Warren Reeder
MBA 614
4/19/2011

Final Project: Web Analytics Dashboard

Executive Summary

Recently, I worked on an internet marketing consulting project for a veterinary hospital. The animal clinic's goal for its website was to generate leads via a phone call. Consulting efforts included setting up accounts in Google Voice, Google Analytics, and Google AdWords. In order to quickly allow the veterinary hospital see the business contribution of the website, I created a VBA web analytics dashboard.

The dashboard aims to show at a glance three key metrics to making internet marketing decisions: traffic, conversion rate, and average order value. To do this the VBA dashboard requires that the user first completes the following information: Google account email, Google login password, and a date range. After this the user clicks the "View Dashboard" form button to initialize data collection and dashboard creation.

- To pull total traffic data, the VBA dashboard navigates to Google Analytics, logs-in, sets the appropriate date range, then pulls visits data and copies it to a new worksheet in the Excel file. This information then displays in the dashboard.
- To pull traffic data and costs relating to paid search, the VBA dashboard navigates to Google AdWords, logs-in, sets the appropriate date range, then pulls click data and cost data, which are copied to the Excel file. This information then displays in the dashboard.
- To pull conversion data, the VBA dashboard navigates to Google Voice, logs-in, prints to a new worksheet all the phone calls and corresponding dates that fall within the appropriate date range. The amount of phone calls, or conversions, then displays in the dashboard.
- Conversion rate is calculated using the conversion and traffic data.
- In order to determine average order value, the VBA dashboard allows a user to manually enter data from the hospital's records regarding services purchased by individuals who called the Google Voice # listed on the website; once this data is entered, total website revenue and average order value are automatically calculated and appear in the dashboard.

Once a dashboard has been generated, a "Save Report" form button is present. When clicked this button saves a copy of the dashboard report with the appropriate date range included in the file name.

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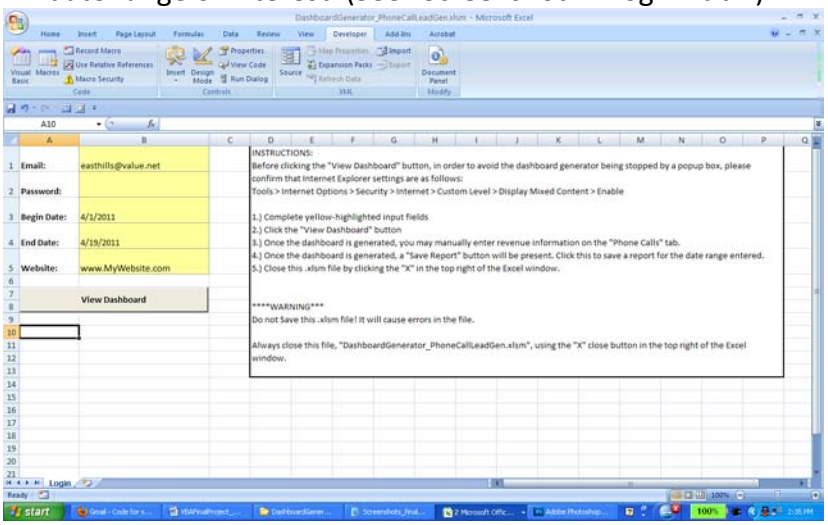
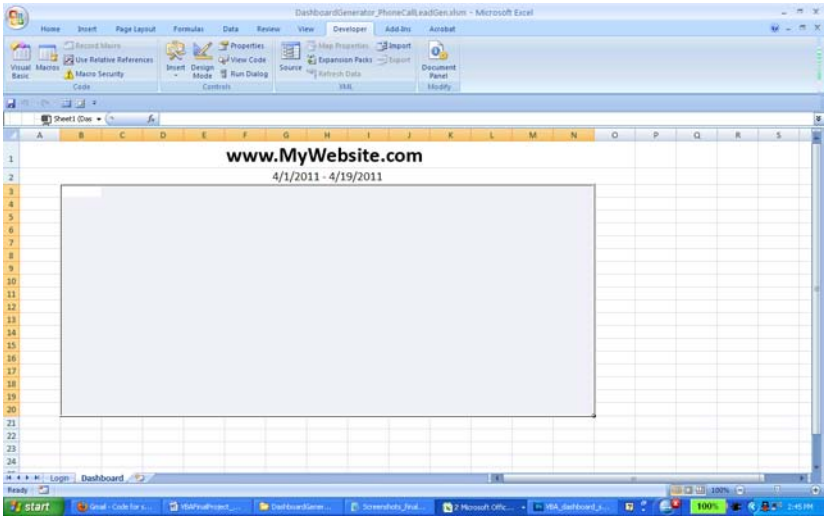
Implementation Documentation

Provide a concise, well-organized documentation of what you actually did for your solution. You may want to use tables or bulleted lists to describe the components of your solution and their role in the overall task. In any case, you should provide a textual description of the elements so it is clear what you have done, why it was included, how it is intended to be used in the task. Screen captures may be helpful in illustrating what you have done.

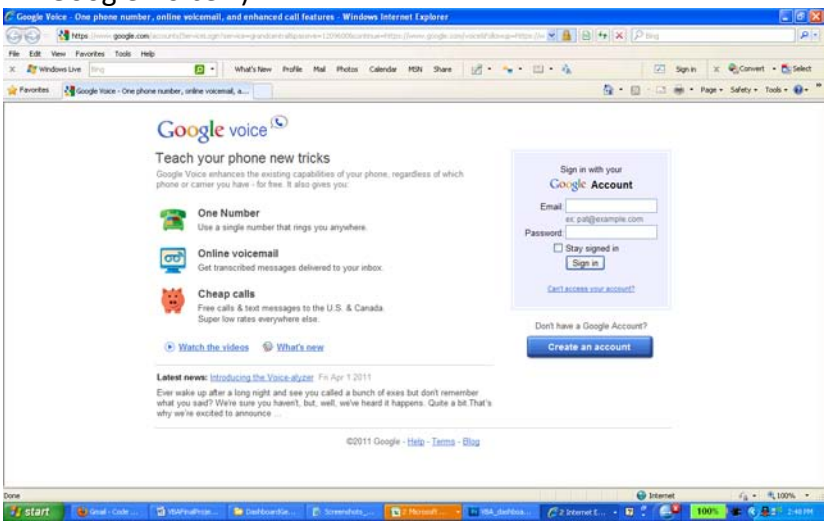
- Created Login tab to collect information
  - This worksheet was included to obtain the necessary information required to run reports. It is intended to be the starting point for generating a dashboard for a date range of interest. (See "Screenshot A: Login Tab".)



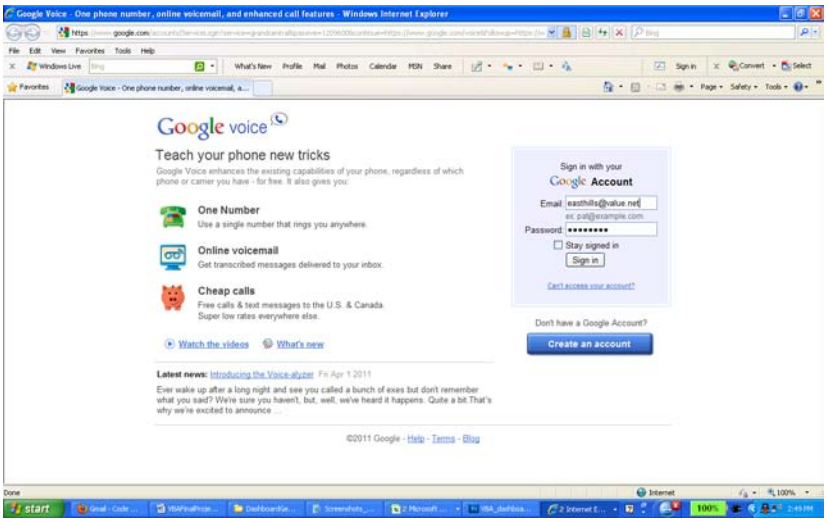
- Set Option Explicit and defined 25 global variables
  - Option explicit was included in order to properly define all variables used.
  - The 25 global variables are used to pass information in multiple sub procedures.
- Created initializeDashboard sub procedure and View Dashboard form button
  - This sub procedure was included in order to launch the dashboard program and control the order in which all other sub procedures execute.
  - This sub procedure is linked to the View Dashboard form button. The button is intended to be the starting button for running a new dashboard. (See "Screenshot A: Login Tab".)
  - Creates a "Dashboard" tab with a section of the screen formatted as the dashboard background. (See "Screenshot B: Dashboard Tab Creation".)



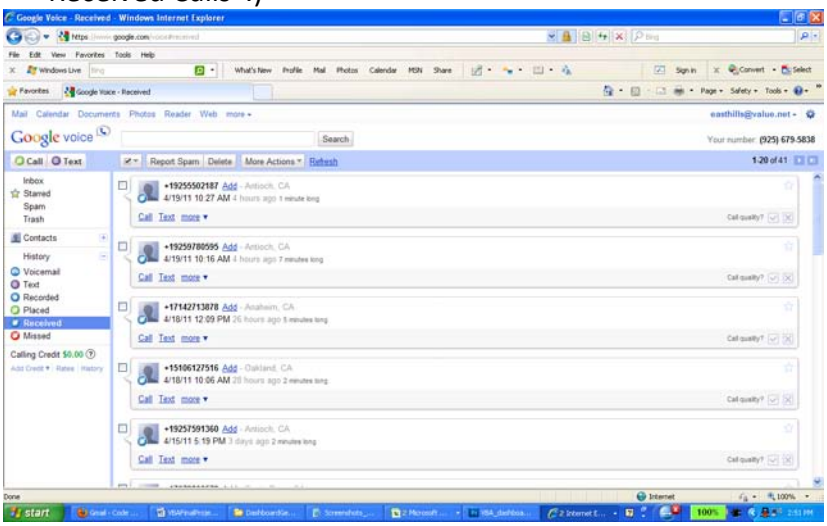
- Created getGVoiceData sub procedure
  - This sub procedure does the following:
    - Navigates to the Google Voice website (See "Screenshot C: Navigating to Google Voice".)



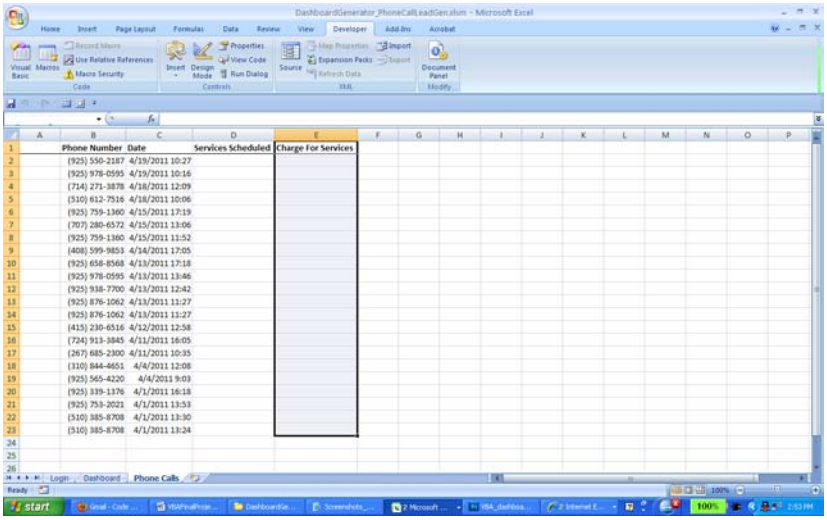
    - Enters login email and password and clicks to login (See "Screenshot D: Google Voice Login".)



- Navigates to the Received Calls page (See “Screenshot E: Google Voice Received Calls”.)



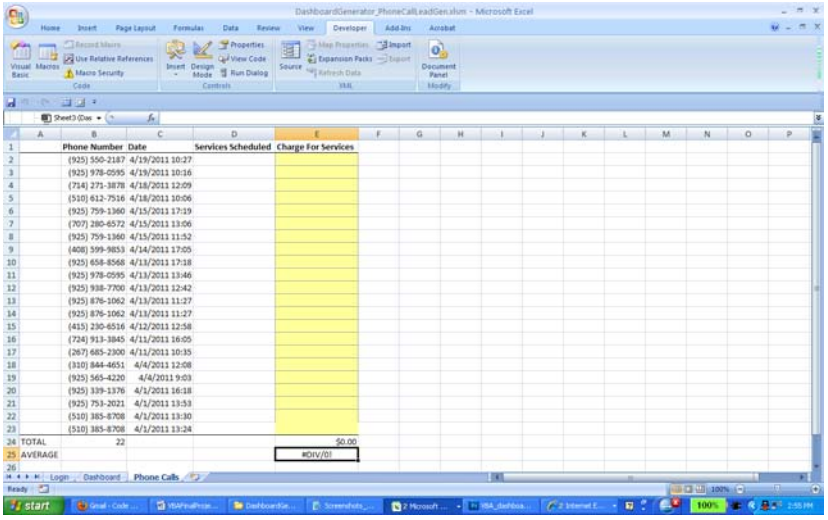
- Creates new “Phone Calls” worksheet
- Utilizes a Do While Loop and If statements to collect and print to a worksheet all the phone numbers (and corresponding dates) that fall within the desired date range. (See “Screenshot F: Phone Calls Tab Creation”.)



	Phone Number	Date	Services Scheduled	Charge For Services
2	(925) 550-2187	4/19/2011 10:27		
3	(925) 978-0595	4/19/2011 10:16		
4	(714) 271-3878	4/18/2011 12:09		
5	(510) 612-7516	4/18/2011 10:06		
6	(925) 759-1360	4/15/2011 17:19		
7	(707) 280-6572	4/15/2011 13:06		
8	(925) 759-1360	4/15/2011 11:52		
9	(408) 599-9853	4/14/2011 17:05		
10	(925) 658-8568	4/13/2011 17:18		
11	(925) 978-0595	4/13/2011 13:46		
12	(925) 938-7700	4/13/2011 12:42		
13	(925) 876-1062	4/13/2011 11:27		
14	(925) 876-1062	4/13/2011 11:27		
15	(415) 230-6516	4/12/2011 12:58		
16	(724) 913-3845	4/11/2011 16:05		
17	(267) 685-2300	4/11/2011 10:35		
18	(310) 844-4651	4/4/2011 12:08		
19	(925) 565-4220	4/4/2011 9:03		
20	(925) 339-1376	4/1/2011 16:18		
21	(925) 753-2021	4/1/2011 13:53		
22	(510) 385-8708	4/1/2011 13:30		
23	(510) 385-8708	4/1/2011 13:24		

- Signs out of Google Voice

- Created GVoiceChart sub procedure
  - Includes 15 variables
  - Formats call data on worksheet
  - Counts # calls within date range
  - Highlights “Charge for Services” cells in yellow to indicate they are input cells. Formats these cells as currency. (See “Screenshot G: Phone Calls Tab Formatting”.)



	Phone Number	Date	Services Scheduled	Charge For Services
2	(925) 550-2187	4/19/2011 10:27		
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4	(714) 271-3878	4/18/2011 12:09		
5	(510) 612-7516	4/18/2011 10:06		
6	(925) 759-1360	4/15/2011 17:19		
7	(707) 280-6572	4/15/2011 13:06		
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10	(925) 658-8568	4/13/2011 17:18		
11	(925) 978-0595	4/13/2011 13:46		
12	(925) 938-7700	4/13/2011 12:42		
13	(925) 876-1062	4/13/2011 11:27		
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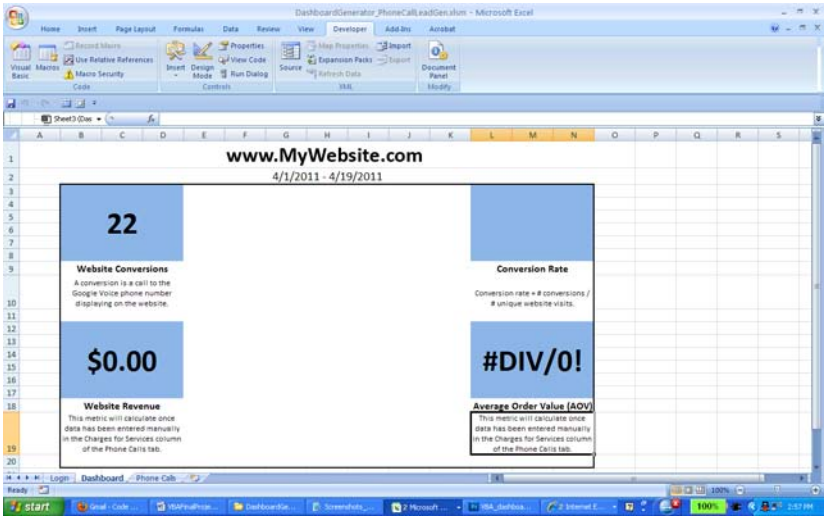
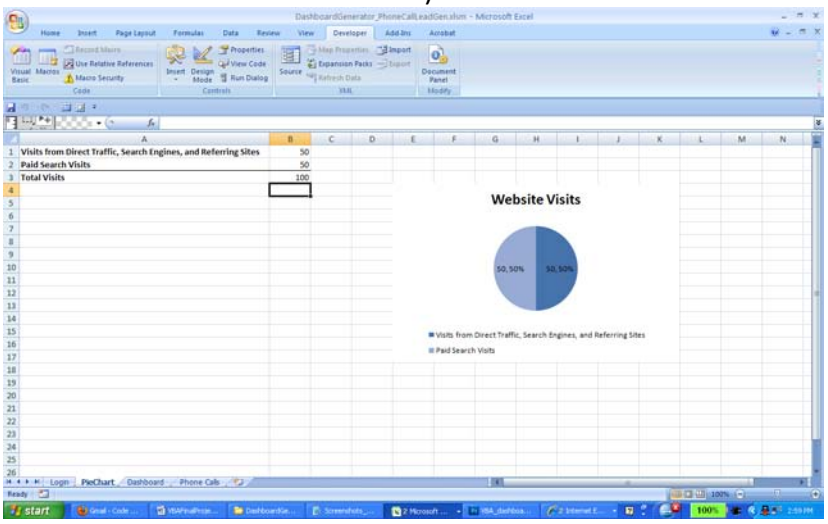
19	(925) 565-4220	4/4/2011 9:03		
20	(925) 339-1376	4/1/2011 16:18		
21	(925) 753-2021	4/1/2011 13:53		
22	(510) 385-8708	4/1/2011 13:30		
23	(510) 385-8708	4/1/2011 13:24		
24	TOTAL	22		$0.00
25	AVERAGE			#DIV/0!

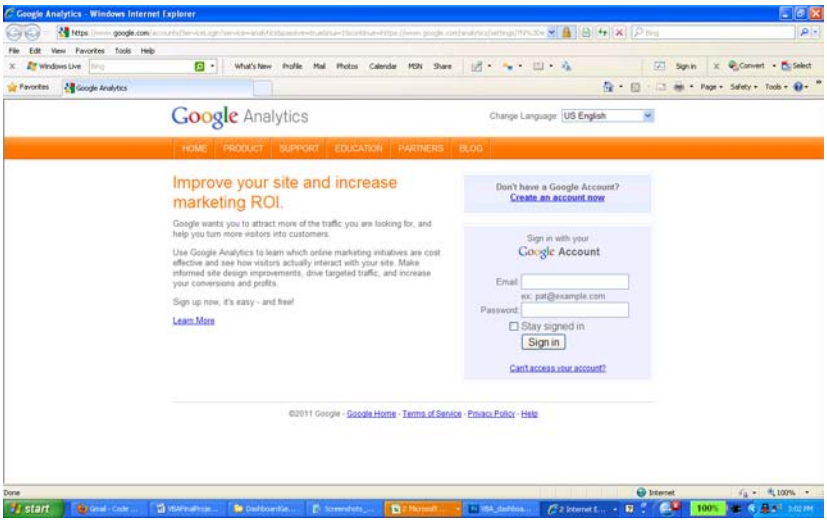
  - Enters data in a visual manner on the Dashboard tab (See “Screenshot H: Google Voice Data Added to Dashboard”.)



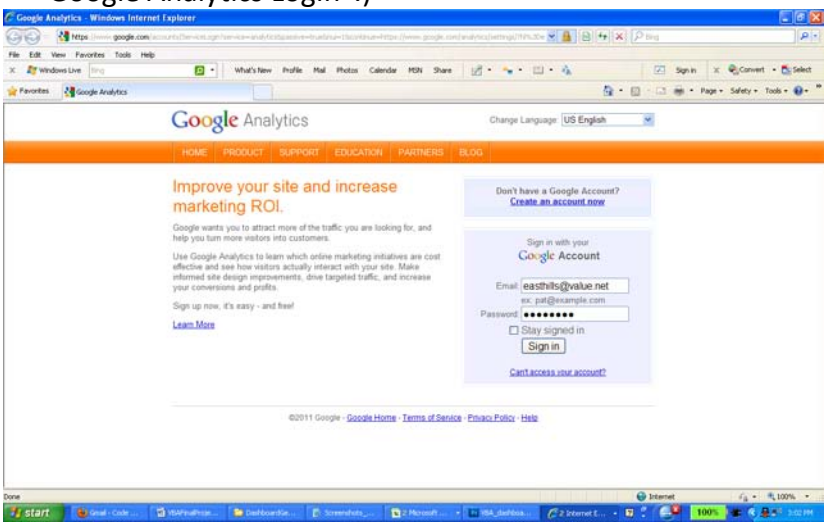
- Created getDatePeriod sub procedure
  - Creates variables for month, day, and year for Begin Date entered
  - Creates variables for month, day, and year for End Date entered
  - These variables are later used to login to Google Analytics and Google AdWords
- Created a PieChart worksheet that is hidden
  - This worksheet was included as a simple way to create a properly formatted pie chart of website traffic.
  - The pie chart visually breaks out the paid clicks from the other website visits (See "Screenshot I: PieChart Tab".)



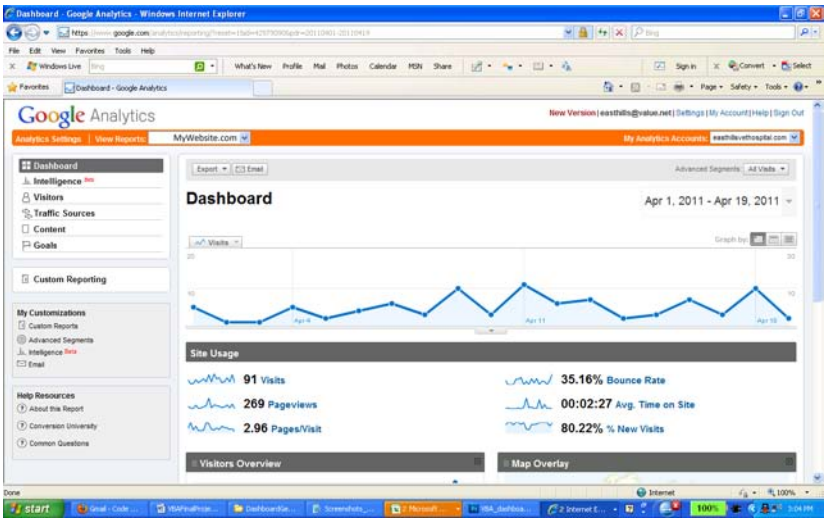
- Created getGAnalyticsData sub procedure
  - This sub procedure does the following:
    - Adds a "Web Analytics Data" tab to the Excel file.
    - Navigates to the Google Analytics website (See "Screenshot J: Navigating to Google Analytics".)



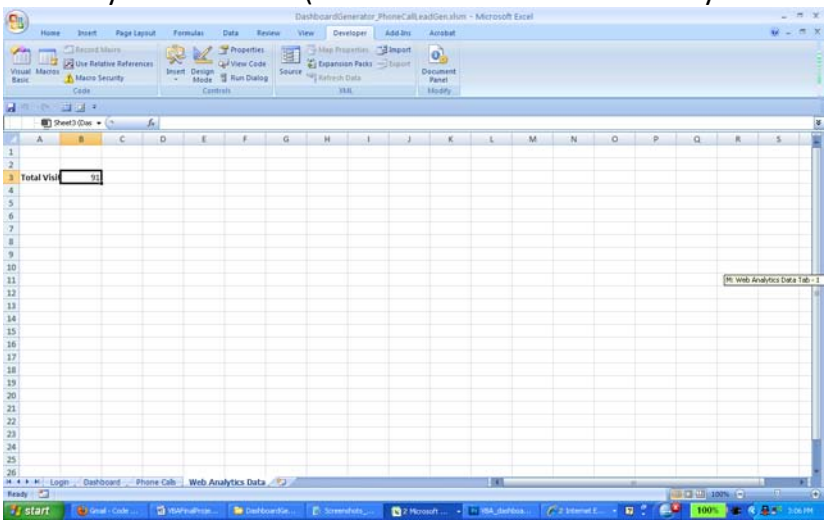
- Enters login email and password and clicks to login (See “Screenshot K: Google Analytics Login”.)



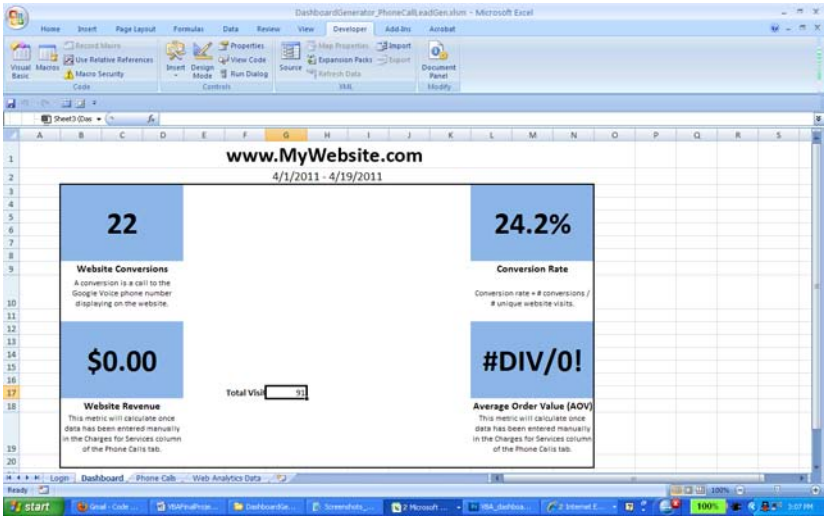
- Sets the Google Analytics date range to be the same date range the user entered in the Login tab (See “Screenshot L: Set Google Analytics Date Range”.)



- Stores total website visits as variable and prints that value to the "Web Analytics Data" tab (See "Screenshot M: Web Analytics Data Tab - 1".)

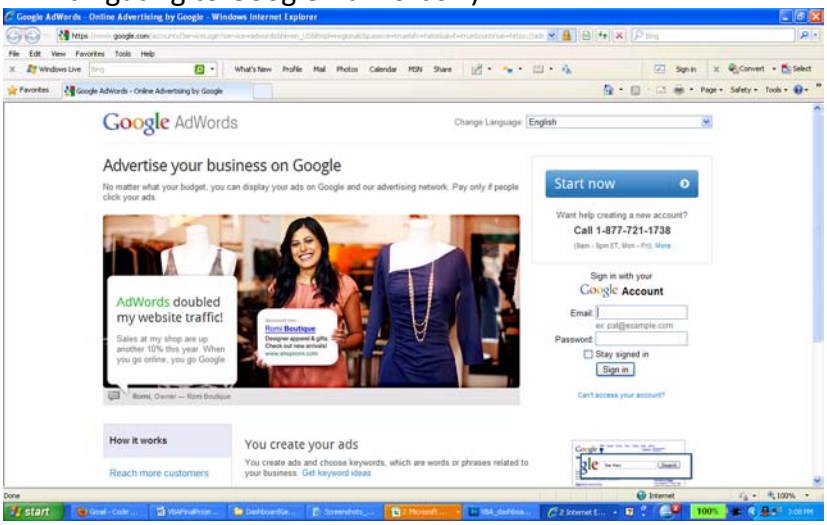


- Calculates conversion rate, stores value, and prints that value to the dashboard
- Prints total visits data to the dashboard (See "Screenshot N: Conversion Rate, Total Visits Added to Dashboard".)

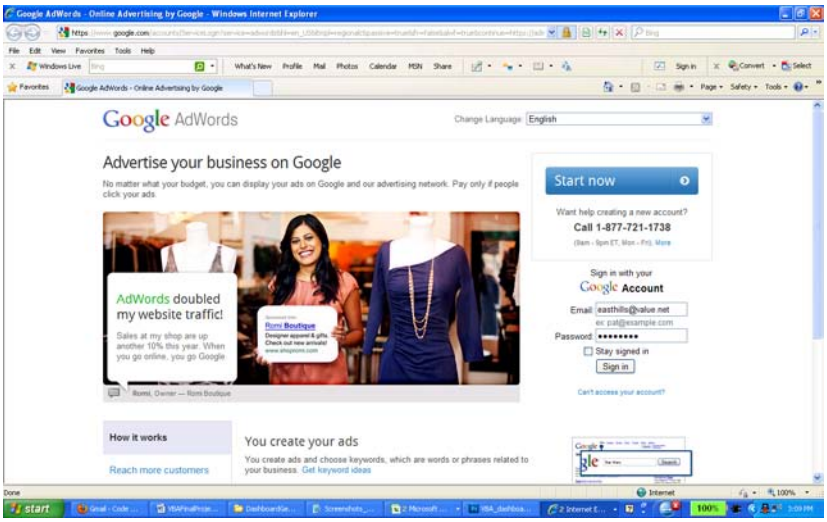


- Signs out of Google Analytics

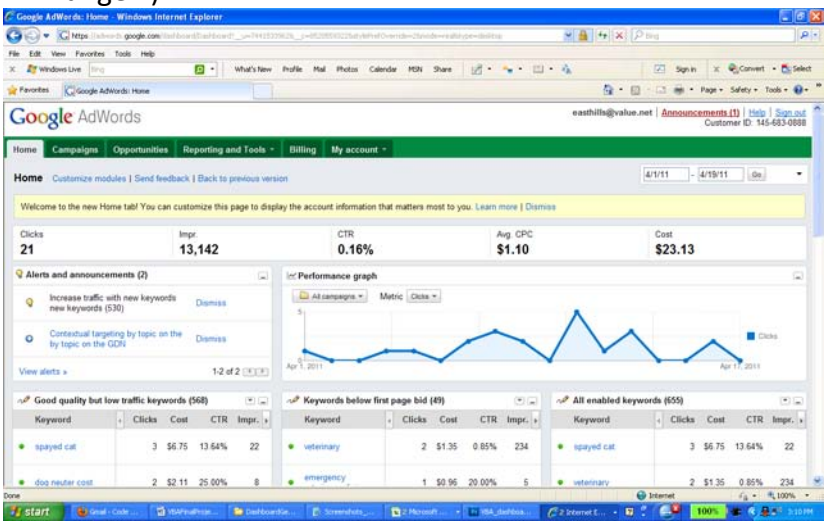
- Created getGAdWordsData sub procedure
  - Includes 5 variables
  - This sub procedure does the following:
    - Navigates to the Google AdWords website (See “Screenshot O: Navigating to Google AdWords”.)



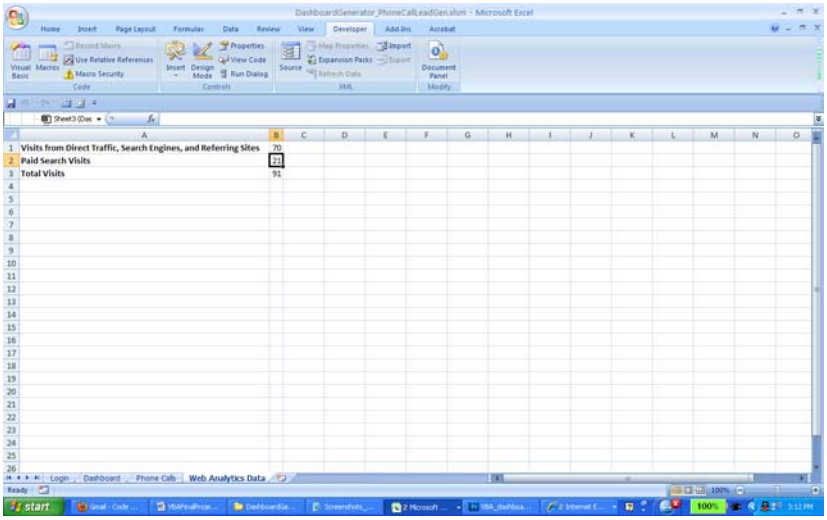
    - Enters login email and password and clicks to login (See “Screenshot P: Google AdWords Login”.)



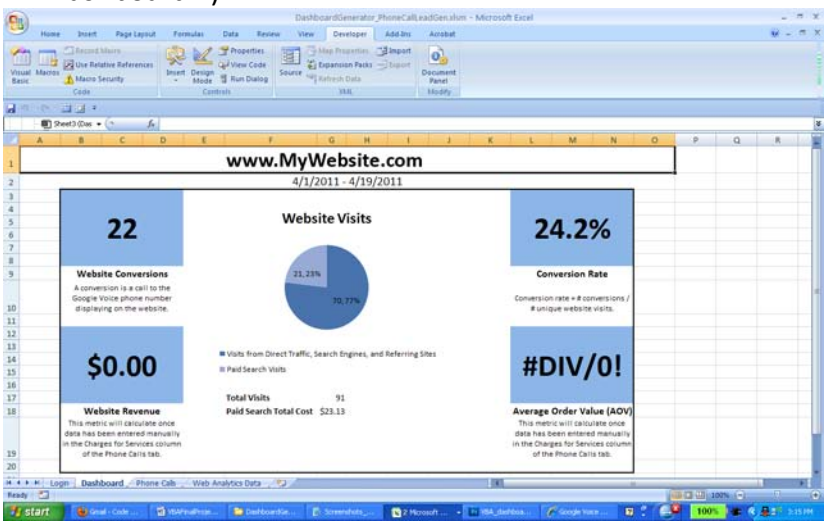
- Sets the Google AdWords date range to be the same date range the user entered in the Login tab (See “Screenshot Q: Set Google AdWords Date Range”.)



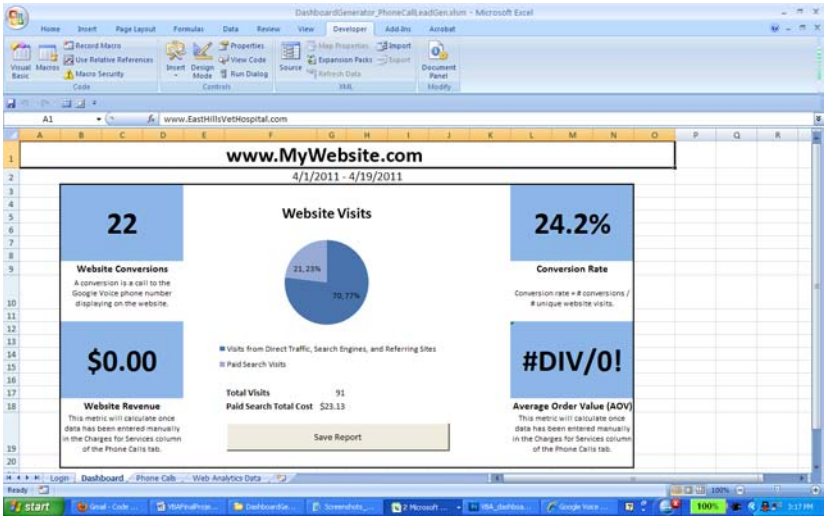
- Stores paid click visits as variable and prints that value to the “Web Analytics Data” tab
- Signs out of Google AdWords
- Calculates total visits – paid clicks to figure remaining natural traffic to website. Stores this as variable value and prints to “Web Analytics Data” tab (See “Screenshot R: Web Analytics Data Tab - 2”.)



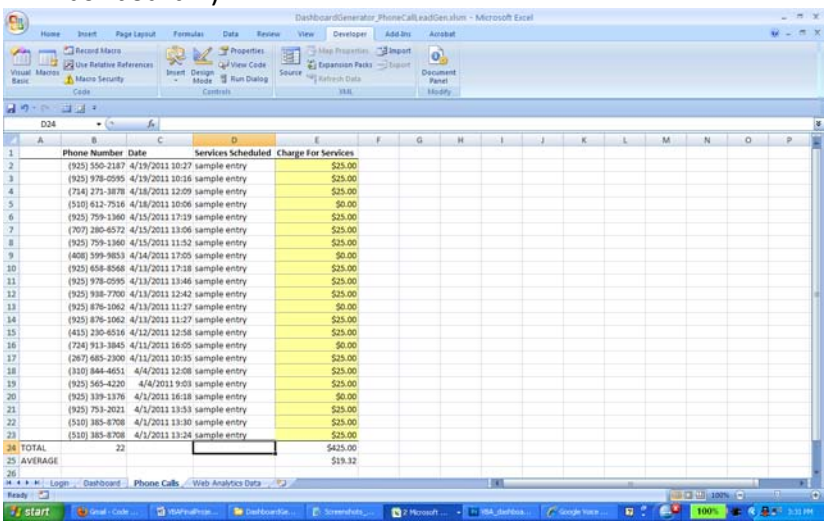
- Makes PieChart tab visible. Updates values on PieChart tab to reflect accurate data for: visits from natural search, direct visits, and referring sites; paid search visits; and total visits.
- Stores total cost for paid search clicks as variable and prints that value to the dashboard
- Copies pre-formatted pie chart and pastes onto dashboard, then hides PieChart tab (See "Screenshot S: Visits and Paid Click Data Added to Dashboard".)



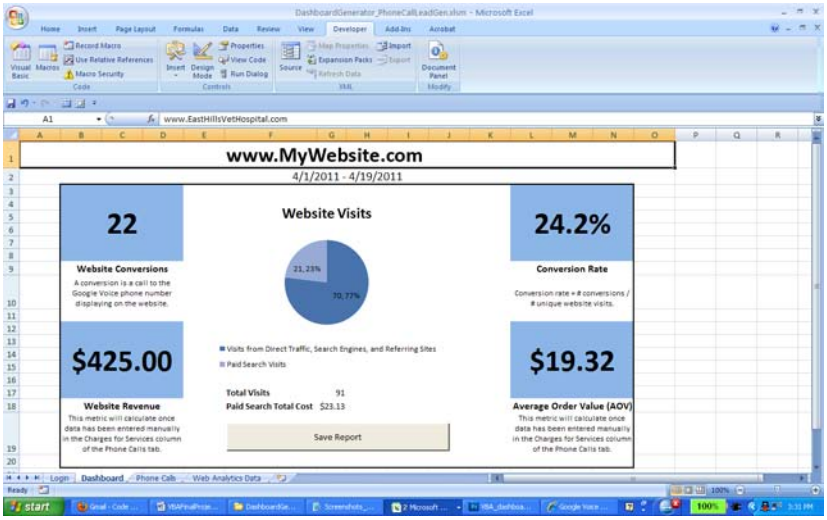
- Created "saveDashboardReport" sub procedure and "Save Report" form button
  - (See "Screenshot T: Dashboard Generation Complete".)



- After dashboard generation is complete, the user may click on the "Phone Calls" tab and manually enter "Charge for Services" amounts for customer appointments originating from a phone call to the Google Voice number. (See "Screenshot U: Revenue Amounts Added to Phone Calls Tab" and "Screenshot V: Website Revenue and AOV Populated on Dashboard".)



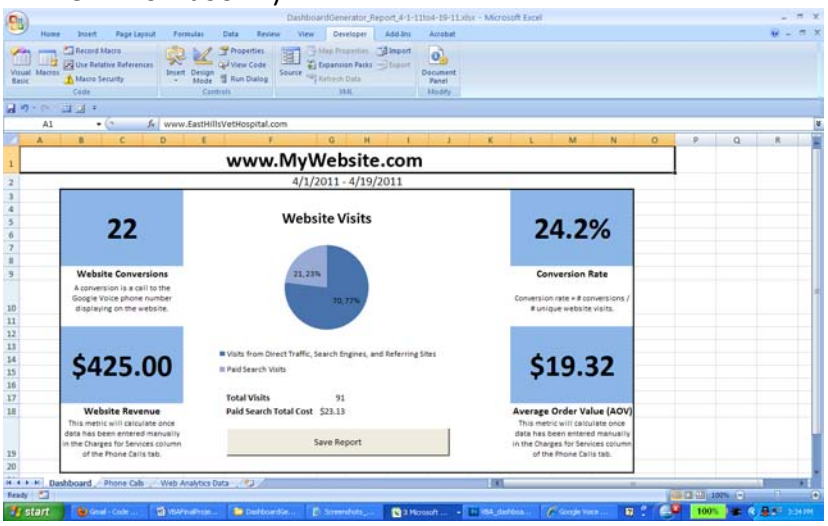
	Phone Number	Date	Services Scheduled	Charge For Services
2	(925) 550-2187	4/19/2011 10:27	sample entry	$25.00
3	(925) 978-0595	4/19/2011 10:16	sample entry	$25.00
4	(714) 271-3878	4/18/2011 12:09	sample entry	$25.00
5	(510) 612-7516	4/18/2011 10:06	sample entry	$0.00
6	(925) 759-1360	4/15/2011 17:19	sample entry	$25.00
7	(707) 280-6572	4/15/2011 13:06	sample entry	$25.00
8	(925) 759-1360	4/15/2011 11:52	sample entry	$25.00
9	(408) 599-9853	4/14/2011 17:05	sample entry	$0.00
10	(925) 658-8568	4/13/2011 17:18	sample entry	$25.00
11	(925) 978-0595	4/13/2011 13:46	sample entry	$25.00
12	(925) 938-7700	4/13/2011 12:42	sample entry	$25.00
13	(925) 876-1062	4/13/2011 11:27	sample entry	$0.00
14	(925) 876-1062	4/13/2011 11:27	sample entry	$25.00
15	(415) 230-6516	4/12/2011 12:58	sample entry	$25.00
16	(724) 913-3845	4/11/2011 16:05	sample entry	$0.00
17	(267) 685-2300	4/11/2011 10:35	sample entry	$25.00
18	(310) 844-4651	4/4/2011 12:08	sample entry	$25.00
19	(925) 563-4220	4/4/2011 9:03	sample entry	$25.00
20	(925) 339-1376	4/1/2011 16:18	sample entry	$0.00
21	(925) 753-2021	4/1/2011 13:53	sample entry	$25.00
22	(510) 385-8708	4/1/2011 13:30	sample entry	$25.00
23	(510) 385-8708	4/1/2011 13:24	sample entry	$25.00
24	TOTAL	22		$425.00
25	AVERAGE			$19.32



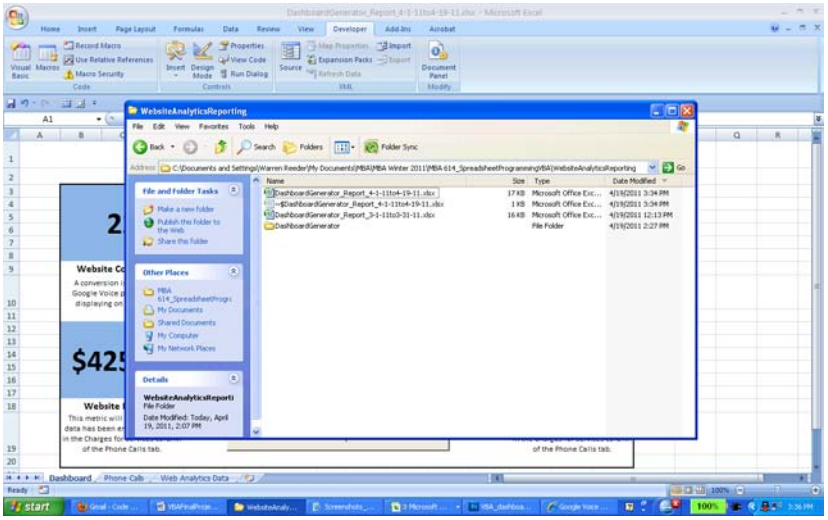
- After revenue information has been added, the "Save Report" button may be clicked. This runs the "saveDashboardReport" sub procedure.

o This procedure selects 3 worksheets: Dashboard, Phone Calls, and Web Analytics Data

o Copies the tabs to a new workbook (See "Screenshot W: Dashboard Report As New Workbook".)



o Saves the new workbook in the directory folder as "DashboardGenerator_Report_(BeginDate)to(EndDate).xlsx (See "Screenshot X: Saved Reports".)



- Activates the VBA dashboard generator file and selects the “Dashboard” tab. This returns to user to viewing the VBA dashboard.

Discussion of Learning and Conceptual Difficulties Encountered

I learned a ton about VBA by doing this project. In fact, I would say that during the course of this class, I learned the basic tools that can be used in VBA. However, during this project is when I really learned VBA. The struggle of trying to figure out so many things helped me become much more comfortable with my abilities in VBA. Throughout this project I encountered many difficult situations, but with lots of time and effort was able to work through them. I learned:

- How to use the Agent to navigate on the web
- How to find ids of input fields and click buttons using the Agent
- How to create new worksheets and how to hide worksheets
- How to refer to a chart or worksheet object that was automatically generated – without knowing the name given to the object (i.e. “worksheets.count”)
- How to use Cint() and other functions in conjunction with variables
- The helpfulness of message boxes
- On Error Resume Next
- How to record a macro for anything I didn’t know how to code, then plug that code into VBA procedures
- And lots, lots, more.

I was able to accomplish basically everything I intended to on this project. I received some help on collecting Google Voice data from Dr. Allen; later I asked him a few questions on issues I struggled with. These included: why I received errors when I hid the browser, how to automatically create a chart and have it format correctly using VBA, and how to save a copy of

selected worksheets. I am very happy with the results I was able to achieve with the VBA dashboard. Completing this project has been a lot of hard work and one of the most satisfying experiences in my MBA education. I have learned how to use a very useful new tool – VBA.