

## Microsoft (MS) Excel Project

By reading the business case sections and completing the three parts of this project (Parts A, B, and C) you will:

- ◆ Extend your knowledge of MS Excel
- ◆ Learn how to apply MS Excel to solve business problems
- ◆ Understand how to find and use built-in MS Excel functions

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### PROJECT INTRODUCTION

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The Global River Conservancy (GRC) is a non-profit environmental group whose primary purpose is the protection of free flowing rivers. Lisa Rios, a business school graduate, has recently become a brand manager for a major corporation. In her spare time she works as a volunteer for the GRC.

The GRC is interested in starting a major fund raising drive. The funds will then be used to lobby congress in an effort to designate the Broad River as a Wild and Scenic River. GRC has asked Lisa to use her marketing skills to develop effective advertising for the drive. Lisa will first need to determine the target market, which you will help her do in Part A of the Excel project. She will then conduct a phone survey to determine the best form of advertising to promote the fundraising effort. In Part B you will help Lisa analyze the budget for the survey, and in Part C you will help her analyze the results of the survey. When Lisa and you have finished all the parts of the project, the GRC should have some valuable information with which it can begin its fund raising effort.

**Project Spreadsheet Instructions:** You will need to download the Excel file *globalRiverConservancy.xls* from the student section of <http://www.wiley.com/college/piercy> . This workbook contains three worksheets, one worksheet for each part of this project.

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### PART A

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**Part A Business Case:** Lisa is excited about this opportunity. Not only will she be working for a cause that she believes in, but also the project will enable her to apply and refine the marketing skills she learned in school. Lisa knows that the marketing concept can be applied to any organization, and her knowledge of it will be beneficial.

One hurdle that Lisa must cross is the limited budget that she has to work with. She will have to plan carefully to achieve the maximum benefit from the available funds and also be able to justify her expenses to the GRC board of directors. Lisa decides that she needs to be armed with the proper information to best prepare and justify the plan.

The board has indicated that it wants Lisa to develop an advertising campaign for the fund raising effort. The goal, as with any advertising campaign, is to effectively and efficiently reach the target market. Lisa concludes that she first needs to determine who the target market is and then find out the best way to reach them. To do so, she chooses to first study demographic information with the hope that it will indicate the best market segments to target. Then she will conduct a survey of the target market to discover the media which would most effectively reach them.

Lisa has learned that there is much demographic data available. However, she has also learned the data is useless without an effective way to analyze and interpret the information. Fortunately, Lisa has had a lot of practice using electronic spreadsheet software, such as Excel, to analyze data while she was an undergraduate. She thinks she sees a way to use a spreadsheet to help her determine her target market.

**Part A Problem Definition:** Your job in this first project is to help Lisa by using MS Excel to analyze the required demographic data. Lisa has determined that a good way to select target markets is to examine household information based on income level. She reasons that such an analysis will point to the groups which are most likely to contribute to environmental causes.

She has already found information gathered by other groups which shows the percentage of households in each income level that has contributed to environmental causes in the past. In addition, the data include the average annual amount of total environmental contributions by households that have made donations. She has also been able to obtain household figures from census reports and other marketing sources (this information is included in the project spreadsheet file). With this information she will be able to calculate the expected environmental contribution per household to all environmental causes. She can then estimate the total contribution for each group. By looking at the percentage figures for each group she eventually wants to target advertising towards the group or groups which give the most contributions. She is also interested in seeing if there are any recognizable trends in the data that might help her make future decisions.

**Part A Spreadsheet Instructions:** To complete the analysis you need to perform the following calculations using the spreadsheet:

- **Contributions per Household** for all households in an income level are calculated by multiplying the **Percentage of Households Contributing** for each income level by the **Average Contributions** for the income level. For example, 7.00% of \$55 = \$3.85/Household.
- Lisa wants to forecast the numbers of households by income level for the years 2005 and 2010. She will do this using the following growth/decline rates which she calculated earlier using estimates of relevant households. The numbers represent the growth rates between 1990 and 2000. Without evidence to the contrary, these growth rates are assumed to remain the same through the year 2010. Format these as percent with 1 decimal place.

<u>\$0-\$20K</u>	<u>\$20-\$40K</u>	<u>\$40-\$70K</u>	<u>\$70-\$100K</u>	<u>Over \$100K</u>
-11%	22.5%	66%	77%	70%

- Enter the values into the column marked **Growth Rates** under the basic assumptions section of the spreadsheet. For example, the Over \$100K group is expected to grow at a rate of 70% over the five-year period from 2000 to 2005. Assume this growth rate will also apply from 2005 to 2010.
- Calculate the forecast number of households for this income level in 2005 using the equation:  

$$2005 \text{ households} = 2000 \text{ households} * (1 + \text{growth rate})$$
- Similarly, calculate the forecast number of households for each income level in 2010. Use the same growth rates and the 2005 forecasts to calculate forecasts for 2010. (Format these values to 0 decimal places since households are counted in whole numbers.)
- Use an appropriate FUNCTION to obtain a Total estimate of households for each of the years in the table.
- Next, we need to calculate the total Estimated Environmental Dollar Contributions by Income Level for each of the years in the table.
- Therefore, calculate these dollar figures by multiplying the number of actual or estimated households in an income level by the previously computed **Contributions per Household**. This latter number, we

remember, takes into account both the households who gave and the others who did not. Compute the total dollar figures for 1990, 1995, 2000, 2005, and 2010. Format these as currency with 0 decimal places. (Hint: By carefully using absolute cell references and copying you can save yourself some time here. See if you can type the formula only once into cell B31 and then copy the formula to the rest of the table.)

- Compute the total contributions for all income levels for each year by using the appropriate spreadsheet FUNCTION.
- To calculate the **Percentage Environmental Contributions By Income Level**, simply divide the estimated contribution for each level and year by the total contributions for that year. Format as percent with 2 decimals. (Hint: keep absolute cell referencing in mind here.)
- Lisa is also interested in obtaining a good graph which indicates the target market to use in a presentation for the GRC board, so you will need to create one. She decides she needs a histogram (column chart) of the **Percentage Environmental Contributions By Income Level** for the year 2005. The graph should be created as a column chart with the income levels as the labels for the columns and the percentages for 2005 as the heights of the columns. Since the graph will be used in a presentation, it should also have titles and legends where appropriate.

**Part A Interpretative Questions:** Based on your analysis of your results answer the following questions.

1. Which is the best, single-income level for Lisa to target for her advertising campaign? Why?
2. Briefly explain any trends you detect from the data in the spreadsheet, especially in terms of the number of households per income level. How might this affect future GRC fund raising?

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## **PART B**

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**Part B Introduction:** After studying the demographic analysis (which you did for Lisa in project A), Lisa has decided that the demographic group \$40–\$70K is the target market for her survey. The next step is to determine the details of the survey, i.e., sample size, timing, and budget. She can use this information to prepare a report to the GRC board and request the necessary funds.

**Part B Business Case:** The GRC board has promised Lisa a total budget of \$18,000 for the survey, but will allow her a little extra if it is justified. She now needs to analyze her expected costs to see if it is feasible to do the survey within budget. She has already decided that she will conduct a phone survey so there will be several sources of expenses. These are wages, employee training, and the costs of making phone calls, telephone rental, office rental, and miscellaneous supplies. The company Lisa works for has done extensive marketing research, and it has donated the use of a computerized phone number list for the survey. The list has the names and numbers of the heads of households divided into income groups.

Lisa tried to get volunteers to man the phones but given the short notice and the fact that most of the GRC's members work or go to school during the day, she was unsuccessful. One of the members gave her the name of a good temporary employment agency where she could get employees to work the phones. She would pay the agency \$17.50 per hour for the workers who would each work 8 hours per day. The agency has several workers who have experience conducting phone surveys so training costs will be minimal. Lisa expects that training costs will be about \$23 per person. This assumes that once an employee is trained, she/he would work every day until the project is completed.

Lisa has scheduled the survey for one week in the near future. This allows 5 days for the survey to be conducted. She will need to take this into account in her analysis in determining how many temporary workers and phones she will need. Through some other contacts, Lisa found office space she could rent for \$220 a day and telephones she can rent for \$30 each per day.

Based on previous surveys conducted by the GRC, Lisa figures that each call will average 9 minutes in length. This average is for all calls including those which reach a cooperative respondent and those which do not. The average excludes training time which precedes actual phone calls. Unsuccessful calls include those calls in which no one answers, and those where someone answers but refuses to participate in the survey. Some time for paperwork and caller breaks is also built into this average.

A major consideration when designing a survey (and many other types of marketing research) is that of selecting an appropriate sample. A sample is a small portion of the population. Data from the sample are then used to deduce information about the entire population. Sampling is necessary in cases where it would be difficult or too expensive to collect information about the entire population. Three questions to answer when selecting a sample are: (1) who is to be sampled, (2) how big the sample should be,

and (3) how the sample should be selected. Lisa has already determined the answer to the first question using the demographic analysis you completed in Project A. The target population for the survey was chosen to be households with income between \$40,000 and \$70,000.

The sample size should be large enough to provide statistical validity to the survey. One method of determining the sample size for a random sample is based on statistical precision. This method uses a confidence interval for each important criteria measured in the survey. A confidence interval gives a range into which the true population value of the characteristic being measured will fall, assuming a given level of certainty. The smaller this range, the more precise our conclusions about the true population value of the characteristic are. A confidence interval is calculated using:

$$C.I. = \bar{x} \pm Z_{\alpha/2} \frac{s}{\sqrt{n}}$$

**Where:**

C.I. = the range in which the true value lies

$\bar{x}$  = the estimated value of the characteristic

$Z_{\alpha/2}$  = the reliability coefficient

s = standard deviation of the estimated value

n = the sample size

By making estimates of our characteristic and our desired precision, we can use this to calculate the necessary sample size. The last part of the above equation that includes the reliability coefficient, standard deviation, and sample size determines the tolerance level we can accept. By selecting an acceptable tolerance level, which represents the allowable difference permitted between the estimate and its known true value, we can manipulate this part of the equation and solve for the sample size.

For our survey Lisa has decided that the most critical question involves how much respondents are likely to donate to the GRC. She wants to have a large enough sample size to estimate the average donation to within a tolerance level of plus or minus \$3.25.

Next, we will choose the reliability coefficient. Reliability coefficients can be found on statistical tables based on how much confidence one wants to have in the estimate. Lisa would like to have 99% confidence in the result. For this confidence level we need  $Z_{1-\alpha} = 2.33$ .

We also need an estimate of the standard deviation. This can be estimated using a small test sample or through the use of past data. Lisa has analyzed the past contributions to GRC fund raising and she found that these averaged \$96 with a standard deviation of \$38.

With these values we can use the following formula to calculate the sample size:

$$n = (Z_{1-\alpha})^2(s)^2/h^2$$

**Where:**

n = sample size

$Z_{1-\alpha}$  = the reliability coefficient

s = standard deviation of the estimated value

h = tolerance level

Lisa must also decide how the sample will be selected. Since the list includes addresses, it is easy to divide the list into different geographic regions. Then, samples can be selected at random and analyzed from each of the regions. This method is a form of sampling called stratified sampling.

Using stratified sampling, we will divide the total sample size among the different regions. The amount of households sampled in each region can be determined by assigning a weight to each region which is based on the number of households in the region. The regional sample sizes can then be found by multiplying the weights by the overall sample size.

For the GRC survey, because of the demographics of her state, Lisa has divided her state into five geographic regions. Region A includes the counties comprising the metropolitan areas around the state capitol. Regions B, C, D, and E include the counties in northeast, northwest, southeast, and southwest, respectively. The procedure Lisa used to determine the sample size for each region is to base each regional sample size on the proportion of households in the region. For example, if 28% of the total households in our target population live in Region A, then 28% of the total sample size will be contacted from this region. The numbers of households in each region are already provided in your spreadsheet.

Because some people will either not cooperate or not be at home when called, the survey team will need to make a larger number of calls in each region in order to obtain enough valid responses to meet the sample size requirements. Lisa was able to use data from past surveys to estimate a response rate for each region. The response rate represents the percentage of total calls made which result in a valid survey response. For

example, if the response rate in a region is 0.39, then 39% of the total calls made to the region will be useful for the survey. If we divide the needed regional sample size by the response rate, we can calculate the number of calls necessary to obtain the sample size in a region. The response rates for each region are already provided in your spreadsheet.

The average cost per call from Lisa's city to each region is also provided for you on the spreadsheet. These averages include the costs for all calls including those which result in invalid responses.

Now Lisa and you have enough information to complete the survey budget analysis.

**Part B Problem Definition:** Your job is to help Lisa with her survey budget analysis. Using Excel, you should conduct an analysis which will provide answers to the following questions:

- What is the total needed sample size for the entire survey?
- How many total calls will be needed to meet the sample size?
- How many phones and workers will Lisa need?
- What is the expected total cost of the survey?

You will answer these questions in writing in the Part B Interpretive Questions section that is found later in the project. For now, keep them in mind as you create your budget analysis.

**Part B Spreadsheet Instructions:** You have already downloaded the project Excel file when you downloaded the file for Part A. The spreadsheet will initially contain all labels needed and some of the values mentioned above.

To complete the spreadsheet, you need to perform the following steps:

- Enter the basic information into the appropriate cells on the spreadsheet. The numbers to be entered can be found by reading through the background section above. Remember to give them the proper format. (currency, number, etc)
- Calculate the total sample size using the formula discussed above:
$$\text{Sample Size} = Z^{2*}(\text{St.Dev.})^2/\text{Tolerance}^2$$
- Round the answer to the nearest whole number (since we don't want to survey 1/2 of a household) using the appropriate spreadsheet FUNCTION (This is not simply formatting the value to 0 decimals). Be sure to use the appropriate cell addresses in all formulas.

- Complete the call calculations sections as follows: (format all values to zero decimal places, except regional response rate which is already formatted for you)
- Use the spreadsheet FUNCTION to compute the **Total Number of all Households**
- Compute the **Percent of Total Households** for each region by dividing the **Number of Households** in each region by the overall **Total Number of Households**
- Calculate the **Regional Sample Sizes** by multiplying the **Percent of Households** in each region by the **Overall Sample Size**. Use a FUNCTION to round these to values with 0 decimal places.
- Compute the **Number of Calls (to make) per Region** by dividing the **Regional Sample Size** by the Regional Response Rate. Use a FUNCTION to round these to values with 0 decimal places.
- Use the appropriate spreadsheet function to calculate the grand totals for **Regional Sample Size** and **Number of Calls**.

Complete the **Budget Calculations** section as follows:

- Compute the **Regional Call Costs** by multiplying the **Cost Per Call** by the **Number of Calls** needed in each region. (The format for these numbers should be currency with 0 decimal points).
- Calculate the **Call Time by Region** by multiplying the **Number of Calls** times the **Average Time per Call**. Convert this to hours by dividing the result by 60. (The format for these numbers should be fixed with 0 decimal points.)
- Use the appropriate spreadsheet function to compute the grand total for **Regional Call Costs** and **Total Call Time**.
- Compute the **Total Shifts** by dividing the grand total **Call Time by Region** by **Calling Shift**. A shift is equal to one 8-hour day. (The format for these numbers should be fixed with 1 decimal point.)
- Calculate the **Number of Employees** and **Phones** needed by dividing the **Number Of Shifts Required** by the **Number Of Days** for conducting the survey. Use a FUNCTION to round this value to the nearest integer.
- The following formulas are used to compute the various expenses: (the format for these numbers should be currency with 0 decimal points)

- **Wages = (Total Calling Hours)\*(Wage Rate)**
  - **Training = (# of Employees)\*(Training Cost)**
  - **Calls = (Total Call Costs)**
  - **Phone Rent = (# of Phones)\*(Phone Rental Rate)\*( # of Days)**
  - **Office Rent = (Daily Office Rent)\*(# of Days)**
  - **Miscellaneous Supplies = \$1750**
- Use the appropriate spreadsheet FUNCTION to total the expenses
- Lisa would also like to have a horizontal bar chart she can use to compare the **Number of Calls Required per Region**. Create this chart using the data in the spreadsheet. Include appropriate titles and legends, as necessary.

**Interpretative Questions:** Based on your analysis results answer the following questions.

1. Here again are the questions from the Part B problem Definition Section:
  - a. What is the total needed sample size for the entire survey?
  - b. How many total calls will be needed to meet the sample size?
  - c. How many phones and workers will Lisa need?
  - d. What is the expected total cost of the survey?
2. What effect would decreasing the average time per call from 9 minutes to 8 minutes have on Lisa's total budget? Give specific values.

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## **PART C**

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**Part C Introduction:** Lisa and her team have completed the media survey. Thanks to the careful planning and the analyses you helped Lisa with in Project Parts A and B, there were few problems and an adequate sample size was reached. In Part C, you will help Lisa analyze part of the results of the survey. From the analysis it will then be possible to choose the advertising medium or media which is/are expected to be most effective for the fund-raising effort.

**Part C Business Case:** The survey was completed as planned, in 5 days with only a few extra hours of overtime required to obtain a good sample size. The final total sample size obtained by Lisa and her team was 977

households. After carefully looking through the responses, it was determined that 43 responses were invalid. A response was designated invalid if key questions were not answered or if the answers obtained were inconsistent. Invalid responses were removed from the data set and were not used in the analysis.

The survey was designed so that each worker could first record the name, address, and telephone number of the person she/she was about to contact. This information was available on the telephone list that was donated by Lisa's company. The callers were careful not to ask for this information from the respondents since many times asking for this information will cause a respondent to choose not to respond to the survey. When a respondent was contacted, the caller would begin the conversation by reading an opening paragraph. If the respondent needed additional information about the GRC and its purpose (which was often the case), the caller would then read a second explanatory paragraph. Next, the respondent would be asked if he or she could answer some brief questions. As mentioned in project B, many times there would be no answer to the call or respondents would refuse to participate. In these cases, the caller would simply discard the survey form and begin again with the next person on the list. The callers would also ask a first question to ascertain whether or not the respondent was an adult and qualified to give valid responses. If the person who answered was not an adult, the caller would then ask to speak to one.

The remaining questions were divided into three categories: Media Viewing Habits, Environmental Group Involvement, and Personal Information. The questions under Media Viewing Habits were designed to solicit information which could be used to determine the media most likely to be seen by the target market. The Environmental Group Involvement questions were designed to determine the level of potential donations from each respondent household. The purpose of the Personal Information category was to gather demographic information which is an important part of many surveys. The demographic information could be used when designing the advertisements so that they appeal to the target market.

When giving the survey, each caller would read each question and mark the responses as instructed. At the end of each day, the completed surveys were gathered and the question responses tabulated. Those surveys judged invalid were noted and discarded. The tabulated results of the valid questionnaires are now ready for analysis.

One basic form of analysis conducted with most survey results is to examine the frequency distribution for each question. A frequency

distribution breaks each question into categories and shows the amount of responses that fall into each category. By dividing the amount of responses in a category by the total amount of responses for the question the distribution is shown in percentage terms. Usually, a cumulative frequency is presented which shows the percentage of responses in a category plus all previous categories. The frequency and cumulative frequency distributions can be used to calculate statistics, such as the median and the mean. For example, the frequency distribution for question #2, television hours per day would be:

**Frequency Distribution for Television Hours:**

<b>Category</b>	<b># of Responses</b>	<b>Frequency</b>	<b>Cumulative Frequency</b>
0 to 2 hr.	185	19.96%	19.96%
2.1 to 4 hr.	306	33.10%	52.97%
4.1 to 6 hr.	195	21.04%	74.01%
6.1 to 8 hr.	148	15.96%	89.98%
more than 8 hr.	93	10.02%	100.00%

From this frequency distribution it can be seen that the largest group of those surveyed watch television between 2.1 and 4 hours per day. In addition, over half of the respondents say they watch television 4 or less hours per day.

The frequency column was computed by simply dividing the number of responses in a category by the total responses for the question. The cumulative frequency column was calculated by adding the frequency for each category to the cumulative frequency of the previous category.

One measure of how the responses to the question are centered is the median. The median is the value for which there are an equal number of responses with a value greater than the median as there are responses with a value less than the median. The median can be easily calculated using the information available in the frequency distribution. First, notice in the example that 52.97% of the responses have a value less than or equal to 4 hours and 19.96% of the responses are 2 hours or less. Therefore, the median falls somewhere between 2 and 4 hours. Using the following equation we can determine the value of the median:

$$\text{Median} = U_{n-1} + ((0.5 - c.f._{n-1}) / (c.f._n - c.f._{n-1})) (U_n - U_{n-1})$$

**Where**

n = the number of the category in which the median falls

$U_{n-1}$  = the upper bound on the (n-1)th category

$c.f._{n-1}$  = the cumulative frequency of the (n-1)th category

$c.f._n$  = the cumulative frequency of the nth category

$U_n$  = the upper bound on the nth category

In the television hours example above we can find the median by using:

$$n = 2, U_{n-1} = 2, c.f._{n-1} = 0.1996, c.f._n = 0.5297 \text{ and } U_n = 4.$$

So the median is:

$$\text{Median} = 2 + ((0.5 - 0.1996) / (0.5297 - 0.1996)) (4 - 2) = 3.82 \text{ hr.}$$

This means that half of the respondents reported viewing television less than 3.82 hours per day, and half of the respondents reported viewing television more than 3.82 hours per day.

Lisa would like to analyze the frequency distribution of Question 8 of the survey, the amount of expected donation per household, to determine the expected total donation from each of several media used for advertising. To do this, she wants to complete a separate frequency distribution for each of the media categories. Using Question 6, which asks for the media a household has responded to, she can tabulate the donation responses for all survey forms with the radio answer checked, then with the cable TV answer checked and so on, until there is a separate tabulation for each of the five media. The tabulated responses are already included in the project spreadsheet file which you downloaded earlier. A respondent may answer that she/he has responded to more than one category in the last year so there is some overlap in the response tabulations. Surveys in which the respondent indicated the answer "don't know" were discarded as invalid surveys. After the frequency distributions are found, it will then be possible to calculate the median and the percentage of respondents that can be reached by each form of media. These values will then be used to compare the forms of media as to which is most likely to provide the best advertising for the GRC fundraising campaign.

The final values obtained will be in the form of expected net proceeds based on advertising from each of the forms of media. These values should be used for comparison purposes only. Many simplifying assumptions have been made for the analysis and there are several

sources of variation. Another problem frequently encountered with surveys of this nature is that the respondents' answers do not provide an entirely accurate picture of what their actions will be when the fundraising is under way. Survey respondents often say one thing and then do another. For these reasons the final net proceeds values should not be taken as accurate forecasts of the true net proceeds for each form of media.

**Part C Problem Definition:** In Part C, you will help Lisa determine the most effective form of advertising based on the survey results. First, open the project Excel file which you downloaded earlier. Once you have this file you can complete the analysis by following the instructions below.

**Part C Spreadsheet Instructions:** As you have already seen in the spreadsheet template, the responses for each form of media have been tabulated for you. The **Costs per 1000** for each form of media have also been entered for you. For each of the frequency distributions in the spreadsheet complete the following calculations:

- Enter the appropriate **Total Sample Size** in the space provided (Hint: only include the valid responses).
- Use the appropriate spreadsheet FUNCTION to compute the **Total Number of Households** that responded to the given media for each frequency distribution (These values should be formatted with 0 decimal places).
- Complete the Frequency column by dividing the number of responses for each category by the total responses for the given media. For example, the Frequency for the first category of Radio responses can be found using: (These values should be formatted as percent with 2 decimal places).

$$\text{Frequency} = (\text{Number of responses in category 1}) / (\text{Total Radio Responses})$$

- Complete the Cumulative Frequency column by using the frequency of the first category as the first cumulative frequency and then for each subsequent category use the frequency of the category plus the previous cumulative frequency. (These values should be formatted as percent with 2 decimal places.)
- Calculate the **median donation** for each medium using the formula provided in the background section (format as currency with 2 decimal places).

- For example, the median of the contributions from the respondents who have responded to the radio advertising would be calculated as follows, assuming the median falls in the \$51 to \$100 category:

$$\text{Radio Median} = \$50 + \frac{(50\% - \text{c.f. of } \$1 \text{ to } \$50 \text{ category})(\$100 - \$50)}{(\text{c.f. of median category} - \text{c.f. of } \$1 \text{ to } \$50 \text{ category})}$$

category)

- Calculate the **Percent of Total** responses for a medium, like radio, by dividing the **Total Responses** for the individual medium by the **Total Valid Survey Sample Size**. This value is an estimate of the percentage of the target population that can be reached by the individual medium (format as percent with 2 decimal places).

After completing all of the Frequency Distribution sections, complete the Expected Proceeds Calculations as instructed below. The **Cost per 1000** people reached is already included in the spreadsheet.

- Use cell addresses to show the **Median Donation** values in the **Median Donation** column (format as currency with 2 decimal places).
- Compute the **Households Reached** for each medium by multiplying the **Percent of Total Sample** for each medium by the **Total Number of Target Households** in Georgia provided for you in the spreadsheet (format with 0 decimal places).
- The **Gross Proceeds** are calculated by multiplying the **Households Reached** by the **Median Donation** for each medium (format as currency with 0 decimal places).
- Compute **Expected Costs** by dividing the **Households Reached** by 1000 and then multiplying by the **Cost per 1000** (format as currency with 0 decimal places).
- **Net Proceeds** are simply the **Gross Proceeds** minus the **Expected Cost** (format as currency with 0 decimal places)

**Interpretative Questions:** Based on your analysis results answer the following questions.

1. Which form of media appears to be most effective in soliciting donations for the GRC?
2. How can the analysis be improved so that the results are more valuable from a marketing perspective? (provide 2 or 3 brief suggestions only)