for 'Peilut English')
- IN - internet consulting (coded 'IN' for 'Internet')
- NE -stock exchange activity (coded 'NE' for 'Niarot Erech')
- NW - potential customer getting information
- TT – customers who left a message asking the bank to return their call but, while the system returned their call, the calling-agent became busy hence the customers were put on hold in the queue.

6) **Date - 6 digits**

year-month-day

7) **vru_entry - 6 digits**

Time that the phone-call enters the call-center. More specifically, each calling customer must first be identified, which is done by providing the VRU with the customer-id. Hence this is the time the call enters the VRU.

8) **vru_exit - 6 digits**

Time of exit from the VRU: either to the queue, or directly to receive service, or to leave the system (abandonment).

9) **vru_time - 1 to 3 digits**

Time (in seconds) spent in the VRU (calculated by $\text{exit_time} - \text{entry_time}$).

10) **q_start - 6 digits**

Time of joining the queue (being put on “hold”). This entry is 00:00:00, for customers who have not reached the queue (abandoned from the VRU).

11) **q_exit - 6 digits**

Time (in seconds) of exiting the queue: either to receive service or due to abandonment.

12) **q_time - 1 to 3 digits**

Time spent in queue (calculated by $\text{q_exit} - \text{q_start}$)

13) **Outcome - 4,5 or 7 digits**

There are 3 possible outcomes for each phone call:

- AGENT - service
- HANG - hung up
- PHANTOM - a virtual call to be ignored (unclear to us – fortunately, there are only few of these.)

14) **ser_start - 6 digits**

Time of beginning of service by agent.

15) **ser_exit - 6 digits**

Time of end of service by agent.

16) **ser_time - 1 to 3 digits**

Service duration in seconds (calculated by ser_exit – ser_start)

17) **Server - text**

Name of the agent who served the call. This field is NO_SERVER, if no service was provided.

A Data Sample (Excel worksheet)

| vru+line | call_id | customer_id | priority | type | date | vru_entry | vru_exit | vru_time | q_start | q_exit | q_time | outcome | ser_start | ser_exit | ser_time | server |
|----------|---------|-------------|----------|------|--------|-----------|----------|----------|----------|----------|--------|---------|-----------|----------|----------|-----------|
| AA0101 | 44749 | 27644400 | 2 | PS | 990901 | 11:45:33 | 11:45:39 | 6 | 11:45:39 | 11:46:58 | 79 | AGENT | 11:46:57 | 11:51:00 | 243 | DORIT |
| AA0101 | 44750 | 12887816 | 1 | PS | 990905 | 14:49:00 | 14:49:06 | 6 | 14:49:06 | 14:53:00 | 234 | AGENT | 14:52:59 | 14:54:29 | 90 | ROTH |
| AA0101 | 44967 | 58660291 | 2 | PS | 990905 | 14:58:42 | 14:58:48 | 6 | 14:58:48 | 15:02:31 | 223 | AGENT | 15:02:31 | 15:04:10 | 99 | ROTH |
| AA0101 | 44968 | 0 | 0 | NW | 990905 | 15:10:17 | 15:10:26 | 9 | 15:10:26 | 15:13:19 | 173 | HANG | 00:00:00 | 00:00:00 | 0 | NO_SERVER |
| AA0101 | 44969 | 63193346 | 2 | PS | 990905 | 15:22:07 | 15:22:13 | 6 | 15:22:13 | 15:23:21 | 68 | AGENT | 15:23:20 | 15:25:25 | 125 | STEREN |
| AA0101 | 44970 | 0 | 0 | NW | 990905 | 15:31:33 | 15:31:47 | 14 | 00:00:00 | 00:00:00 | 0 | AGENT | 15:31:45 | 15:34:16 | 151 | STEREN |
| AA0101 | 44971 | 41630443 | 2 | PS | 990905 | 15:37:29 | 15:37:34 | 5 | 15:37:34 | 15:38:20 | 46 | AGENT | 15:38:18 | 15:40:56 | 158 | TOVA |
| AA0101 | 44972 | 64185333 | 2 | PS | 990905 | 15:44:32 | 15:44:37 | 5 | 15:44:37 | 15:47:57 | 200 | AGENT | 15:47:56 | 15:49:02 | 66 | TOVA |
| AA0101 | 44973 | 3.06E+08 | 1 | PS | 990905 | 15:53:05 | 15:53:11 | 6 | 15:53:11 | 15:56:39 | 208 | AGENT | 15:56:38 | 15:56:47 | 9 | MORIAH |
| AA0101 | 44974 | 74780917 | 2 | NE | 990905 | 15:59:34 | 15:59:40 | 6 | 15:59:40 | 16:02:33 | 173 | AGENT | 16:02:33 | 16:26:04 | 1411 | ELI |
| AA0101 | 44975 | 55920755 | 2 | PS | 990905 | 16:07:46 | 16:07:51 | 5 | 16:07:51 | 16:08:01 | 10 | HANG | 00:00:00 | 00:00:00 | 0 | NO_SERVER |
| AA0101 | 44976 | 0 | 0 | NW | 990905 | 16:11:38 | 16:11:48 | 10 | 16:11:48 | 16:11:50 | 2 | HANG | 00:00:00 | 00:00:00 | 0 | NO_SERVER |
| AA0101 | 44977 | 33689787 | 2 | PS | 990905 | 16:14:27 | 16:14:33 | 6 | 16:14:33 | 16:14:54 | 21 | HANG | 00:00:00 | 00:00:00 | 0 | NO_SERVER |
| AA0101 | 44978 | 23817067 | 2 | PS | 990905 | 16:19:11 | 16:19:17 | 6 | 16:19:17 | 16:19:39 | 22 | AGENT | 16:19:38 | 16:21:57 | 139 | TOVA |
| AA0101 | 44764 | 0 | 0 | PS | 990901 | 15:03:26 | 15:03:36 | 10 | 00:00:00 | 00:00:00 | 0 | AGENT | 15:03:35 | 15:06:36 | 181 | ZOHARI |
| AA0101 | 44765 | 25219700 | 2 | PS | 990901 | 15:14:46 | 15:14:51 | 5 | 15:14:51 | 15:15:10 | 19 | AGENT | 15:15:09 | 15:17:00 | 111 | SHARON |
| AA0101 | 44766 | 0 | 0 | PS | 990901 | 15:25:48 | 15:26:00 | 12 | 00:00:00 | 00:00:00 | 0 | AGENT | 15:25:59 | 15:28:15 | 136 | ANAT |
| AA0101 | 44767 | 58859752 | 2 | PS | 990901 | 15:34:57 | 15:35:03 | 6 | 15:35:03 | 15:35:14 | 11 | AGENT | 15:35:13 | 15:35:15 | 2 | MORIAH |
| AA0101 | 44768 | 0 | 0 | PS | 990901 | 15:46:30 | 15:46:39 | 9 | 00:00:00 | 00:00:00 | 0 | AGENT | 15:46:38 | 15:51:51 | 313 | ANAT |
| AA0101 | 44769 | 78191137 | 2 | PS | 990901 | 15:56:03 | 15:56:09 | 6 | 15:56:09 | 15:56:28 | 19 | AGENT | 15:56:28 | 15:59:02 | 154 | MORIAH |
| AA0101 | 44770 | 0 | 0 | PS | 990901 | 16:14:31 | 16:14:46 | 15 | 00:00:00 | 00:00:00 | 0 | AGENT | 16:14:44 | 16:16:02 | 78 | BENSION |
| AA0101 | 44771 | 0 | 0 | PS | 990901 | 16:38:59 | 16:39:12 | 13 | 00:00:00 | 00:00:00 | 0 | AGENT | 16:39:11 | 16:43:35 | 264 | VICKY |
| AA0101 | 44772 | 0 | 0 | PS | 990901 | 16:51:40 | 16:51:50 | 10 | 00:00:00 | 00:00:00 | 0 | AGENT | 16:51:49 | 16:53:52 | 123 | ANAT |
| AA0101 | 44773 | 0 | 0 | PS | 990901 | 17:02:19 | 17:02:28 | 9 | 00:00:00 | 00:00:00 | 0 | AGENT | 17:02:28 | 17:07:42 | 314 | VICKY |
| AA0101 | 44774 | 32387482 | 1 | PS | 990901 | 17:18:18 | 17:18:24 | 6 | 17:18:24 | 17:19:01 | 37 | AGENT | 17:19:00 | 17:19:35 | 35 | VICKY |
| AA0101 | 44775 | 0 | 0 | PS | 990901 | 17:38:53 | 17:39:05 | 12 | 00:00:00 | 00:00:00 | 0 | AGENT | 17:39:04 | 17:40:43 | 99 | TOVA |
| AA0101 | 44776 | 0 | 0 | PS | 990901 | 17:52:59 | 17:53:09 | 10 | 00:00:00 | 00:00:00 | 0 | AGENT | 17:53:08 | 17:53:09 | 1 | NO_SERVER |
| AA0101 | 44777 | 37635950 | 2 | PS | 990901 | 18:15:47 | 18:15:52 | 5 | 18:15:52 | 18:16:57 | 65 | AGENT | 18:16:56 | 18:18:48 | 112 | ANAT |
| AA0101 | 44778 | 0 | 0 | NE | 990901 | 18:30:43 | 18:30:52 | 9 | 00:00:00 | 00:00:00 | 0 | AGENT | 18:30:51 | 18:30:54 | 3 | MORIAH |
| AA0101 | 44779 | 0 | 0 | PS | 990901 | 18:51:47 | 18:52:02 | 15 | 00:00:00 | 00:00:00 | 0 | AGENT | 18:52:02 | 18:55:30 | 208 | TOVA |
| AA0101 | 44780 | 0 | 0 | PS | 990901 | 19:19:04 | 19:19:17 | 13 | 00:00:00 | 00:00:00 | 0 | AGENT | 19:19:15 | 19:20:20 | 65 | MEIR |
| AA0101 | 44781 | 0 | 0 | PS | 990901 | 19:39:19 | 19:39:30 | 11 | 00:00:00 | 00:00:00 | 0 | AGENT | 19:39:29 | 19:41:42 | 133 | BENSION |
| AA0101 | 44782 | 0 | 0 | NW | 990901 | 20:08:13 | 20:08:25 | 12 | 00:00:00 | 00:00:00 | 0 | AGENT | 20:08:28 | 20:08:41 | 13 | NO_SERVER |
| AA0101 | 44783 | 0 | 0 | PS | 990901 | 20:23:51 | 20:24:05 | 14 | 00:00:00 | 00:00:00 | 0 | AGENT | 20:24:04 | 20:24:33 | 29 | BENSION |
| AA0101 | 44784 | 0 | 0 | NW | 990901 | 20:36:54 | 20:37:14 | 20 | 00:00:00 | 00:00:00 | 0 | AGENT | 20:37:13 | 20:38:07 | 54 | BENSION |
| AA0101 | 44785 | 0 | 0 | PS | 990901 | 20:50:07 | 20:50:16 | 9 | 00:00:00 | 00:00:00 | 0 | AGENT | 20:50:15 | 20:51:32 | 77 | BENSION |
| AA0101 | 44786 | 0 | 0 | PS | 990901 | 21:04:41 | 21:04:51 | 10 | 00:00:00 | 00:00:00 | 0 | AGENT | 21:04:50 | 21:05:59 | 69 | TOVA |
| AA0101 | 44787 | 0 | 0 | PS | 990901 | 21:25:00 | 21:25:13 | 13 | 00:00:00 | 00:00:00 | 0 | AGENT | 21:25:13 | 21:28:03 | 170 | AVI |
| AA0101 | 44788 | 0 | 0 | PS | 990901 | 21:50:40 | 21:50:54 | 14 | 00:00:00 | 00:00:00 | 0 | AGENT | 21:50:54 | 21:51:55 | 61 | AVI |
| AA0101 | 44789 | 9103060 | 2 | NE | 990901 | 22:05:40 | 22:05:46 | 6 | 22:05:46 | 22:09:52 | 246 | AGENT | 22:09:51 | 22:13:41 | 230 | AVI |
| AA0101 | 44790 | 14558621 | 2 | PS | 990901 | 22:24:11 | 22:24:17 | 6 | 22:24:17 | 22:26:16 | 119 | AGENT | 22:26:15 | 22:27:28 | 73 | VICKY |
| AA0101 | 44791 | 0 | 0 | PS | 990901 | 22:46:27 | 22:46:37 | 10 | 00:00:00 | 00:00:00 | 0 | AGENT | 22:46:36 | 22:47:03 | 27 | AVI |
| AA0101 | 44792 | 67158097 | 2 | PS | 990901 | 23:05:07 | 23:05:13 | 6 | 23:05:13 | 23:05:30 | 17 | AGENT | 23:05:29 | 23:06:49 | 80 | VICKY |
| AA0101 | 44793 | 15317126 | 2 | PS | 990901 | 23:28:52 | 23:28:58 | 6 | 23:28:58 | 23:30:08 | 70 | AGENT | 23:30:07 | 23:35:03 | 296 | DARMON |
| AA0101 | 44794 | 0 | 0 | PS | 990902 | 00:10:47 | 00:12:05 | 78 | 00:00:00 | 00:00:00 | 0 | HANG | 00:00:00 | 00:00:00 | 0 | NO_SERVER |
| AA0101 | 44795 | 0 | 0 | PS | 990902 | 07:16:52 | 07:17:01 | 9 | 00:00:00 | 00:00:00 | 0 | AGENT | 07:17:01 | 07:17:44 | 43 | ANAT |
| AA0101 | 44796 | 0 | 0 | PS | 990902 | 07:50:05 | 07:50:16 | 11 | 00:00:00 | 00:00:00 | 0 | AGENT | 07:50:16 | 07:53:03 | 167 | STEREN |