



The Nelson A. Rockefeller Center at Dartmouth College

The Center for Public Policy and the Social Sciences

Policy Research Shop

Legal Aid Referral Center Incoming Call Analysis

An Analysis to Provide Best Practices Recommendations

**Presented to the Legal Aid Referral Center of New
Hampshire**

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EXECUTIVE SUMMARY

The Legal Aid Referral Center (LARC) keeps a complete a record of its incoming and outgoing phone calls in the form of an electronic dataset. However, it lacks the resources and necessary statistical tools to draw meaningful information from the data. Our goal is to develop a strategy to streamline data gathering, provide basic statistical analysis of trends from the dataset, conduct an in-depth trend analysis of caller behavior, and offer some “best practices” recommendations on ways to more effectively and efficiently structure the LARC call system. We hope that our needs analysis can help LARC better allocate resources to serve the needs of the community.

1. BACKGROUND

LARC provides a 24/7 hotline that provides legal advice as well as referrals for eligible low-income people to pro bono programs sponsored by the New Hampshire Bar Association on topics related to housing, family, benefits and welfare. It is the sole phone-based legal aid option in New Hampshire and thus serves the entire state.

The hotline offers pre-recorded messages on specific legal topics. Operating via a pre-determined flowchart of commands, the hotline plays different messages depending on the individual choices of the caller. The system has set up a separate algorithm of message options for use outside of regular business hours during which a caller is unable to talk to a live call intake screener. There are two primary categories of legal advice options available to callers: (1) a several-minute recording of legal advice on an array of legal topics, and (2) the possibility to wait in a queue to talk to a call screener to verify eligibility before creating an appointment to discuss concerns with a legal advocate specializing in family and/or housing law, and a set of informational extensions which are currently unknown. We also found several destination extensions that we, with the assistance of both LARC staff and the phone system administrator, were unable to identify.

In order to track incoming calls, LARC has contracted Best VoIP USA, a digital data center, to catalog caller inputs and various other interactions within the calling system. Every transaction made via the hotline is recorded as a new input on a data spreadsheet. For every call, the dataset catalogs information including: time and day of call, caller ID if available and phone number, final destination of the call, duration spoken and billed, and whether the call was answered or disconnected. Thus, each unique phone call may generate dozens, or even hundreds, of lines of data. The final destinations of incoming calls are recorded in codes.

Most columns of the dataset are cataloged in codes. Most substantive destinations are described as “IVRs,” with each “IVR” designating a specific recording, such as an info box or after-hours message. See Appendix B for a description of various IVRs, also



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referred to as information (info) boxes. “Queues,” on the other hand, are where callers wait to be processed by an intake screener. Time duration in the queue measures the wait time of people wishing to talk to one of five call screeners working in either family or housing law.

2. ANALYSIS OF ONE WEEK’S CALLS

2.1 Methodology

We performed analysis on the data for one week. The first week of October was chosen by the LARC as a representative week of their work. We swapped data from Tuesday October 24 with Tuesday October 3 because October 3 was used in our preliminary study; LARC identified October 24 as an appropriate alternative. Using SQL software, we extracted data from the LARC database with BestVOIP, including several thousand rows of data across many variables, into MS Excel. Outgoing calls were screened out of the dataset in the initial SQL query.

To facilitate our analysis, we trimmed the dataset to extract the variables that are pertinent to us. We began by dividing the week into datasets for each day, and then deleted all variables except call date (*calldate*), client id (*clid*), incoming phone number (*src*), call destination (*dcontext*), voice message option (*dst*), description of call (*lastapp*), duration, billed seconds (*billsec*), final call action (*disposition*), and *uniqueid*. This information helped tell a complete story of each individual call. After deleting extraneous information, we sorted the data by *src* then *calldate*. We then created a new dataset organized such that each case was a complete phone call, including the following information for each phone call: incoming phone number, total duration, and billed seconds. In general, total duration and billed seconds were the same. Additionally, for queues, we manually calculated the total time waiting in the queue and the time actually speaking to a call screener. The process through which we did this can be seen in Appendix A.

Analysis of the calling data was predicated upon our understanding of the various codes used to indicate a particular call option chosen at the preference of the caller. We gathered information describing the codes used in the phone call database through multiple discussions with the BestVoip administrator, and ultimately by analyzing the actual software code used to build the program. However, because we had very limited access to the “real meaning” behind much of this information, the scope of our analysis is limited. Nevertheless, the data analysis generated some interesting findings and recommendations that we outline below.

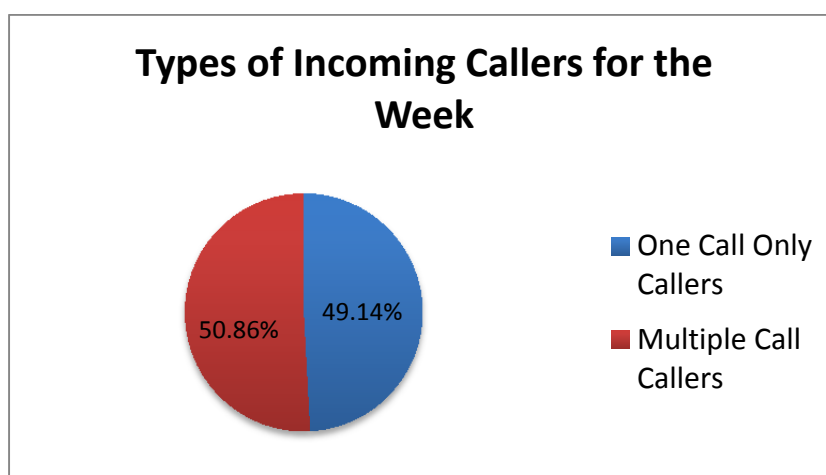


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2.2 Trends

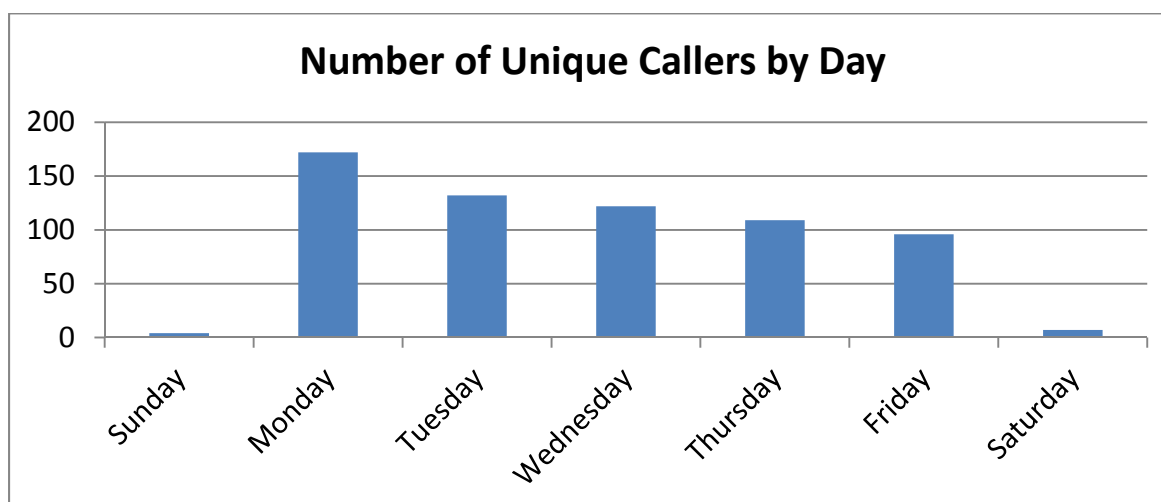
Of the 1192 calls made to LARC in the given week, forty-nine percent (602) were one-time-only callers (Figure 1). Correspondingly, fifty-one percent of all callers made multiple calls. 151 callers called multiple information boxes in one day and 81 callers called the same destination multiple times within one day. Within one day, approximately forty callers called both an information box and chose to wait in a queue.

Figure 1. Chart of Callers



Half of total calls are roughly unique callers for each weekday, as shown in Figure 2. Also worthy of note is the descending trend of the number of unique callers throughout the week.

Figure 2. Number of Unique Callers by Day

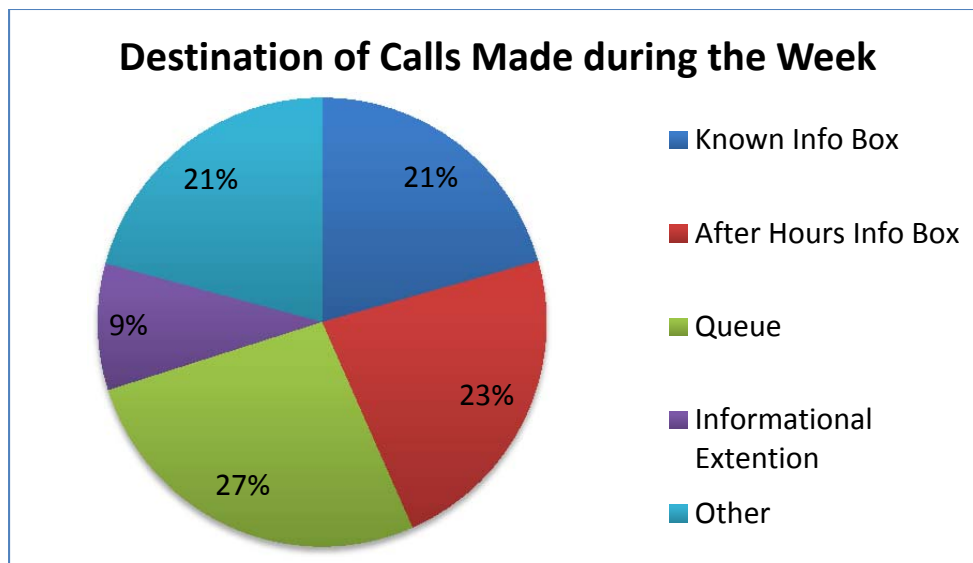




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Of all the calls made during the given week, twenty-seven percent of calls choose to wait to speak with a live legal advocate. Twenty-three percent called the after-hours information box and twenty-one percent called other known information boxes. Nine percent called an informational extension. Twenty-one percent of the destinations are categorized as 'Other' due to being currently unknown.

Figure 3. Destination of Calls Made During the Week

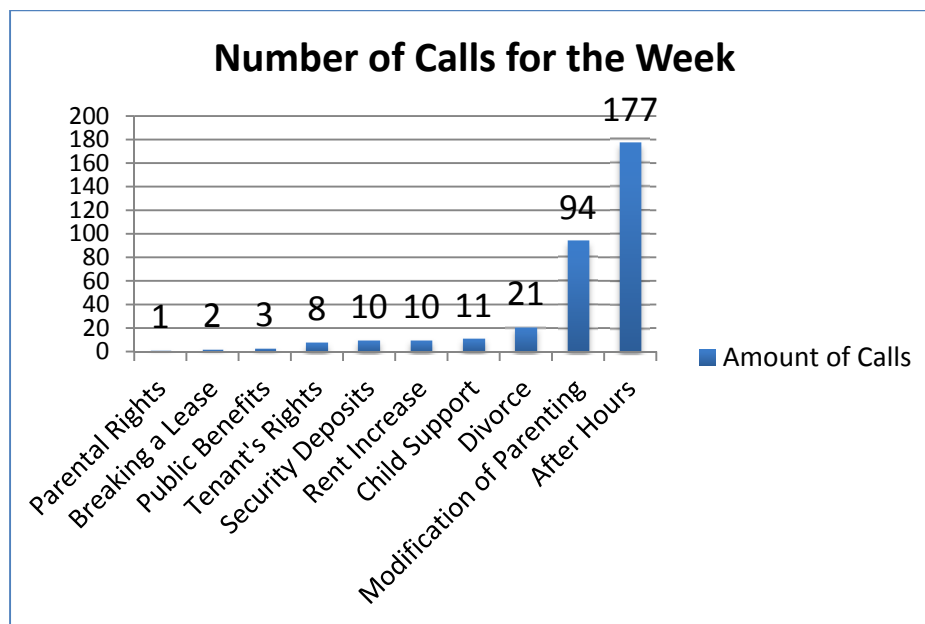


Based on calling frequency (Figure 4), the most accessed pre-recorded info box was for after-hours. Unsurprisingly, there is a spike in the calls made to the info box on Wednesday, when the center does not take calls, while for the rest of the week the number of calls to the after-hours box is consistent. The second most accessed information box was modification of parenting, or custody. Ninety-four calls were made to this info box. The next most popular info boxes were for divorce and child support. Less frequently called, but still notable info boxes were rent increase, security deposits, and tenant's rights. Figure 2 below shows the number of calls made to various info boxes.



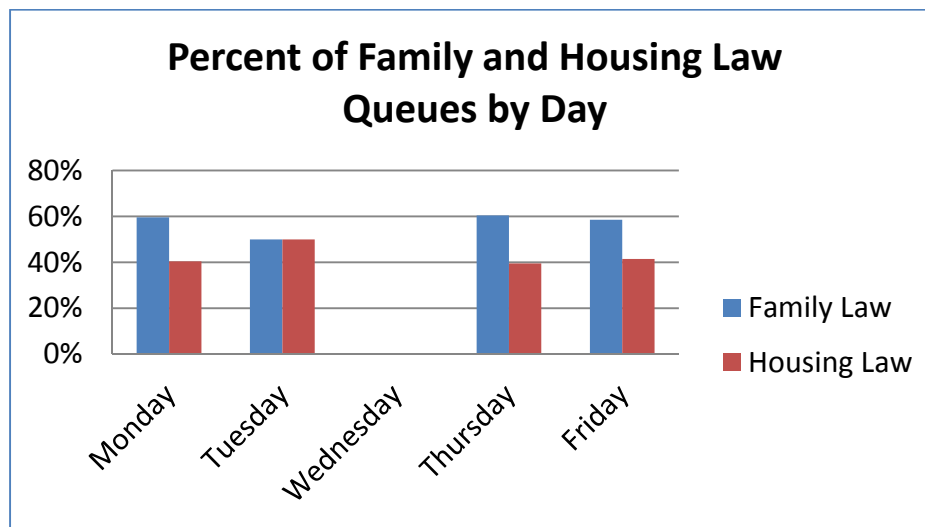
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Figure 4. Number of Calls Made to Info Boxes throughout the Week



The proportion of calls made to family law or housing law queues are consistent throughout the week, disregarding Wednesday, at a ratio of sixty percent family law and forty percent housing law. Tuesday was the only exception, with a fifty-fifty balance between the two queues.

Figure 6. Percent of Family and Housing Law Queues by Day





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The average waiting time for a queue was about half an hour at twenty-eight minutes. The average speaking time was roughly twelve minutes. There was wide variation in the times callers were waiting and speaking. Variation in waiting time may have been a result of differing volumes of callers. Variation in speaking time may have been due to shorter intake times needed for returning clients and longer intake times needed for new clients.

Figure 6. Length of Time in Queue for the Week in Minutes

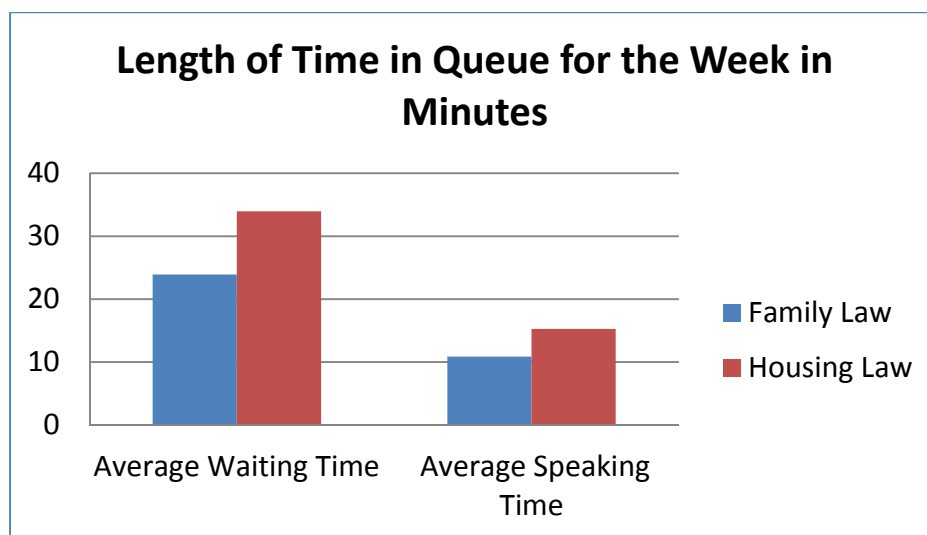
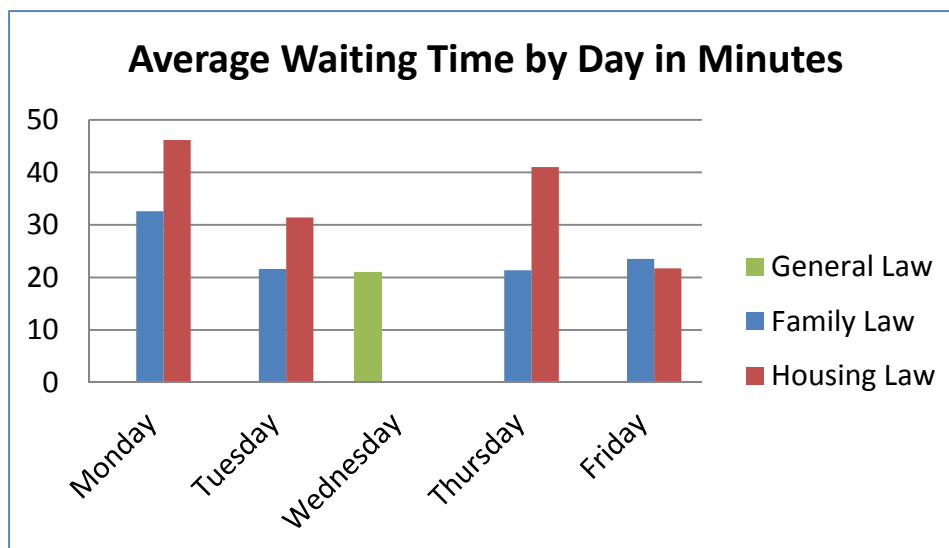


Figure 7 shows that other than Friday, there is a significantly longer waiting time for housing law than family law throughout the week.

Figure 7. Average Waiting Time by Day in Minutes

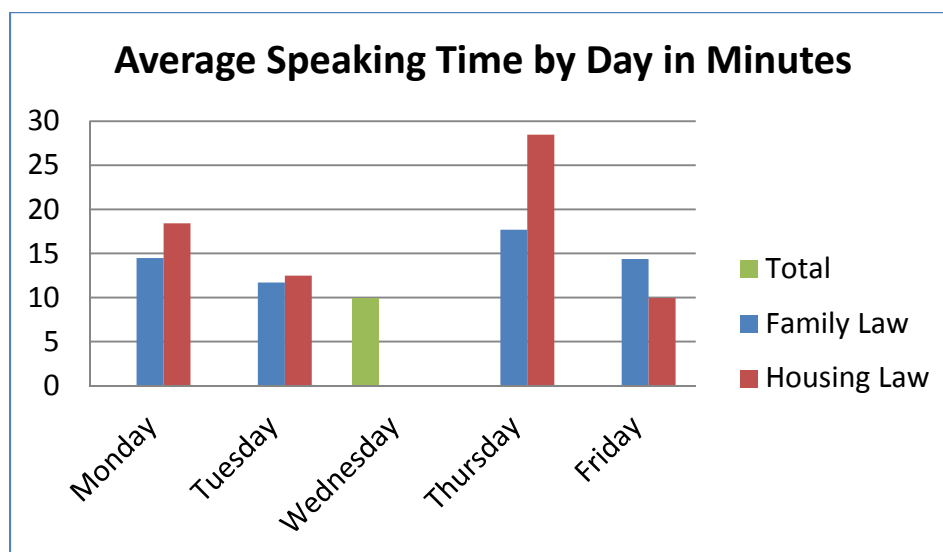




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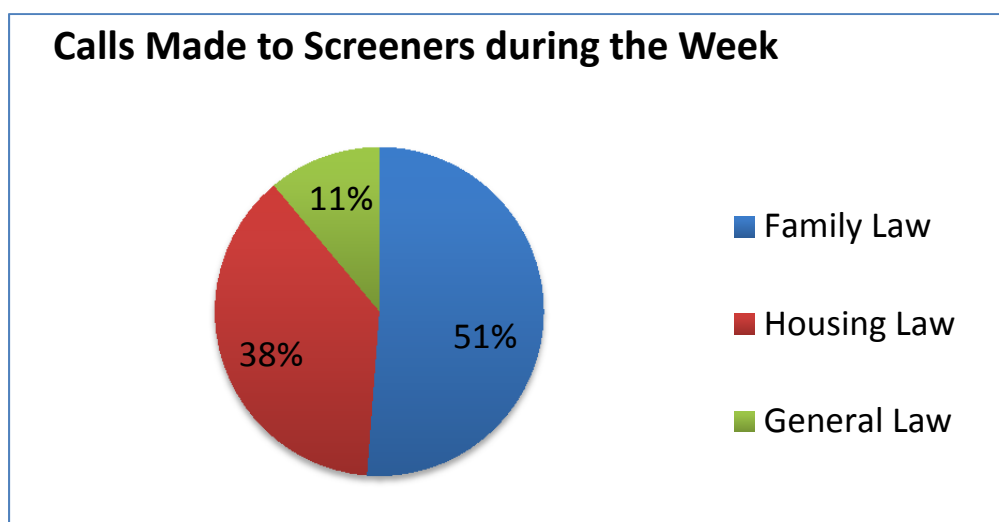
It is interesting to note the large spike of speaking time on Thursday compared to the rest of the week, specifically Friday where the number of incoming calls is smaller. This may be due to some direct service being provided after intake or another factor LARC may want to explore.

Figure 8. Average Speaking Time in Minutes



Fifty-one percent called to talk to a family law legal assistant, and thirty-eight percent called to speak to a housing law legal assistant.

Figure 9. Calls Made to Family or Housing Law Advocates

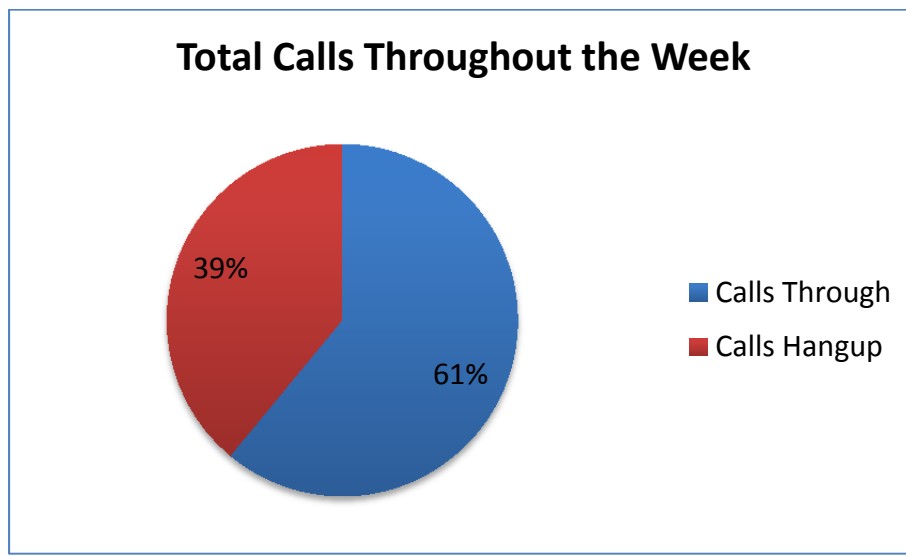




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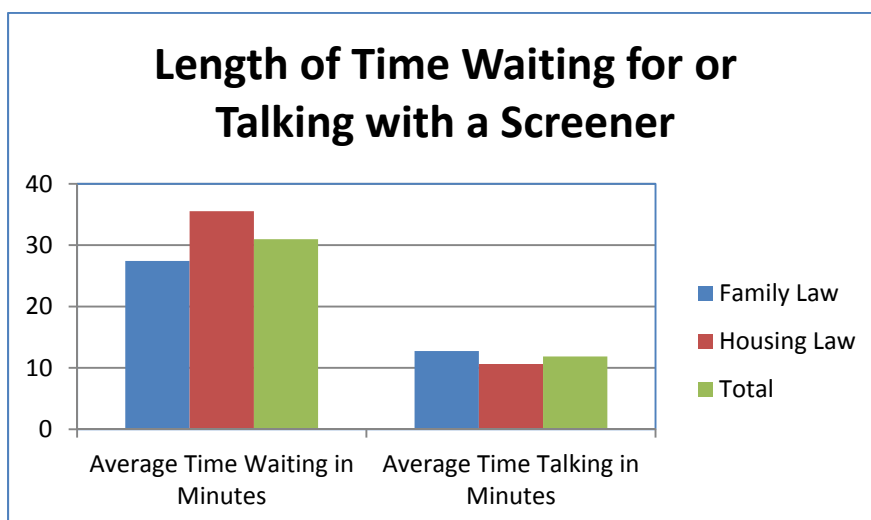
Of those calling to talk to an advocate, sixty-one percent remained on the phone to speak to the screener while thirty-nine percent hung up. Callers who hung up remained in the queue for a wide range of times.

Figure 10. Chart of Hang-Ups for Incoming Calls



Callers interested in housing law on average waited longer and spoke to a screener for a shorter amount of time. This can be seen in Figure 11 below. This trend suggests that housing law screeners may feel more pressed for time as compared to family law advocates.

Figure 11. Waiting Time





3. COMPARISON TO OTHER LEGAL AID CALL SERVICE CENTERS

In addition to an analysis of incoming calls, the LARC might be interested in learning more about how other call centers operate and about which services they provide. We compared four legal aid centers in Michigan, Minnesota, Georgia, and Oregon. We chose these four since their services are similar to those provided by NH LARC and they have a similar audience.

Minnesota Volunteer Lawyers Network offers a free family law service called the Carver and Scott County Family Law Advice by Phone. Only those whose household income is below 300% of the Federal Poverty Guidelines are eligible. Those who qualify are able to schedule an appointment with a family law attorney for approximately twenty minutes. While the telephone legal aid solely covers family law, many important facets such as adoption and child protection is not included.

Michigan's Legal Aid Counsel and Advocacy Law Line (CALL) combines support from the Michigan Poverty Law Program, the State Bar of Michigan, the Michigan State Bar Foundation, and the Legal Services Corporation. CALL partners with local programs to provide telephone information, advice, brief services and referrals to poor and senior callers in the counties above and throughout much of Northern, Western and South Central Michigan.

Georgia Legal Services Program is a cooperative project among Atlanta Legal Aid Society, the Georgia Division of Aging Services, the State Bar Pro Bono Project and the Atlanta Bar Association. It offers legal advice, brief services, self-help materials and referrals to seniors throughout the state. While the telephone service is dedicated only to senior citizens, the Georgia Legal Aid website provides a comprehensive directory on fifteen legal topics, ranging from disaster relief to wills and life planning.

Oregon Law Center (OLC) provides information, advice and representation on a number of administrative law issues that are important for low-income clients including health care, employment issues, food stamps, the Jobs program, public benefits and Social Security. In order to receive assistance within the pro-bono division, the legal issue must within the Portland Metropolitan Area.

3.1 Other Call Center Operations

Our initial findings show that the other four call centers operate in a slightly different manner than LARC. They are all similar in that they target a specific audience, whether low income or seniors, and offer legal advice services on a range of topics over the phone. All call centers also offer Spanish options immediately.



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However, they do show some distinct differences as well. The other four call centers are open for fewer hours during the week. They also all refer to their websites in the beginning part of their opening messages. The websites they refer to also seemed easier for us to navigate than New Hampshire Legal Aid's website. None of the other call centers have information boxes via telephone. The Oregon Law Center has three different phone numbers to call for its three services of child support advice, public benefit advice, and pro bono programs.

Given the unique circumstances surrounding LARC's services, it may not be very useful to look into multiple phone lines or shortening hours, but it might be worthwhile to explore referring to the website in the opening message.

4. BEST PRACTICES RECOMMENDATIONS

Our analysis of calls for one week suggests that the following areas could use some development to better serve the community. The data trends presented above suggest that LARC may best serve its community by increasing services in the child custody area and by relieving some strain on the advocate lines. The strain on advocate lines is apparent in the number of people who hang up before speaking to an advocate, and these people tend to be only slightly more impatient. They stay on the phone for about 24 minutes as opposed to 30 minutes for those callers who connect with an advocate. Another point of interest is that LARC might find use in identifying unknown IVR's and addressing their usefulness.

4.1 Addressing Hang-ups

Long wait time and hang-up rates are signs of caller frustration. The calling data demonstrate an average wait time of half an hour, with roughly 40 percent of people ultimately hanging up while in the queue to speak to a screener, often only a few minutes before their call would be answered.

Noticing that hang ups, waiting, and speaking times are higher for Housing Law, we suggest LARC pay special attention to Housing Law. Higher speaking times are likely due to the larger amount of information needed for intake for this type of legal advising, but LARC might find use in exploring the higher waiting times further. One LARC employee mentioned that Family Law callers are sometimes taken from the queue before Housing Law callers. LARC might want to contact Best VOIP to see if the problem can be fixed and at what cost. As an alternative, LARC might also consider training employees to be cognizant of the issue and to manually choose the caller waiting the longest.

Additionally, in order to mitigate caller frustration while minimizing operational costs (i.e. increasing more legal advocates on call), we suggest that LARC examine increasing



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website presence and referring callers to the website, provide an average wait time in the queue message, and/or frontload staff.

4.1.1 Increase Website Presence

It is clear telephone lines serve a segment of the population who may not otherwise have access to legal advice, be it due to financial or technological constraints. However, if New Hampshire residents had easy access to web-based resources that are easily to find and comprehensive in content, LARC will not only expand its impact to a broader group of people, but improve caller experience by providing referrals to the website as an alternative to waiting on hold. The four other call centers direct callers to websites early in their opening message, and LARC may better serve its clients by doing the same.

The Legal Services Agencies of New Hampshire operates a website where callers may find detailed resources on an array of legal topics. However, its effectiveness could be improved with better navigation and publicity of the website. Prominent “self-help” tools on the website direct the average user to telephone numbers for more information instead of directly leading the user to the legal resources already contained in the various webpages. The Legal Service Agencies’ heavy promotion of its telephone services undermines the usefulness of its library of information on the web. The dominant use of either tabs, icons, or search bars in the website design may help users navigate the website more easily and thus let them find the information they were looking rather than having to wait in a queue. This will free up the queue lines for those who absolutely require the personal assistance.

The website may also be a useful tool to use for prescreening callers, by clearly explaining eligibility criteria for receiving aid. This will allow for quicker communication with advocates in the queue and will consequently keep the queue moving faster.

4.1.2 More Information via Prerecorded Messages

One option may be to have the expected time waiting recited as people enter the queue. This would require a service which may come at some cost to LARC. However, it would help people have some idea of how long they will be waiting on the phone. This would help them hang up if they knew they did not have enough time or let them plan ahead knowing on average how much time they need. While hang-ups may not go away, this will still help make sure that those who need to be served know what to expect.

4.1.3 Frontloading Staff

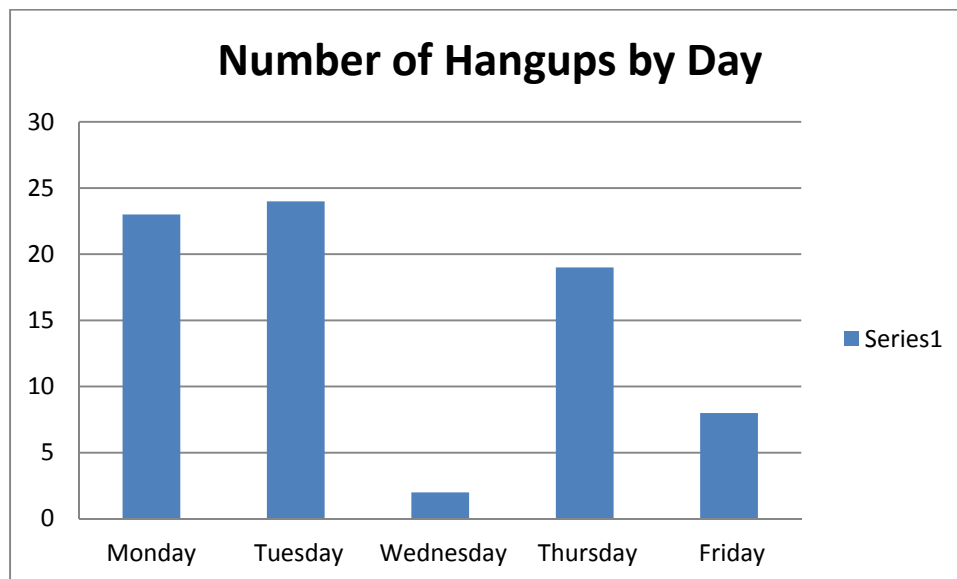
The number of calls and unique callers seem to be greater at the beginning of the week as compared to the end. Because LARC appears to be seeing more traffic in the beginning of the week, it may want to consider frontloading its staff. The following chart shows the



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number of hang-ups each day, showing far fewer numbers on Thursday and Friday (note that Wednesday's unique status as a no-call day at the LARC deflates its hang-up statistics).

Figure 12. Number of Hang-ups by Day



4.2 Increasing Custody Resources

The data analysis of calls to IVR's shows a high volume of calls being made to the custody IVR. It seems that this is a high point of interest to LARC callers and LARC may consider looking into expanding resources for this option or dedicating a queue to this issue to better serve its community.

4.3 Identifying Unknown Destinations

Info boxes have some cost to maintain and LARC might better use its resources to identify unknown info boxes and other destinations. A further understanding of the system in place may help LARC identify other areas to improve.

CONCLUSION

Our one-week analysis of LARC's incoming calls indicates that LARC is serving a wide population of callers. As a result, there is a significant wait time for callers wanting to reach a live legal advocate. In addition, we find that there is variability within the week on wait time and speaking duration. Therefore, we recommend that LARC redistribute its



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resources to ameliorate the strains on advocate lines during earlier days of the week. Our comparison analysis of other call centers leads us to suggest that LARC turn to other venues such as the web or more pre-recorded info boxes as a means to reduce call volume. The analysis of IVRs also suggests that LARC may want to invest more resources into the custody area and explore the utility of certain known and unknown info boxes to best serve its community and reduce costs.



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Appendix A. Data Extraction Process¹

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	270	266	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3243	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	251	251	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3244	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	72	72	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3245	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	1294	1294	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3246	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3247	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	11	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3248	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	9	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3249	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3250	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3251	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3252	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	9	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3253	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3254	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3255	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	12	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3256	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	6	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3257	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	9	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3258	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3259	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	1	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3260	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	9	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3261	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3262	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	1	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3263	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	9	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3264	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	10	0	FAILED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3265	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	2	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3266	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	0	0	NO ANSWER	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3267	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	570	564	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3268	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	65	65	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3269	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	401	401	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3270	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	465	465	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3271	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	872	872	ANSWERED	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3272	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround	1	0	BUSY	13E-09	13E-09	13E-09	13E-09	13E-09	13E-09
3273	10/3/2011 14:45	6038352868	6038352868	601 from-internal	ivr-13	BackGround									

¹ Caller ID (src) blacked out to maintain caller confidentiality.



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Appendix B. Flowchart for Incoming Calls

LEGAL ADVICE & REFERRAL CENTER TELEPHONE FLOW-CHART

