

## **WSDOT CTR Program Guidance for Employers that Are Conducting Surveys Using Sampling – Updated August, 2010**

If you are surveying a large group of employees, you might want to minimize the impact that the surveying will have on your worksite. It is often not necessary to survey the entire population of employees. Instead, you can select a random sample of employees from the population and survey just them. You can then draw conclusions about how the entire population of employees would respond based on the responses from this randomly selected group of people. This document presents some guidance for employers that are conducting CTR surveys using a random selection of employees, or those considering sampling their employees.

### **What are the Requirements for a Worksite that Wants to Consider Conducting a Sample Survey?**

1. The worksite should have at least 1,000 employees that the survey is intended to represent.
2. Employees that are asked to complete the survey must be selected randomly.
3. Before conducting the survey, employers must communicate/coordinate with WSDOT's CTR program to indicate their intention to do a sample survey. If you are an employer with multiple worksites, we'll need to know which of your worksites are sampling, and which are instead surveying all employees. This is critical so the survey approach is approved and the survey data is analyzed appropriately.

### **How Many Employees Should I Randomly Select for Surveying?**

A worksite should have a minimum of 1,000 employees to consider sampling, but for practical purposes sampling won't significantly reduce the impact on your worksite until your worksite has a couple of thousand employees. Table 1 below indicates how many employees should be randomly selected for surveying (a minimum and maximum number of surveys to distribute), as well as the minimum number of completed surveys that must be returned to avoid fill-in due to low survey response rates. It's expected that at least 50 to 55 percent of employees who are asked to take the survey complete one.

The first column in Table 1 indicates the total number of employees that the survey is intended to represent (and should be the same number the ETC indicates on the survey header sheet when providing header sheet information to WSDOT).

The second and third columns in Table 1 indicate the minimum and maximum number of employees that should be randomly selected to be surveyed. If you expect you will be able to achieve a high survey response rate of at least 70 percent, you can use the minimum number of

employees to survey. Otherwise, you may want to survey more employees, up the maximum number indicated in column 3. In your worksite header sheet information you provide to WSDOT when setting up worksite surveys, this number will represent “surveys distributed” for this worksite.

The fourth column indicates how many completed surveys must be returned to avoid the application of fill-in due to a low survey response rate. This number is based on the assumption of a random selection of employees surveyed, with a sampling error of 3 percent, at a 95 percent confidence level.

**Table 1. Sampling Worksites: Minimum and Maximum Surveys to Distribute and Number of Returned Surveys Required to Avoid Fill-In**

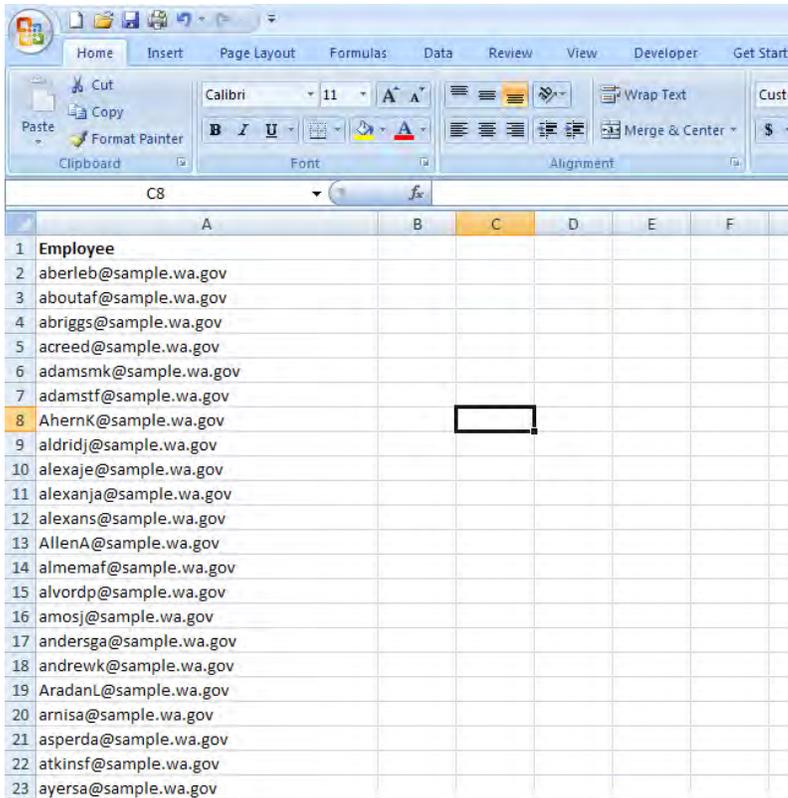
Total Employees the Survey Is Intended to Represent	How Many Employees To Randomly Select for Surveying (Minimum and Maximum Surveys to Distribute)?		Of Those Selected For Surveying, How Many Need to Return Completed Surveys to Avoid Fill-In for Low Survey Response Rate?
	Minimum Surveys Distributed	Maximum Surveys Distributed	
1,000	737	939	516
1,100	774	994	542
1,200	807	1,047	565
1,300	837	1,096	586
1,400	865	1,144	606
1,500	891	1,189	624
1,600	915	1,232	640
1,700	937	1,274	656
1,800	957	1,315	670
1,900	976	1,354	683
2,000	994	1,392	696
2,100	1,011	1,415	708
2,200	1,027	1,437	719
2,300	1,041	1,458	729
2,400	1,055	1,477	739
2,500	1,068	1,496	748
2,600	1,081	1,513	757
2,700	1,093	1,530	765
2,800	1,104	1,545	773
2,900	1,114	1,560	780
3,000	1,124	1,574	787
3,500	1,168	1,636	818
4,000	1,203	1,685	842
4,500	1,232	1,725	863
5,000	1,256	1,759	879
5,500	1,277	1,787	894
6,000	1,294	1,812	906
6,500	1,309	1,833	917
7,000	1,323	1,852	926
7,500	1,335	1,868	934
8,000	1,345	1,883	942
8,500	1,354	1,896	948
9,000	1,363	1,908	954
9,500	1,370	1,919	959
10,000	1,377	1,928	964
11,000	1,390	1,945	973
12,000	1,400	1,960	980
13,000	1,409	1,972	986
14,000	1,416	1,983	992
15,000	1,423	1,992	996
16,000	1,429	2,001	1,000
17,000	1,434	2,008	1,004
18,000	1,439	2,015	1,007
19,000	1,443	2,021	1,010
20,000	1,447	2,026	1,013
25,000	1,462	2,047	1,023
30,000	1,472	2,061	1,030
35,000	1,479	2,071	1,036
40,000	1,485	2,079	1,039
45,000	1,489	2,085	1,042
50,000	1,493	2,090	1,045

WSDOT will apply drive alone rate and VMT fill-in when the surveys returned falls below a ~3% sampling error rate (at 95% confidence level), which is consistent with the error rate typically achieved for average-sized CTR worksites.

## How Can I Randomly Select Employees to Distribute Surveys To?

There are various ways to randomly select survey participants. Following is one approved way to randomly select the people to survey using Microsoft Excel.

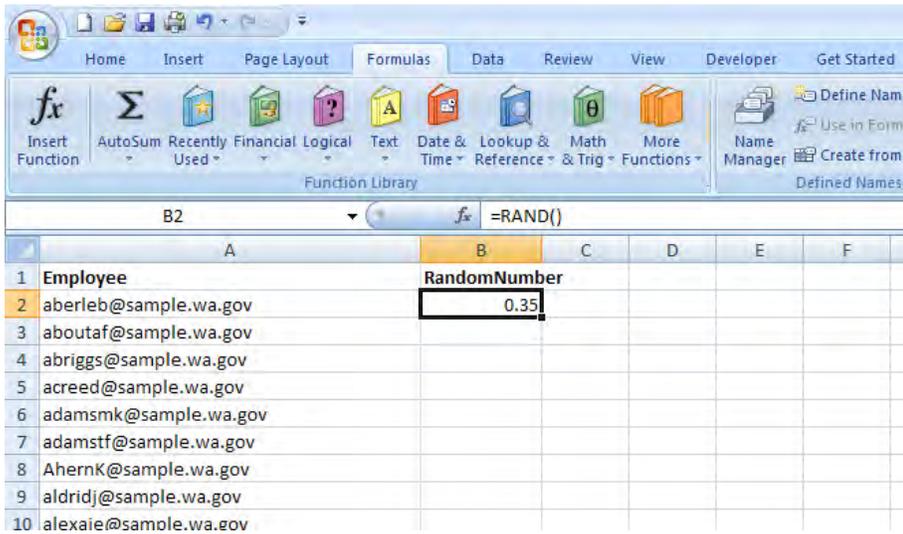
1. Identify how many random employees to distribute surveys to, and returned surveys required, for your worksite. This is based on Table 1 above.
2. Obtain a list of all potential survey respondents (such as email addresses), and paste that list into the first column of a new excel workbook, as shown below:



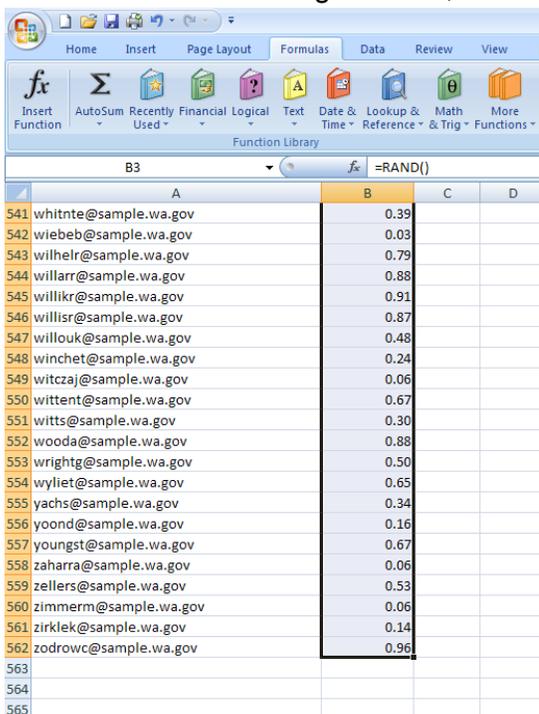
The screenshot shows a Microsoft Excel spreadsheet with the following data:

	A	B	C	D	E	F
1	<b>Employee</b>					
2	aberleb@sample.wa.gov					
3	aboutaf@sample.wa.gov					
4	abriggs@sample.wa.gov					
5	acreed@sample.wa.gov					
6	adamsmk@sample.wa.gov					
7	adamstf@sample.wa.gov					
8	AhernK@sample.wa.gov					
9	aldridj@sample.wa.gov					
10	alexaje@sample.wa.gov					
11	alexanja@sample.wa.gov					
12	alexans@sample.wa.gov					
13	AllenA@sample.wa.gov					
14	almemaf@sample.wa.gov					
15	alvordp@sample.wa.gov					
16	amosj@sample.wa.gov					
17	andersga@sample.wa.gov					
18	andrewk@sample.wa.gov					
19	AradanL@sample.wa.gov					
20	arnisa@sample.wa.gov					
21	asperda@sample.wa.gov					
22	atkinsf@sample.wa.gov					
23	ayersa@sample.wa.gov					

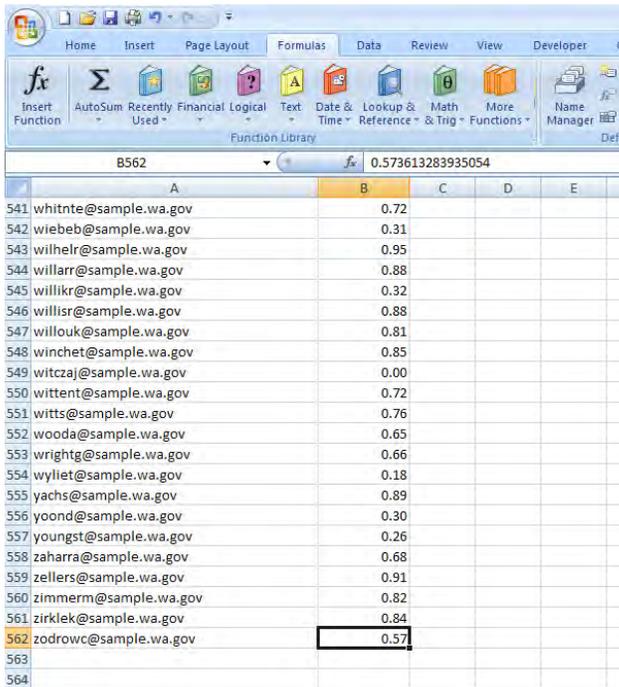
- In the second column, go to Insert, then Function (or Formula, Insert Function in Excel 2007), and insert the RAND function to generate a random number between 0 and 1 for the first cell in the list. You may need to reformat the cell so it shows the data as a number with a couple of decimal places. In the formula bar (to the right of fx above column B) you will see “=RAND()”.



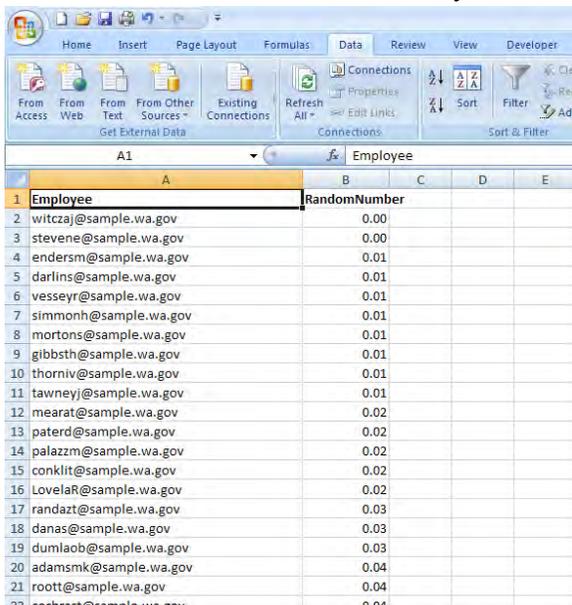
- Copy and paste the formula in cell B2 to the rest of cells in Column B so all employees have a random number generated, the bottom of the list in this example shown below:



- The RAND function will update all of the numbers every time the cell is calculated, so you need to convert these random numbers to values. To do this, Select and Copy the entire B column, and Paste Special the column to Values. See the example below in which column B has been pasted as values. For cell B562, the formula bar now shows 0.573613283935054 instead of “=RAND()”.



- Select columns A and B and sort by column B.



7. Based on Table 1 on page 2, select the number of employees to distribute surveys. For example, if a worksite had 3,000 employees, a minimum of 1,124 employees and a maximum of 1,574 should randomly be selected to be surveyed. So from the list sorted in step 6 above, you would request that the first 1,574 employees (or the first 1,124 employees in the list if you are confident that you'll achieve a high survey response rate) in the sorted list complete surveys. This will represent a random sample of all employees.