ALASKA 511 STATISTICS ANALYSIS FOR APRIL 25, 2003 TO MAY 1, 2005

By

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EXECUTIVE SUMMARY

The Alaska Department of Transportation and Public Facilities deployed Alaska's 511 phone and web site on April 25, 2003 as part of the fifteen-state 511 coalition called the Condition Acquisition and Reporting System (CARS) by Castle Rock Consultants. Alaska was the eleventh statewide and the sixteenth overall 511 system to be deployed. The information currently provided on this system includes road conditions, weather forecasts, construction and ferry information.

The most important goal of a 511 system is to provide accurate, real-time information in a way that is understandable to the traveling public. The best way to evaluate the level of service provided to customers is to evaluate the system and identify areas for improvement. In order to understand in a quantitative nature more about usage of the 511 system, an analysis of the Alaska 511 statistics as reported by Castle Rock Consultants was completed. This report analyzed the data as recommended by the 511 National Deployment Coalition.

This analysis led to the following conclusions:

- The total number of phone calls from April 25, 2003 to May 1, 2005 was over 135,000. Call volumes are highest in the winter with December 2004 and specifically December 24, 2004 being the peak. Peak days are Fridays with peaks times from 8 to 11 am with 9 am being the peak;

- Since deployment, over 6,300 hours of call time have accrued with the average call lasting 2 minutes and 47 seconds. December 24, 2005 was also the peak for call time;

- The information requested is 91.4 percent traffic and 8.6 percent weather. In both the original and current systems, the highway summary is used most followed by the local regional summary. Information has been requested for 339 separate cities/regions with Anchorage and Fairbanks being the top two. Information for 229 separate highways/routes has also been requested with the Seward Highway being the top requested. Ambiguous routes occur nine times more than ambiguous cities;

- There were almost 53,000 unique callers to the Alaska 511 system. Most callers (61 percent) had only used 511 once and the average number of times someone called 511 was 2.5. Although 94.5 percent of callers were from Alaska, there were callers with phone registered to 45 of the 50 states, three Canadian Provinces, the District of Columbia, and the Virgin Islands. Eight percent of Alaska's population has tried 511 and callers have been from 187 different towns/cities in Alaska with the greatest number (38 percent) from Anchorage;

- Eighty four percent of Alaskan calls were made using a landline phone with the greatest number being ACS of Anchorage subscribers;

- The total number of web hits from July 1, 2003 to April 29, 2005 was over 4,150,000. Web hits are highest in the winter with the peak being November 2003 although the peak

day was November 3, 2004. The average number of web hits in a day are 6,756. Peak days are Fridays like the phone; however the peak hours are 2 pm and 8 to 9 am;

- Of the sites that people used prior to accessing 511.Alaska.gov, return hits from this site were the greatest (75 percent). Of the sites that work and are not Alaska 511 or Alaska DOT, the greatest number of hits were from media sites (36 percent) and search engines (33 percent) with the most hits from the Anchorage Daily News and the Google search engine;

- After the home page, "Driving Conditions," "Urgent Reports," and "Ferries" were the most sought after information. Hits to the home page, "NWS Forecast", "Driving Conditions", "Route Summary", and "Urgent Report" pages peak in the wintertime, while hits to the "Ferries" and "Roadwork" pages peak in the seasons other than winter;

- "Regional Summary" reports were requested the most for the Matsu area. Views chosen the most for the "Urgent Reports," "Driving Conditions," "NWS Forecast," "Roadwork," "All Reports," and "Ferries" were statewide (the default) and then Anchorage. The top locations chosen for "Route Summaries" were Anchorage and Fairbanks;

- From an analysis standpoint, the research team found that the records from 511 phone calls and the log files from 511 web site usage were not intuitive to use. These records and log files are transparent to users of the 511 system, and customer satisfaction should not be adversely affected by this. However, if the department is interested in ongoing monitoring and evaluation of 511 usage, it would be very helpful for the structure of data files to be converted so as to be easier to use; and

- Future evaluations of the 511 phone and web systems are recommended and would allow for more data to be compared to better analyze which options users truly prefer, what marketing strategies worked best, how users like the newer phone and web options, and what normal usage of the phone and web are.

1. INTRODUCTION

The Alaska Department of Transportation and Public Facilities deployed Alaska's 511 phone and web site on April 25, 2003 as part of the fifteen-state 511 coalition called the Condition Acquisition and Reporting System (CARS) by Castle Rock Consultants. Alaska was the eleventh statewide and the sixteenth overall 511 system to be deployed. The information currently provided on this system includes road conditions, weather forecasts, construction and ferry information.

The most important goal of a 511 system is to provide accurate, real-time information in a way that is understandable to the traveling public. The best way to evaluate the level of service provided to customers is to evaluate the system and identify areas for improvement. In order to understand in a quantitative nature more about usage of the 511 system, an analysis of the Alaska 511 statistics as reported by Castle Rock Consultants was completed.

Researchers analyzed the types of data recommended by the 511 National Deployment Coalition for 511 phone evaluations (1) including:

- Calls per month (section 3.1);
- Peak call day (section 3.2);
- Peak call day count (section 3.2);
- Peak call day reason (section 3.2);
- Peak call hour (section 3.2);
- Peak call hour count (section 3.2);
- Peak call hour date (section 3.2);
- Peak call hour reason (section 3.2);
- Average call length (section 3.3);
- Total minutes per month (section 3.3);
- Percent by category (section 3.4.1);
- Repeat usage statistics (sections 4.1-4.3);
- % of wireless calls (section 4.4); and
- % of wireline calls (section 4.4).

Other statistics addressed for the phone system included:

- Ranking of phone structural options (section 3.4.2); and
- City/Region and highway/route requests (section 3.4.3).

For the web site, researchers analyzed:

- Web hits per month (section 5.1);
- Peak web hits (section 5.2);
- Referring sites (section 5.3);
- Ranking of web structural options (section 5.4.1);
- Web site icons (section 5.4.2);

- Web site peaks (section 5.4.3); and
- Web site regions requested (section 5.4.4)

2. DATA ANALYSIS METHODOLOGY

To compile statistics on usage of Alaska's 511 telephone system and 511 web site, the research team was furnished with data from Castle Rock Consultants, the contractor for Alaska's 511 system. This chapter describes how the Castle Rock data was converted for analysis.

2.1. Phone Data

The initial data received from Castle Rock was stored in trace files, which contain a record of each time the phone user enters a new portion of the phone structural options. Each phone call to the system will consist of one or more records, based on how the user navigates the phone menu structure. A record consists of the following information which were used in this analysis:

- Time Stamp – in Greenwich Mean Time;
- SID – An ID number which indicates a unique call number, as well as the number of the record within that call;
- Page – The portion of the menu structure currently being accessed;
- State – The state for which information is requested (Alaska);
- City – The city for which information is being requested. For several months in the two-year period, this field was blank; therefore, the EV field was used to provide information on specific cities in which the user was interested;
- Telephone – The telephone number (including area code) from which 511 is being dialed; and
- EV – This field is a relatively freeform text field that provides a trace of how the user navigated from one menu section to the next. It could indicate menu options that were selected, whether the user used voice or keypad entry, and similar characteristics.

Trace files are created for each day and are automatically stored in file folders by month; therefore, the information on the day of a record is self-evident. The records were stored in ASCII text files (*.LOG), and not in a comma-delimited text format. The research team developed some code to translate the LOG files into a comma-delimited format so it could be easily imported into Microsoft Access.

These records needed to be manipulated for the purposes of this analysis. This included the following steps:

- The time stamp was augmented by the date to create a date/time stamp field;
- The area code was extracted from the telephone number. (In a small number of cases, there were obviously errant phone numbers – for example a nine-digit number instead of a ten-digit number – which were manually adjusted where appropriate.);
- The SID value was separated in order to allow for unique identification numbers for each call; and
- Call times were calculated by subtracting the time stamp at the beginning of a call with the time stamp at the end of a call. Corrections for daylight savings time, to ensure that results reflected Alaska local time, were incorporated.

2.2. Web Data

Data regarding 511 web site usage was received in ASCII text format (*.log) files, with one file for each day. These files were stored in a format that could be easily analyzed by a non-proprietary Freeware program called Analog (available at http://www.analog.cx/). To use Analog, a user will enter code into an input file that is read by Analog, and which produces HTML-based reports. Castle Rock Consultants provided sample input files which the research team edited for the purposes of these analyses.

The reports from the Analog files include several outputs of interest; more detail on the specific meanings of terms is available in Analog's on-line documentation.

Successful requests for pages refers to times where the person accessing the web site for information (using a "host" computer) successfully finds a page from the web server. When this report refers to web page hits, this is the quantity that is being referred to. Analog will summarize the number of successful requests for pages by year, month, date, day of week and hour of the day[1].

Request reports are those pages which are requested by the host computer. Analog lists the output in a hierarchical structure. For example, the home page for 511.alaska.gov is http://511.alaska.gov/default.asp. There are many pages with URLs starting with this text, but that have additional text after it; for example:

- http://511.alaska.gov/default.asp?display=weather&area=STATEWIDE_AK
- http://511.alaska.gov/default.asp?display=roadConditions&area=FAIRBANKS_AK

In its output of request reports, Analog will list the total number of hits for the root URL address (http://511.alaska.gov/default.asp), and then will list the number of hits for addresses sharing this root address, such as the two just listed, below that. The number of hits for the root address will be at least the sum of all addresses sharing that root. However, in many cases, the root address is a valid web page itself; in this case, http://511.alaska.gov/default.asp is Alaska's 511 home page. Therefore, the root address may have a far greater number of hits than the sum of all the addresses having that root and other text after it.

If one sums up the number of request reports in a given Analog output file and compares it with the number of successful requests for pages, one will find these numbers generally do not match. URL addresses that are listed under a root address, such as the two examples listed earlier, would not be listed as successful requests for pages. This is problematic from an analysis standpoint, as the root address often does not contain any information about a page's content or specific location information, but this information may be contained in the longer addresses that share that root. For example, in the two examples above, the first address clearly is related to statewide weather information, whereas the second address relates to road conditions in the Fairbanks area. To ensure that this data was preserved, the research team did manual adjustments to the number of request reports by URL address, reducing the number of request reports for root addresses

[1] The data is stored in Greenwich Mean Time, so adjustments were made to convert it to local time.

while allowing URL addresses with additional detail (like the two addresses above) to be included as successful requests for pages. This data was internally verified so that the total number of successful requests for pages remained constant.

Further manual adjustments were necessary as there were a couple of dozen addresses listed which were not valid URL addresses. These addresses would be listed as having a number of request reports, but were not successful requests for pages. These were therefore zeroed out to ensure consistency in the total number of successful requests for pages.

To identify the content of each page, the research team checked each web link to see the information provided. Because the research team was analyzing data that pre-dated the re-design of Alaska's 511 web site, some URL addresses were no longer valid. Therefore, the research team would examine the address itself and make educated guesses about its content. For each URL address, a page and a location were identified. The page would refer to the type of content, for example, road conditions, weather, or construction information. The location would refer to a geographic area for which the information was requested, such as statewide, Anchorage, or Juneau.

There were numerous web links that refer to temporarily created pop-up boxes for specific events (for example, a highway incident creating a road closure). To protect the efficiency of the web page, these web links are broken once the incident or event is resolved. Therefore, it was impossible to readily classify the locations of these events.

3. PHONE CALL VOLUME ANALYSIS

Alaska's 511 phone system was deployed on April 25, 2003. Since that time it has undergone several structural changes.

- The original system provided road weather information and urgent reports as separate options. Rather than continue having road weather and urgent reports as separate options, this information was combined and can be chosen either for a highway in Highway Reports or for a region in Local Summary; and
- There was also an option for getting a statewide synopsis, which is no longer available.

These changes occurred in October and November 2003. During this time, the routing of calls for a "Regional Synopsis" changed; therefore the "Select Region" option is less than "Regional Synopsis" option prior to December 2003.

As well as these changes, additional options were also added to the 511 phone system.

- "Ambiguous Cities" and "Ambiguous Routes" were added in October 2003;
- "Weather Forecasts" and "Comment Save" were added in November 2003; and
- "Yukon Road Report" was added in January 2005.

The current system structure is shown in Figure 3-1.

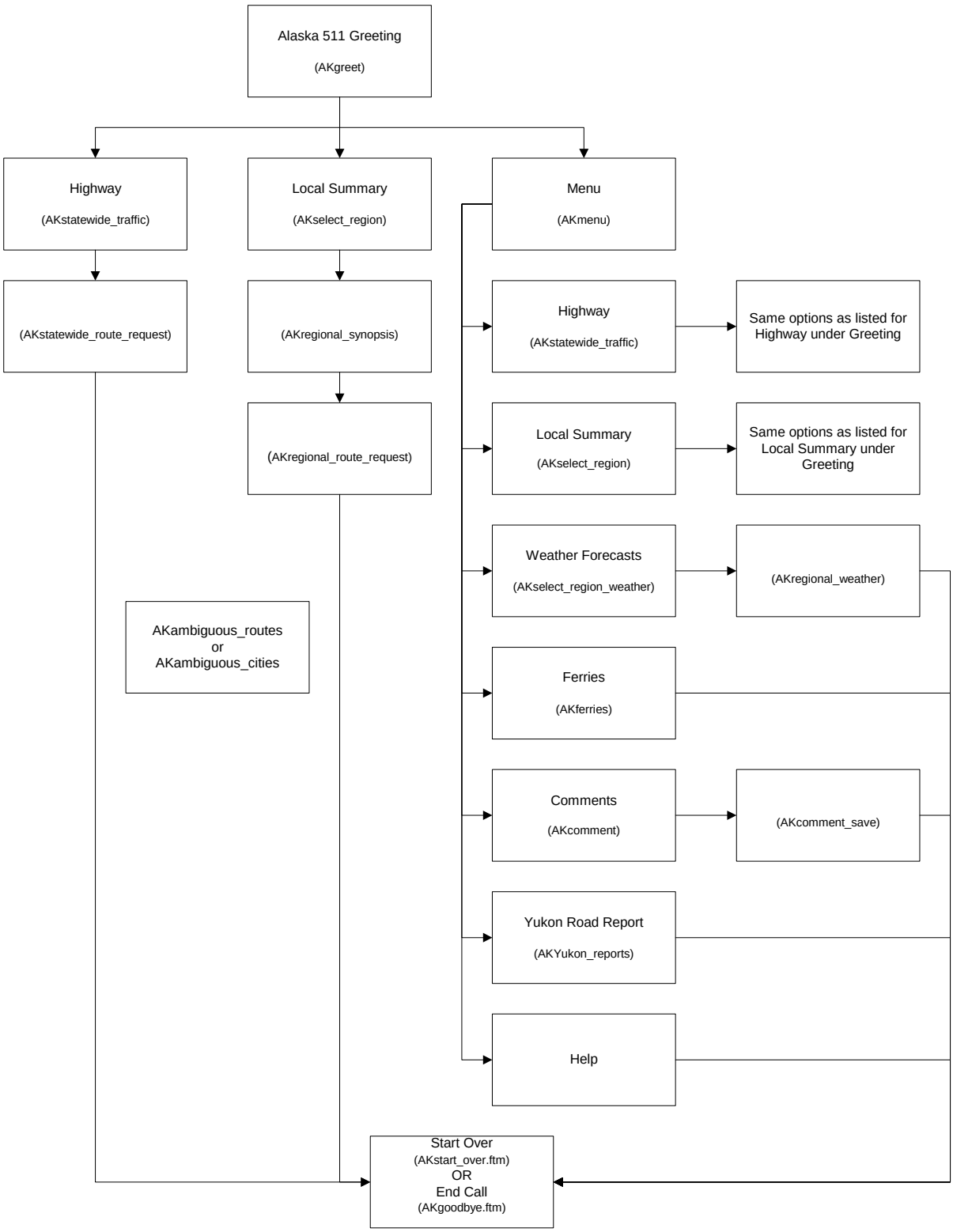

Figure 3-1: Current Alaska 511 Phone System

3.1. Calls per Month

The total number of calls recorded by Castle Rock Consultants in the data available from April 25, 2003 through May 1, 2005 was 137,381.

As shown in Figure 3-2, the monthly call volumes are the highest in winter with the peak months being December 2004 with 13,616 calls and December 2003 with 10,460 calls. It should be noted that these call volumes are lower than those reported by Castle Rock Consultants in the monthly logs sent to the 511 Deployment Coalition.

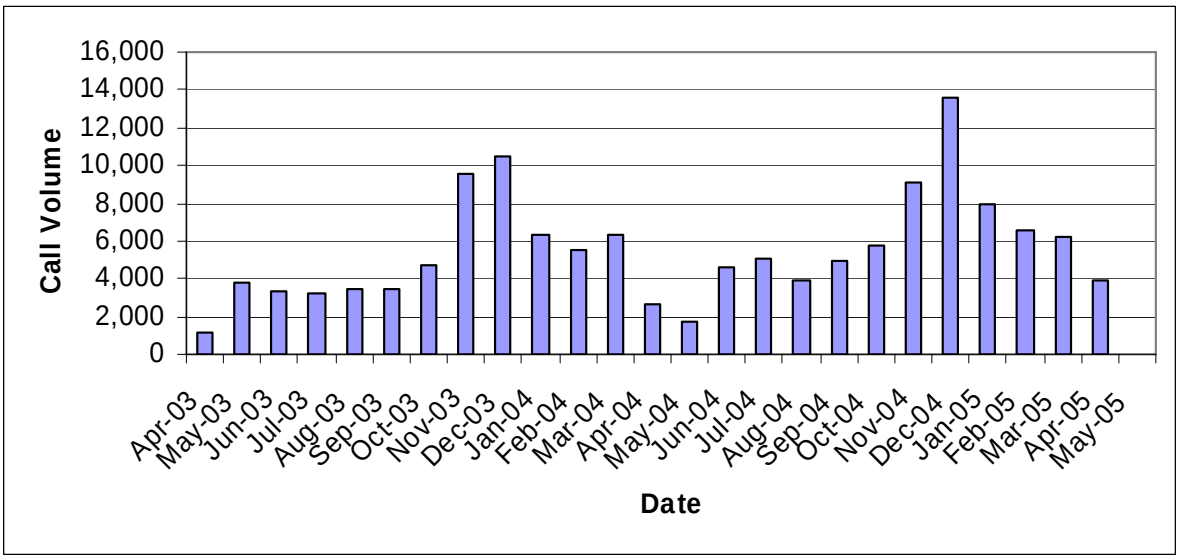

Figure 3-2: Calls per Month

3.2. Peak Calls

Peak days are Fridays with the largest volume day being December 24, 2004 with 2,306 calls. The reason for the peaks is the occurrence of winter storms.

Peak hours are between 8 and 11 am with the peak hour being 9 am with a total of 10,308 calls from April 25, 2003 through May 1, 2005 as shown in Figure 3-3. The average number of calls for 9 am is 14 as shown in Figure 3-4.

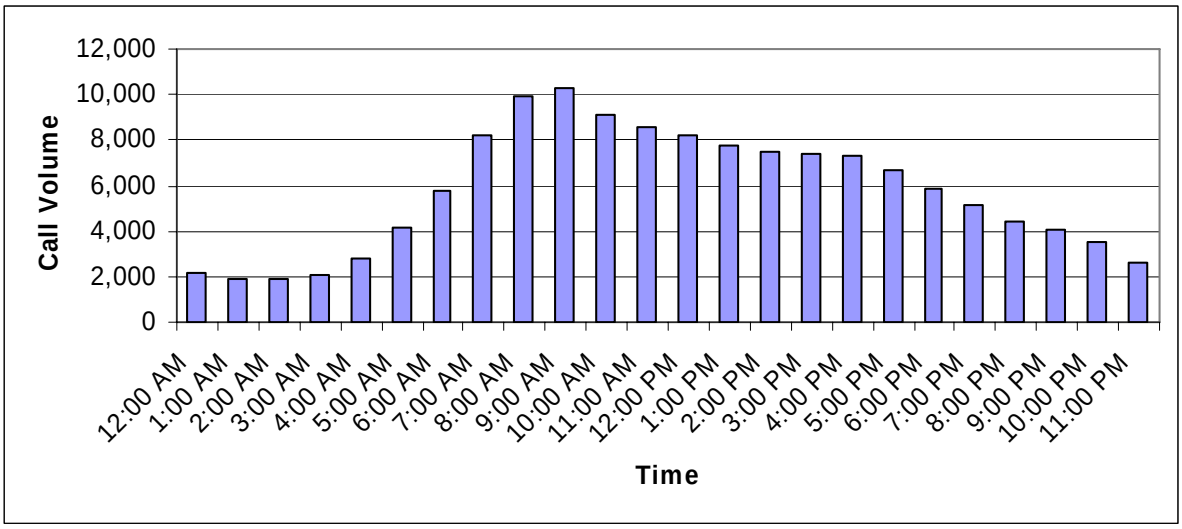

Figure 3-3: Total Hourly Call Volumes

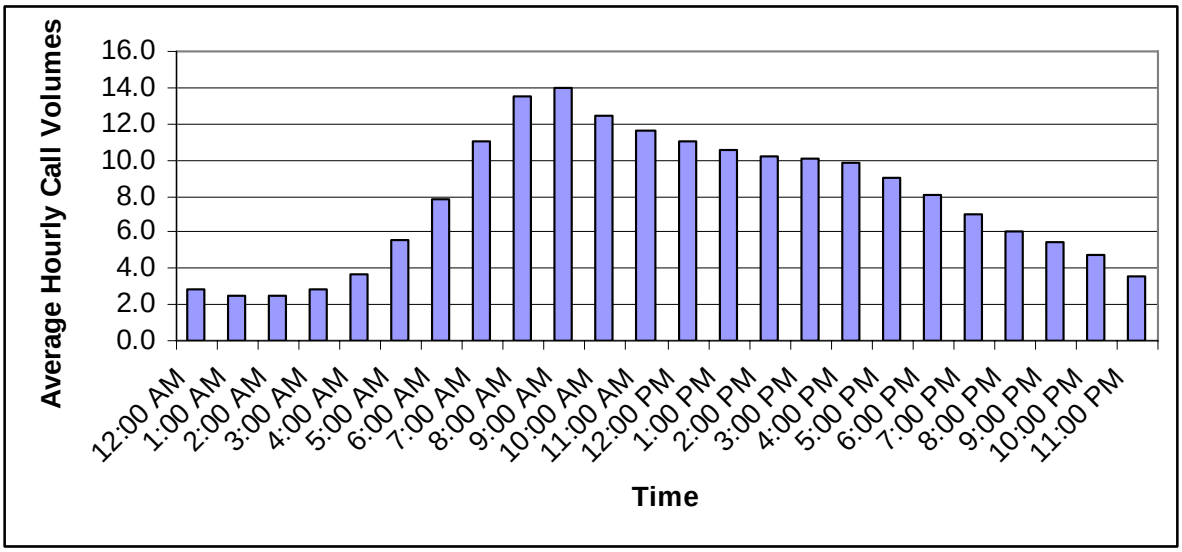

Figure 3-4: Average Hourly Call Volumes

3.3. Call Length/Total Call Time per Month

In two years, the calls to 511 have accrued 6,386 hours 52 minutes and 19 seconds of call time. The average call lasts 2 minutes and 47 seconds.

As shown in Figure 3-5, the total minutes per month, like the call volumes, are highest in the winter. December 2004 was the month with the greatest total call times (993 hours, 55 minutes,

and 21 seconds). The peak day was December 24, 2004 with a call time total of 180 hours, 58 minutes, and 12 seconds. This is not surprising as this is also the day with the largest call volume.

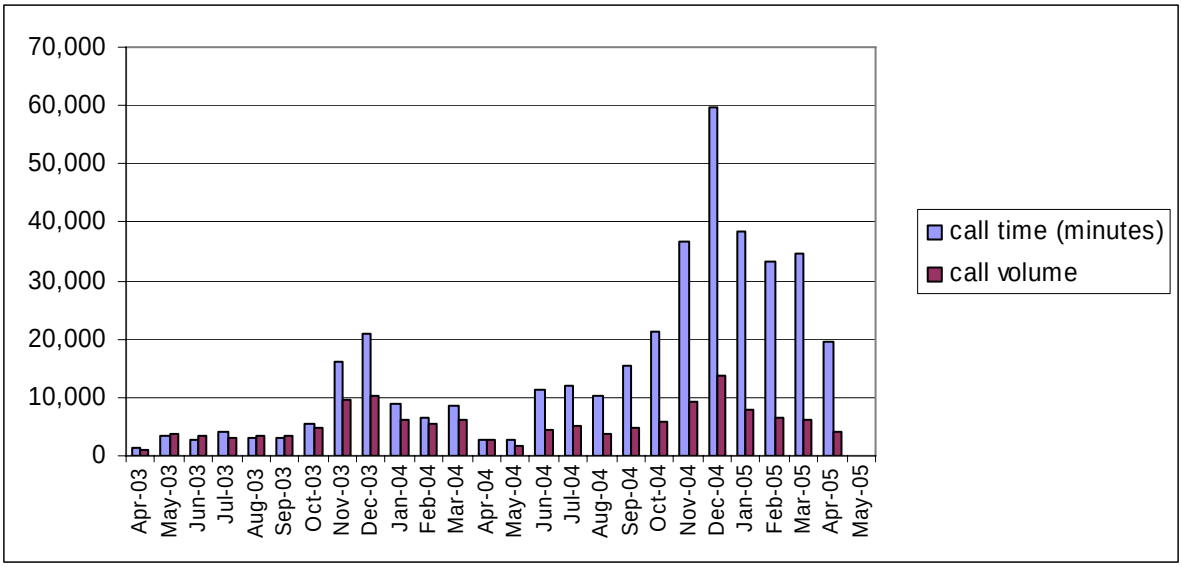

Figure 3-5: Call Time per Month versus Call Volume per Month

3.4. 511 Phone System Structural Options

Callers to the Alaska 511 phone system currently have the following options:

- Highway reports;
- Local regional summary/local regional route summary;
- Weather forecasts;
- Ferries;
- Comments on 511; and
- Yukon road report.

3.4.1. Percent Category of Phone Structural Options

The 511 Deployment Coalition is interested in what percentage of callers chose certain sections of the 511 system. As 511 systems in different states provide different categories of information, the 511 Deployment Coalition has chosen the following categories to be evaluated:

- Traffic;
- Transit;
- Weather;
- Construction;
- Ferry;
- Services;

- Road Conditions;
- No Selection;
- Airports;
- Bicycling;
- Commuter Incentives;
- Paratransit;
- Carpooling/vanpooling;
- Spare the Air; and
- Transfers.

Of these categories, the traffic and weather categories apply to Alaska. Note that although the road condition and construction categories also apply to Alaska, this information is provided in conjunction with the traffic information and therefore cannot be separated out.

In the past two years of service of the traffic and weather information requested, 91.4 percent was traffic and 8.6 percent was weather.

3.4.2. Ranking of Phone Structural Options

As the 511 phone system changed in October and November 2003, the structural options were evaluated separately prior to November 2003 and after November 2003. The rank for the original system options (i.e. prior to November 2003) are shown in. The rank for the current system structure (i.e. after November 2003) is shown in Table 3-1. The rank for the current system structure (i.e., after November 2003) is shown in Table 3-2. It can be seen that in both the original and current systems, the highway summary was the most used option followed by the local regional summary.

Table 3-1: Original Phone System Structure Options

Rank	Options
1	Highway summary
2	Local regional summary
3	Local regional route summary
4	Weather
5	Statewide urgent report
6	Statewide road weather
7	Ferry information
8	Comments
9	Regional urgent reports

Table 3-2: Current Phone System Structure Options

Rank	Options
1	Highway summary
2	Local regional summary
3	Weather forecasts
4	Local regional route summary
5	Ferry information
6	Comments
7	Yukon reports

3.4.3. City/Region and Highway/Route Requests

Several of the structural options above allow for callers to select either a city/region or highway/route for which to gather more information. There were 339 separate cities/regions requested. The top five for each category that allows a city/region to be chosen for are shown in Table 3-3. This shows that the top two cities for every category are Anchorage and Fairbanks. This makes sense as Anchorage is the most populated city in the state and Fairbanks is the third (following Juneau). There were also 229 separate highways/routes requested with the top five for each option possible shown in Table 3-4. The top route that was requested was the Seward Highway which is an American Byway that runs from Anchorage to Seward.

Table 3-3: Top Five Cities/Regions Requested

	Select region	Select region weather	Regional weather	Ambiguous cities
Anchorage	1	1	1	1
Fairbanks	2	2	2	2
Wasilla	3	3	3	
Soldotna	4	4		
Valdez	5			4
Tok				5
Palmer		5		3
Girdwood			4	
Glennallen			5	

Table 3-4: Top Five Highways/Routes Requested

	Regional synopsis	Regional route request	Statewide traffic	Statewide route request	Ambiguous routes
Seward Highway	1	2	1	1	1
Glenn Highway	2	1	3	4	3
Parks Highway	3	3	2	3	2
Richardson Highway	4	4	4	5	
Sterling Highway	5	5		2	4
Sterling Wye					5
Alaska Highway			5		

Sometimes a city that is requested by a caller sounds like two or more different options; therefore, the 511 system must supply the options to the caller and ask which of the different options the caller meant. This is logged as an "Ambiguous City." The same is true for the routes and they are logged as "Ambiguous Routes." There were almost 2,700 times that "Ambiguous Cities" were requested and almost 24,000 times that "Ambiguous Routes" were requested. Therefore there were almost nine times more "Ambiguous Routes" requested than cities.

4. PHONE CALL REPEAT USAGE STATISTICS

Phone numbers for callers to the 511 system were collected from Castle Rock Consultants and were analyzed for April 25, 2003 through May 1, 2005. As this information is confidential, the actual phone numbers will not show up in this report.

4.1. Number of Times Users Have Called 511

In the two years of data analyzed, the total number of phone calls recorded was 137,381. Of these phone calls, 52,924 were unique phone numbers or people who called 511 and 6861 were unknown phone numbers. A comparison between the number of total calls per month and the number of individual callers is shown in Figure 4-1. As can be seen in this graph, the calling trends are similar for both total call volumes and unique call volumes. It can also be seen that callers who use the system more than once a month tend to do so more in the winter months, with the peak month being December 2004 with an average call per phone number of 2.2.

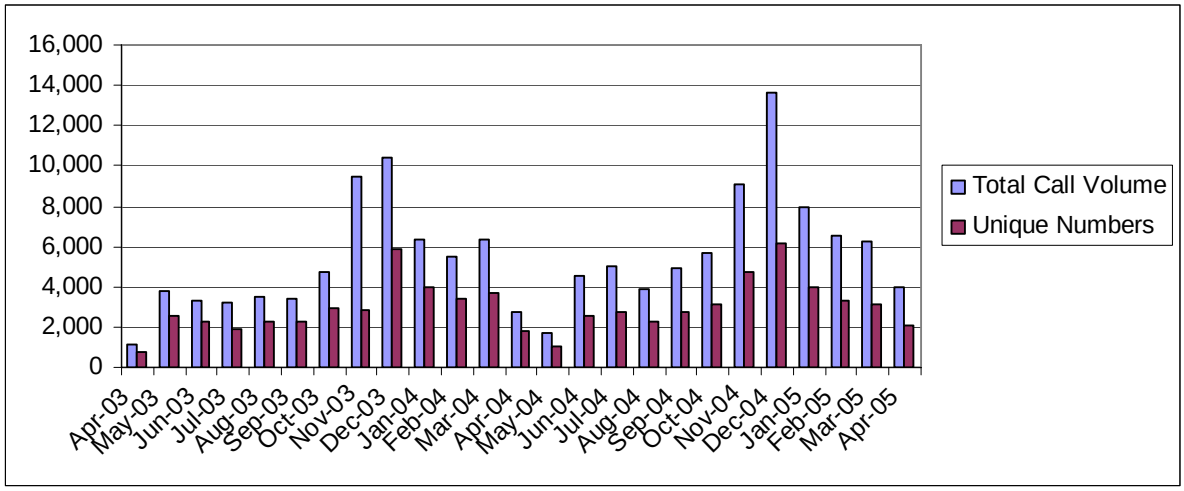

Figure 4-1: Total Calls versus Unique Numbers/Callers

The minimum number of times a person called 511 was once and the maximum number of times a person called 511 was 4,137. The average number of times a person called 511 was 2.5. As shown in Figure 4-2, most callers (61 percent) have only used 511 once, while 18 percent have called twice, 8 percent have called three times, and 13 percent have called more than three times.

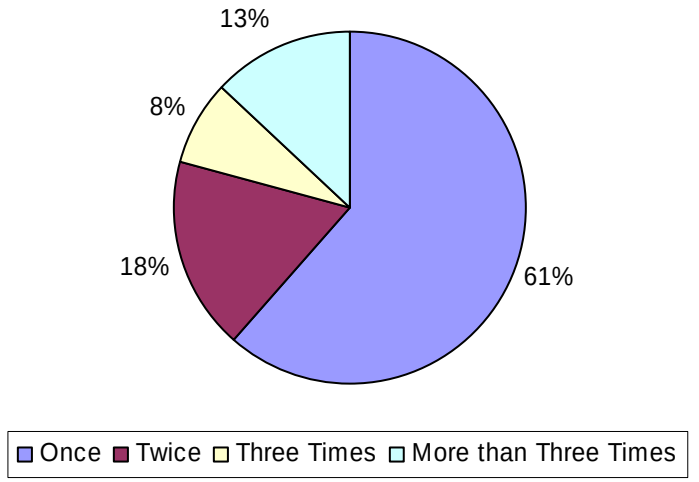

Figure 4-2: Number of Times Users Have Called 511

4.2. In-State versus Out-of-State Calls

Calls to the 511 system have come from phone numbers registered in 45 of the 50 states (i.e. all except South Dakota, West Virginia, Delaware, Rhode Island, and Hawaii); three of the 13 Canadian Provinces (British Columbia, Northwest Territory, and Quebec); the District of Columbia; and the Virgin Islands. Nearly all calls (99.9 percent) have come from the United States. As shown in Figure 4-3, the vast majority (94.5 percent) of all calls are Alaskans, leaving only 5.5 percent of calls from tourists. The calls from tourists most frequently originate from phones registered to people from Colorado (4.4 percent).

4.3. Calls within Alaska

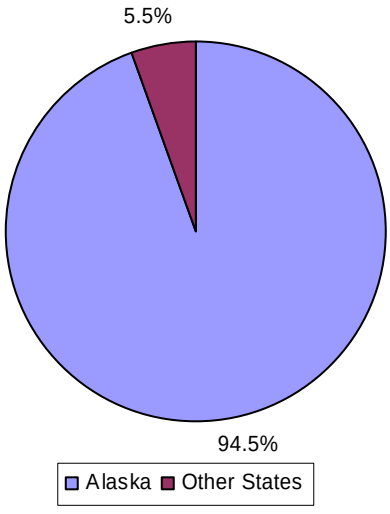

Figure 4-3: Callers by Location

Of the 137,381 calls to the 511 system, 123,300 have been from phones registered to Alaska residents. There have been 52,233 unique callers (phone numbers) to the 511 system or eight percent of the population. There have been callers from 187 different towns or cities in Alaska. As can be seen in Figure 4.4, the greatest number of callers (38 percent) are from Anchorage, the largest city in Alaska with population of 260,283; 33 percent are from cities and towns (182 different ones); 13 percent are from Fairbanks, the second largest city in Alaska with a population of 30,224; six percent are from Wasilla with a population of 5,469; five percent are from Soldotna with a population of 3,759, and five percent are from Juneau with a population of 30,711 (2).

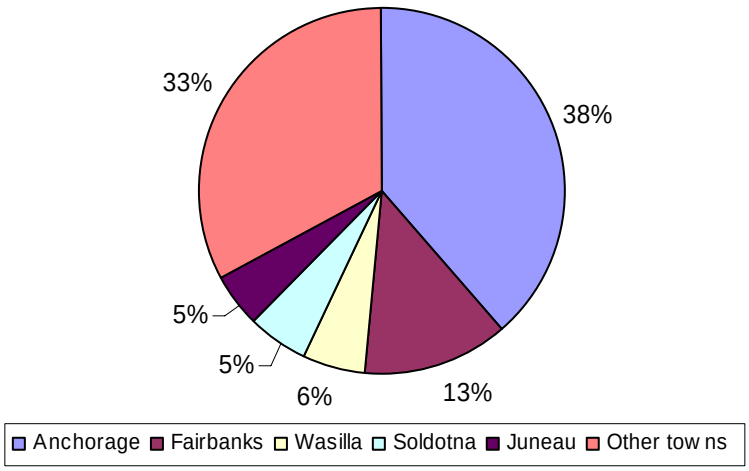

Figure 4-4: Locations of In-state Calls

4.4. Wireless versus Landline

An analysis of whether 511 calls were wireless or landline was done on the Alaska calls only; therefore, a set of 123,300 calls. As can be seen in Figure 4-5, 84 percent of the calls were made using landline services, while 16 percent were made using wireless phones. There were nine different wireless companies used in Alaska with the largest number of calls coming from ACS Wireless (49 percent) and Dobson Cellular Systems (46 percent). There were 24 separate landline companies, with the greatest number of the calls coming from ACS of Anchorage subscribers (35 percent).

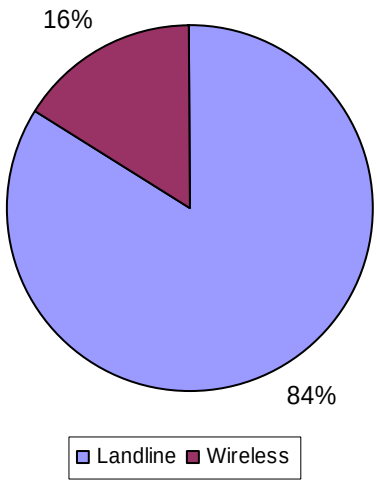

Figure 4-5: Wireless versus Landline Callers in Alaska

5. 511 WEB SITE USAGE STATISTICS

Along with the deployment of Alaska's 511 phone system, a web site (511.alaska.gov) was deployed. Although the 511 phone data starts in April 2003 when the system was deployed, the web site data does not begin until July 2003. While the web site was working prior to July 2003, it was still in its beginning phase and changes were being made to the system as challenges arose. July 2003 was chosen as the start of the data collection because it marks the time when marketing of the system began.

Along with the 511.alaska.gov web site that the Alaska Department of Transportation and Public Facilities provides to the public, there are at least three other web sites that provide this information by customizing the 511.alaska.gov information. These web sites include:

- http://www.homeronline.addr.com/kpo/rehearsal.php;
- http://www.kenaipeninsula.org/Road_Conditions.asp; and
- http://www.ktuu.com/alaska_traffic_report/index.asp.

Data was not provided by the consultant for the following dates; therefore, these were not included in this evaluation:

- the first 22 hours of July 2003;
- December 31, 2003;
- February 1-2, 2004;
- February 15-28, 2004;
- March 1-23, 2004;
- March 29-31, 2004; and
- April 1-7, 2004.

5.1. Web Hits per Month

The total number of web hits recorded by Castle Rock Consultants from July 1, 2003 through April 29, 2005 was 4,168,621.

As shown in Figure 5-1, the monthly web hits are the highest in winter with the peak month being November 2003 with 719,150 hits. The difference in web hit volumes between 2003 and 2004 may be due to a web site monitor that was set-up to record to the wrong place and therefore recorded additional web hits that do not exist (3).

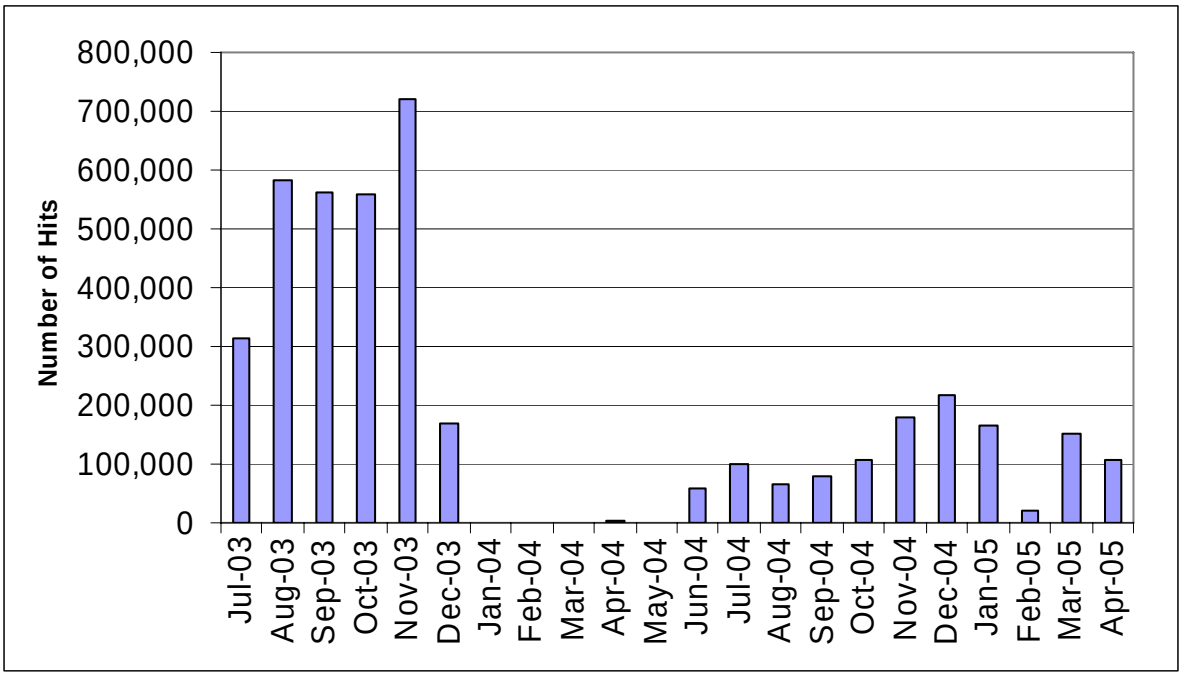

Figure 5-1: Web Hits per Month

Comparison of phone calls and web hits shows that there are more web hits per month than phone calls and can be seen in Figure 5-2 (note that the web hits are actually a factor of ten larger than depicted in the chart).

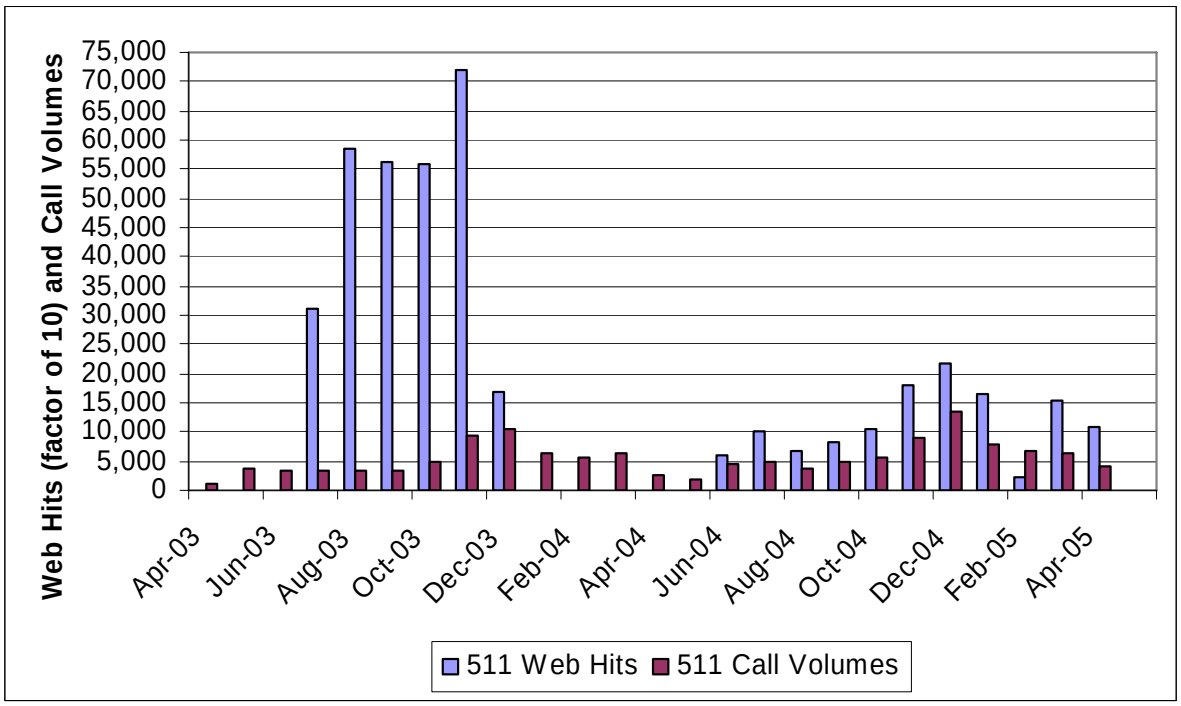

Figure 5-2: Comparison of 511 Web Hits and Phone Calls per Month

5.2. Peak Web Hits

The minimum number of web hits in a day was zero with the maximum being 29,646. The average number of web hits in a day are 6,756. The five days with the greatest number of web hits are shown in Table 5-1. Note that they are all in November, a winter month, although the top one is in 2004 and the others are in 2003.

Table 5-1: Peak Web Hit Dates

Date	Web Hits
November 3, 2004	29,646
November 21, 2003	28,038
November 12, 2003	26,767
November 24, 2003	26,445
November 6, 2003	25,871

As shown in Figure 5-3, peak days for accessing the 511 web site are Fridays with a total of 626,209 web hits. As shown in Figure 5-4, the peak hour for web hits is 2 pm with 213,702 web hits. The next peak is from 8 to 9 am with 211,252 and 211,823 web hits respectively.

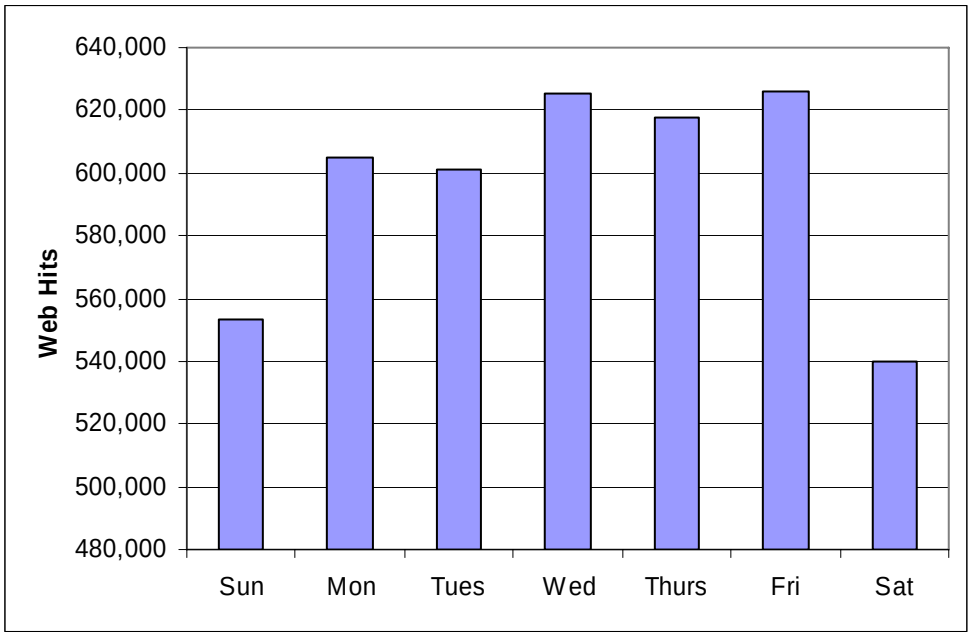

Figure 5-3: Web Hits by Day of Week

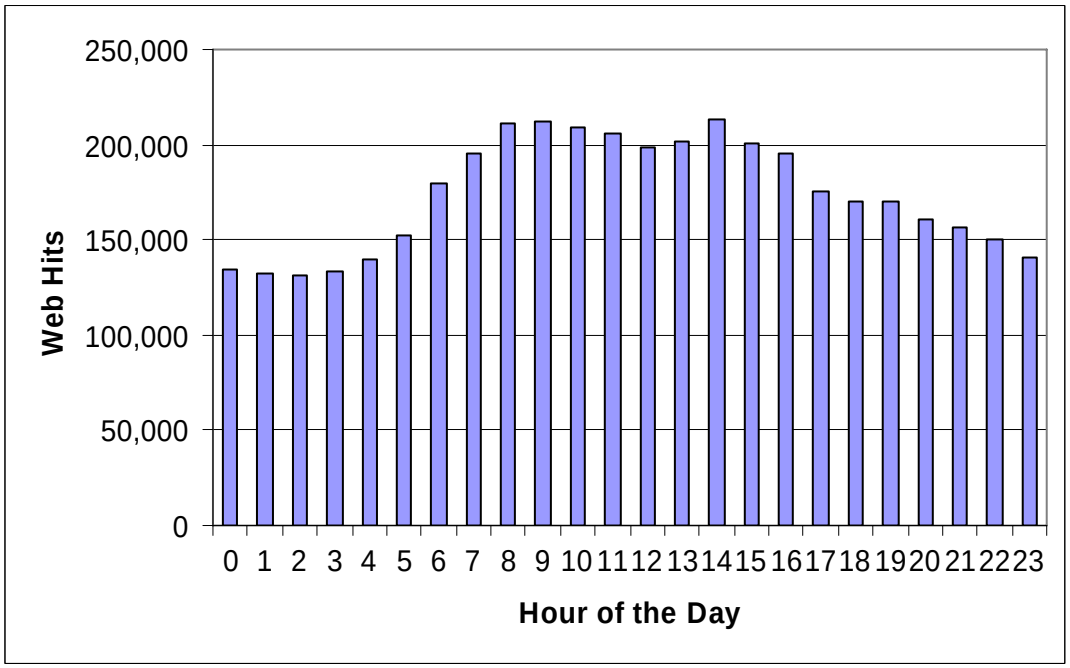

Figure 5-4: Web Hits by Hour

5.3. Referring Site

This information indicates which other sites people used prior to the 511.Alaska.gov web site. Of the web sites whose links are active, there were 403 unique web sites that were used prior to the 511 web site. The consultants' web site, Alaska 511 web site, and Alaska DOT web site were included in this number. As shown in Figure 5-5, return hits from the Alaska 511 web site were the greatest at 75 percent. Hits referred from the Alaska DOT site were ten percent and links that no longer worked comprised one percent. Sites other than these made up 14 percent of referrals and will be further examined.

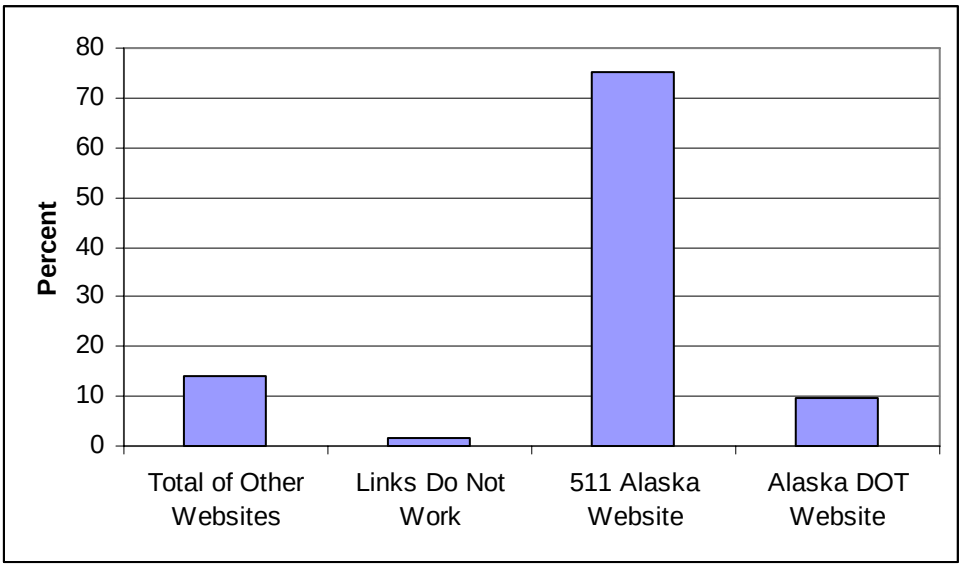

Figure 5-5: Referring Web Sites

The 14 percent of other referring sites were sorted into the following categories to evaluate what types of sites were used prior to the Alaska 511 site:

- schools/colleges,
- local/tribal government,
- state/provincial government,
- federal government,
- e-mail,
- forums/discussion boards,
- weather,
- media,
- search engine,
- 511 national web sites,
- visitors bureaus,
- transportation,
- tourism,

- telephone companies, and
- other.

As shown in Figure 5-6, most of the referring site hits came from media sites (36 percent) and search engines (33 percent). There was an average of 159 hits per web site. The sites with the most hits included the Anchorage Daily News with 17,039 and Google search engine with 12,228.

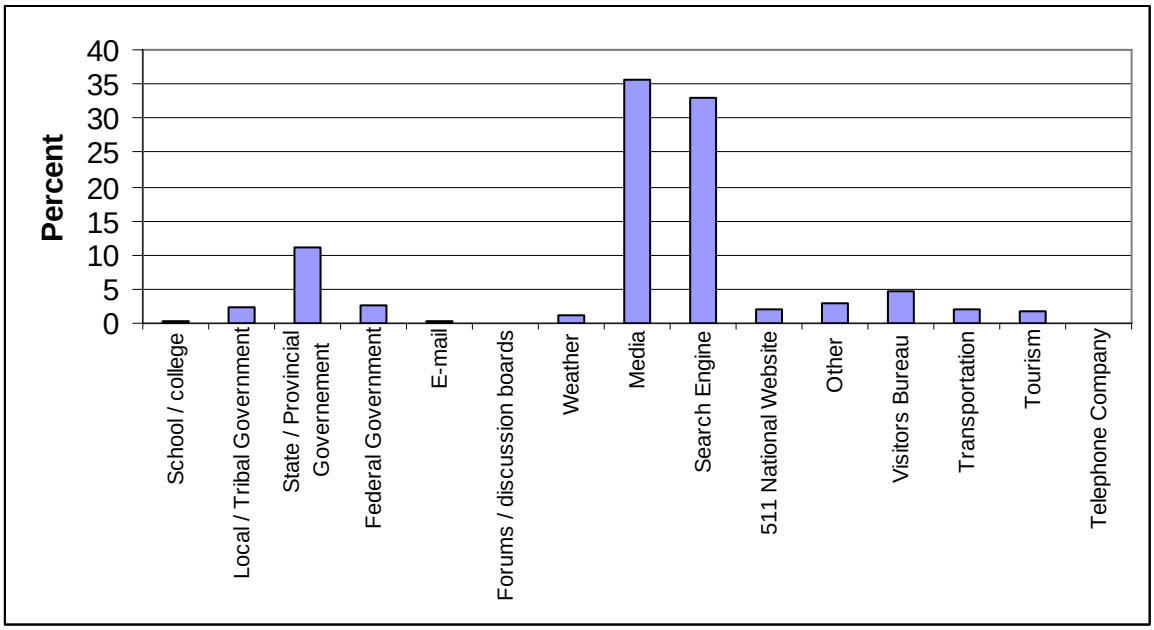

Figure 5-6: Further Evaluation of the Referring Sites

5.4. 511 Web Site Structural Options

511.Alaska.gov users have the following options:

- Urgent reports;
- Driving conditions;
- Route summary;
- Regional summary;
- Roadwork;
- All reports;
- NWS Forecast;
- Ferries;
- Cameras;
- Weight Restrictions;
- Other Travel Information;
- Help and comments; and
- About 511.

The “All Reports” and “Regional Summary” options were added in January 2005. Testing of the system was done from July 2003 to December 2003.

5.4.1. Ranking of Web Structural Options

As shown in Table 5-2, after the home page, “Driving Conditions”, “Urgent Reports”, and “Ferries” were the information most requested by visitors to the website. The fact that “All Reports” and “Regional Summary” were in the bottom of the ranking makes sense, seeing as these options were only available for four of the 22 months of this evaluation.

Table 5-2: Rank of Web Page Options

Option	Rank
Home page	1
Driving conditions	2
Urgent reports	3
Ferries	4
NWS forecast	5
Route summary	6
Roadwork	7
All reports	8
Help and comments	9
Regional summary	10

5.4.2. Web Site Icons

The “Urgent Reports”, “Driving Conditions”, “Roadwork”, “All Reports”, “NWS Forecast”, and “Ferry” pages all have icons that can be accessed to find out more information about conditions. The highway icons (consisting of all listed above except the ferry) were chosen the most (199,748 times). An example of highway icons are the accident, alert, and closure icons on the Urgent Reports page. The RWIS icons on the driving conditions page were accessed 37,010 times. Lastly, the ferry icons were accessed 6,001 times. It should be noted that icons do not need to be pressed in order to obtain additional information on the conditions. Holding the mouse over the icon will also bring up a pop-up box which provides more information on the condition. This shows that these numbers do not indicate the number of people who received the information, but the number of people who clicked on the icons to get the information.

5.4.3. Web Site Peaks

As one would expect, the hits to the home, “NWS Forecast”, “Driving Conditions”, “Route Summary”, and “Urgent Report” pages peak in the wintertime. The hits to the “Ferries” and “Roadwork” pages peak in the seasons other than winter.

5.4.4. Web Site Regions Requested

Each of the informational options on the web allow for users to choose a view of the state. The "Regional Summary" reports have the following options:

- Matsu/Anchorage/Kenai;
- East central;
- West central;
- Northern;
- Southeast; and
- South central.

Of the "Regional Summary" reports that were requested since deployment in January 2005, 186 users chose the Matsu view, 109 chose the Northern view, and 857 were unknown.

The top five view choices for the "Urgent Reports", "Driving Conditions", "NWS Forecasts", "Roadwork", "All Reports", and "Ferries" are shown in Table 5-3. Other than "Urgent Reports", the location view that is chosen the most is statewide. This is to be expected as all pages default to statewide. Anchorage is the second most used view. This is also expected as Anchorage is the city with the greatest population in Alaska. For the "Route Summary" page, the greatest number of hits was unknown; however, the top locations chosen were Anchorage, followed by Fairbanks.

Table 5-3: Top Three Regions for Information Requested

PageName						
Statewide	2	1	1	1	1	1
Anchorage	1	2	2	2	2	
Aleutian AK						3
Kenai Peninsula	3	3	5	4	3	
South Central AK	4	4	4	3	4	
Inside Passage AK						2
Unknown			3	5		4
Fairbanks	5	5				
North Central AK					5	
Southeast AK						5

6. CONCLUSIONS

The analysis led to statistical conclusions for the 511 phone and web systems, data needs, and potential future research.

6.1. Statistical Conclusions

This analysis led to the following conclusions:

- The total number of phone calls from April 25, 2003 to May 1, 2005 was over 135,000. Call volumes are highest in the winter with December 2004 and specifically December 24, 2004 being the peak. Peak days are Fridays with peaks times from 8 to 11 am with 9 am being the peak;

- Since deployment, over 6,300 hours of call time have accrued with the average call lasting 2 minutes and 47 seconds. December 24, 2005 was also the peak for call time;

- The information requested is 91.4 percent traffic and 8.6 percent weather. In both the original and current systems, the highway summary is used most followed by the local regional summary. Information has been requested for 339 separate cities/regions with Anchorage and Fairbanks being the top two. Information was also requested for 229 separate highways/routes, with the Seward Highway being the top requested. Ambiguous routes occur nine times more than ambiguous cities;

- There were almost 53,000 unique callers to the Alaska 511 system. Most callers (61 percent) had only used 511 once and the average number of times someone called 511 was 2.5. Although 94.5 percent of callers were from Alaska, there were callers with phone registered to 45 of the 50 states, three Canadian Provinces, the District of Columbia, and the Virgin Islands. Eight percent of Alaska's population has tried 511 and callers have been from 187 different towns/cities in Alaska with the greatest number (38 percent) from Anchorage;

- Eighty four percent of Alaskan calls were made using a landline phone with the greatest number being ACS of Anchorage subscribers;

- The total number of web hits from July 1, 2003 to April 29, 2005 was over 4,150,000. Web hits are highest in the winter with the peak being November 2003 although the peak day was November 3, 2004. The average number of web hits in a day are 6,756. Peak days are Fridays like the phone; however the peak hours are 2 pm and 8 to 9 am;

- Of the sites that people used prior to accessing 511.Alaska.gov, return hits from this site were the greatest (75 percent). Of the sites that work and are not Alaska 511 or Alaska DOT, the greatest number of hits were from media sites (36 percent) and search engines (33 percent) with the most hits from the Anchorage Daily News and the Google search engine;

- After the home page, "Driving Conditions," "Urgent Reports," and "Ferries" were the most sought after information. Hits to the home page, "NWS Forecast", "Driving Conditions", "Route Summary", and "Urgent Report" pages peak in the wintertime, while hits to the "Ferries" and "Roadwork" pages peak in the seasons other than winter; and

- "Regional Summary" reports were requested the most for the Matsu area. Views chosen the most for the "Urgent Reports," "Driving Conditions," "NWS Forecast," "Roadwork," "All Reports," and "Ferries" were statewide (the default) and then Anchorage. The top locations chosen for "Route Summaries" were Anchorage and Fairbanks.

6.2. Data Needs

From an analysis standpoint, the research team found that the records from 511 phone calls and the log files from 511 web site usage were not intuitive to use. These records and log files are transparent to users of the 511 system, and customer satisfaction should not be adversely affected by this. However, if the department is interested in ongoing monitoring and evaluation of 511 usage, it would be very helpful for the structure of data files to be converted so as to be easier to use.

For the phone data, the research team found the EV field to have a wealth of information regarding how a caller used the system. In fact, there is probably too much information in this field. Sometimes, an EV field will list a sequence of a couple of dozen locations or highways, where it appears the user is listening to a list before selecting the right one. This data may be interesting from some levels, but it is difficult to analyze. Breaking up the EV field into several fields would facilitate analysis. These could include factors such as:

- Whether voice or keypad entry was used for selecting the next menu choice;
- What was the location selected; and
- Were there any errors in the system comprehending the user's voice.

It took considerable effort to subdivide the SID field as well. While the code has periods separating different portions of this number (similar to the structure of an IP address), it was difficult to automatically code this. Dividing this into separate components would also facilitate analysis.

For the web data, the web site's URL addresses are simple and easy to follow, and Analog is a convenient tool for extracting web site usage information from log files. However, given the structure of URL addresses used on the Alaska web site, the ability to preserve information on specific pages and locations accessed by the user is compromised by Analog. If this information is deemed valuable, it would be worth exploring how the web site's URL addresses or the method of extracting web site usage from the log files could be improved to remove the need for manual adjustments.

6.3. Future Research

It was identified that there is a need for future evaluation of the Alaska 511 phone and web systems for the following reasons:

- More data would provide better information as to which phone and web options users truly prefer;
- With more data, a correlation to marketing may also be able to be drawn;
- As the "All Reports" and "Regional Summaries" were just added to the web site and the "Yukon reports" were just added to the phone system a few months prior to data being collected for this study, additional data for these options would allow a true comparison of these options to the other options;
- Problems with missing web data and issues with improper logging that adversely affected the web hit numbers for the first few months have made it difficult to see a clear trend in web hits. Evaluation in the future when more data is available may show more trends;
- The phone and web data that is currently available also indicates that the "normal" usage levels for both systems were just becoming apparent. A future evaluation will be able to better define what normal usage of this system is; and
- Documentation of all changes and dates changes were made to web and phone including additions and deletions of structural changes, data logging changes, and locations would be useful and help better explain trends in future evaluations.

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3. Email from William Davidson, Castle Rock Consultants. June 16, 2005.