# FRAME DEVELOPMENT AND QUALITY ISSUES FOR THE COMMERCE DEPARTMENT-WIDE CUSTOMER SATISFACTION SURVEY

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## INTRODUCTION

In early 1995, the Census Bureau conducted a department-wide customer satisfaction survey for 20 operating units within the Department of Commerce (DOC). The DOC wanted one generic survey for the entire Department, covering 20 separate operating units. As part of the preparation for this survey, we needed to develop a frame of customers and select a sample for each operating unit.

In this paper, we will discuss some of the issues involved in frame development and sample selection for customer satisfaction surveys in the government.

Throughout the paper, we talk about the 20 operating units involved in the survey, but do not identify them. We decided to keep the operating units anonymous because of the statistical caveats associated with the data collected. Therefore, the comparison data that is presented in this paper is offered as general information, not to positively or negatively set apart any specific operating units. The 20 operating units involved in the survey are listed below.

Bureau of Economic Analysis
Bureau of Export Administration
Census Bureau
Consumer Affairs/Office of the Secretary (OS)
Economic Development Administration
International Trade Administration
Minority Business Development Agency
National Environmental Satellite, Data, & Information
  Service/NOAA
National Institute of Standards and Technology
National Marine Fisheries Service/NOAA
National Ocean Service/NOAA
National Technical Information Service
National Telecommunications and Information Administration
National Weather Service/NOAA
Office of Oceanic & Atmospheric Research/NOAA
Office of Small & Disadvantaged Business Utilization/OS
Patents/Patent and Trademark Office
STAT-USA/Economics and Statistics Administration
Trademarks/Patent and Trademark Office
United States Travel and Tourism Administration

## DEFINITION OF A CUSTOMER

The development of a definition of a customer for the survey was one of the first tasks we faced. For this survey, we considered definitional aspects such as:

- external vs. internal customers,
- type of customer,
- the customer as a person versus the customer as an organization,
- depth of customer contact, and
- self-identification of customers.

Some of the decisions we made regarding the definition of a customer were related to the fact that this is a customer survey of government agencies. Companies in the private sector may or may not have the same types of customers or want to survey all of them.

### External vs. Internal Customers

We decided to limit participation in this survey to external customers of the operating unit and the DOC. This survey did not include internal customers because we knew that the DOC planned to compare results across the 20 operating units.

### Customer Type

There are various types of customers that we considered when trying to determine who to include in a customer survey in the government. They include:

- paying customers,
- those who receive a product or service for free,
- those who receive a product or service passively, and
- regulated customers.

The first type of customers are the most obvious ones, those who buy a product or service. In general, these paying customers should be easy to survey since most agencies should have records of financial transactions.

The second type of customers are those who seek out and receive a product or service for free. It can be argued that if someone doesn't purchase something, they shouldn't be considered a customer. However, in most cases, there is still a product or service being delivered that can be evaluated. Also, customers who receive products and services for free may be strong candidates as future paying customers. Surveying these "potential" customers could determine why they don't buy non-free products and services, and if they would pay for currently-free products and services in the future. These customers may be more difficult to survey than paying customers since agencies won't necessarily have a record of non-financial transactions.

The third type of customers are those who passively or unknowingly receive products or services. This customer receives a product or service, without seeking it out. Similar to the last type of customer, they may not pay directly, but they and other taxpayers probably pay for products and services through taxes. For example, the National Weather Service (NWS) of the National Oceanic and Atmospheric Administration (NOAA) provides weather reports and emergency weather information which is broadcast on radio and television channels throughout the country. Radio listeners and television watchers may receive the information that the NWS has provided, even if they don't actively attempt to receive it. They may not even know that the NWS is responsible for the information.

Another difficulty arises with the passive and unknowing customer because many services are not intended to benefit those who experience them directly. Instead, they are intended to protect or benefit others, such as the public, who may not even be aware of their existence. For example, one service provided by a DOC operating unit is the inspection of fisheries done by the National Marine Fisheries Service, also part of NOAA. Presumably this service is ultimately intended to benefit fish-eaters by ensuring the quality of fish, but these "customers" may not be aware of the service. Passive or unknowing recipients of services are probably the most difficult type of customer to survey. If the customer is not actively attempting to receive products or services, they may not even know that the agency is providing them. Chances are, the agency does not know their identity either.

Finally, customers can be persons or companies that are regulated by a government agency. This customer may or may not pay for services and may not consider themselves to be a customer. In most cases, however, providing regulation is a service that is provided. Therefore, it is worthwhile to find out how satisfied these customers are with various aspects of the regulation process or feedback system. There should be good records of these customers since the agency is responsible for regulating them.

For the DOC customer survey, we asked agencies to provide all of these types of customers if possible, realizing that certain types of customer would be documented less comprehensively than others.
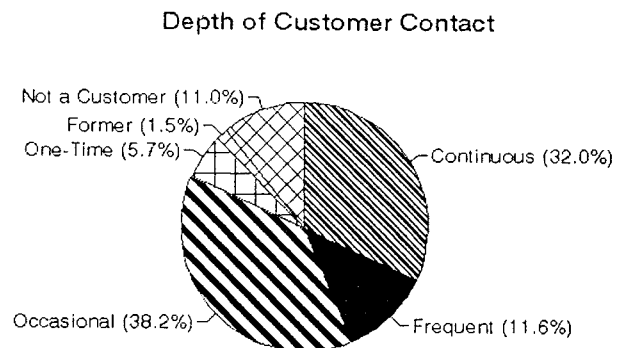
According to the information provided from each agency, all operating units included active customers. It does not appear that any included passive customers. Nine of the 20 operating units included some customers that used a regulatory product or service. According to survey results, every agency provided customers who paid for products or services and those who received them for free.

## Person vs. Organization

We decided to define the customer as a person, rather than as an agency or a business. For this reason, we urged the operating units to include a person's name for each customer record. Since the customer is defined as a person, we may actually have multiple persons from the same organization in the sample.

## Depth of Customer Contact

One more decision used to determine who to include in the survey was the depth of contact the agency has with a customer. The Department survey as a whole included respondents with varying customer relationships (shown below).

Depth of Customer Contact



Not a Customer (11.0%)
Former (1.5%)
One-Time (5.7%)
Continuous (32.0%)
Occasional (38.2%)
Frequent (11.6%)

N = 8,326

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We looked more closely at the percentage of respondents who indicated that they were not a customer of each agency. The percentages ranged from 1.5% to 41.0% with 5 agencies having over 20.0%. One reason for the variability could be that certain products or services could result in a difference in the agency's concept of a customer and the person's concept of a customer. This aspect will be discussed later in this paper.

We also looked more closely at the former customer category for each agency in respect to the recency of the lists. The actual percentage of respondents who indicated that they were former customers of each agency ranged from 0% to 9.5%. There are a variety of interpretations for the variability in these numbers. A low percentage of former customers could indicate that an agency may update their list frequently, removing former customers. A high percentage could mean that an agency purposefully keeps former customers on their list in order to contact them in the future. Another aspect that could affect the percentage of former customers is the nature of the products and services the agency provides. A short-lived relationship between the agency and the customer occurs with certain types of products and services.

In addition, we looked at how current the lists were by examining the percent of responding customers who said they did not contact the operating unit over the past year. 15.7% of the DOC's respondents never contacted a Commerce operating unit for products or services in the last year. This indicates that most of the customers we surveyed are current customers of the Commerce agencies. However, some specific agency lists were less current than others. Six operating units had more than 25% of their responding customers say that they had no contact with the operating unit within the last year.

Agency vs. Individual's Definition of Customer

One general problem in defining a customer is the difference between the agency's concept of a customer and the customer's own concept. Some agencies send out catalogs or brochures to customers on a mailing list. The agency considers the people on the mailing list to be their customers because they receive a product from them. After all, the quality, timeliness, and availability of the catalog or brochure could be evaluated and improved using customer input. It is questionable, however, whether the recipient of the catalog would consider themselves a customer. This

could affect response rates since people may not fill out a customer satisfaction survey if they do not consider themselves a customer.

We were able to look at this issue more closely in survey results from one of the participating operating units. The operating unit provided two files of customers, one containing individuals who were on a mailing list to receive a catalog, and one containing individuals who actually used or purchased some product or service. 23.4% of the respondents who were on the mailing list indicated that they were "not a customer", while only 4.6% of the respondents who purchased a product or service chose that answer. It isn't clear that the higher percentage is entirely due to the type of product received. Also, the response rate for the mailing list customers was 36.0% while the rate for the respondents using or purchasing a product or service was 46.6%. The response rate differences and the quality of the lists could impact the difference we are seeing here.

UNIVERSE FRAME

There are many decisions to consider when developing the frame of customers. We wanted to obtain a computerized, comprehensive list of customers from each participating agency to use as the customer universe frame from which we could select a sample. Each agency, however, had limitations that made it necessary to leave out certain types of customers. The agency had to decide who they could include in the universe based on the types of records they kept about customers and their contacts. The agencies varied greatly on how complete their customer lists were at the time that we requested the lists.

Some examples of customers that agencies either did not have records for, or intentionally left off, include foreign customers, those who received free promotional material at conferences and seminars, customers who were sent replacement items in response to an order already placed, customers who picked up their products and services and therefore had no mailing address listed, phone complaints and inquires, customers before a certain time, walk-in assistance, Congress, and the Presidential office.

Some agencies provided a sample of customers instead of providing all of them. At least one agency surveys customers on a regular basis. They provided a sample because they wanted us to avoid customers that they had surveyed recently.

Since this was a mailout survey, we needed complete address information for each customer. A complete file of customers was useless for this survey unless it contained a mailable address for each customer. Some agencies had to leave customers out of the universe because they only had limited information such as the customer's name and phone number.

Since all agencies could not or did not act consistently in whom they included or excluded in the sampling frame, and because response rates were low (Wellens, Vitrano and Martin, 1995), we strongly cautioned the DOC about making direct comparisons across agencies. All of the data we've reported from this survey (including in this paper) only represent the respondents. We cannot claim that the data represent a large cross-section of a particular agency's customers. The data do not represent:

- all customers who were made available to the Census Bureau,
- all customers who would respond to a survey like this,
- all customers who received the survey, or
- all customers of the operating unit.

The best we can do is describe the types of customers included or excluded from the survey so that agencies can make informed decisions when using the survey results. The results from the respondents are useful and provide insight from customers who took the time and effort to respond.

## CUSTOMER LISTS

Because the Census Bureau does not have individual customer information for other agencies, it was each operating unit's responsibility to provide a list of customers. We gave the operating units guidelines to follow in creating a customer file including the types of customers to include and the required information needed for each customer record.

We asked operating units to leave off customer records that didn't have complete address information since it would be impossible to mail a questionnaire to a respondent without it. In addition to the address information, we asked for a contact name. Personalizing the address, along with other aspects of survey design and implementation, has been shown to improve response rates in other studies (Dillman, 1978). However, it was impossible for certain operating units to provide contact names because they had no record of them. In at least one case, an

agency had numerous records without contact person names on the file (25% of the records had no contact name). As it turns out, this agency did have the lowest response rate of all operating units in the survey. However, it isn't clear that this lowest response rate is entirely attributable to the lack of contact names.

## QUALITY OF CUSTOMER LISTS

The general guidelines we provided resulted in lists varying in quality and scope. In many cases, the quality of these lists seemed to impact the results.

Unfortunately, there are important aspects of list quality which we could not measure, including completeness and coverage of the lists. Some operating units covered a larger variety of customer than others. A comprehensive list containing all customers of an agency may be of higher quality than one that covered only two or three products or services for the purpose of evaluating the agency as a whole. However, we could not measure the coverage of the list, so we could not evaluate that aspect of list quality.

We could measure other aspects of list quality, including:

- size,
- the percentage of duplicates,
- the percentage of post sampling deletes including further duplication, internal customers, and incomplete addresses, and
- the percentage of out-of-scope customers.

Where possible, we will attempt to show the impact of these characteristics on the survey.

### Size of List

The customer lists delivered to the Census Bureau ranged in size from 114 records to 200,000 records. Reasons for this variability include: some agencies just have more customers than others; some provided a sample of customers; some provided customers that used specific products or services within a specified time frame; and some only provided customers that used certain products or services.

### Duplicates removed before sampling

Prior to sampling, we performed a computerized unduplication removing between 0 and 6% of most

operating units' files. There was one agency with 69% of its file removed because of duplication, but follow up with the agency explained that the reasons for this were related to the development of the list.

## Stratification and Sampling

With limited resources, we could not take a census of every customer on each agency list, so we had to sample the large customer files. If an agency provided fewer than 1400 cases, we sent a questionnaire to each customer on the list. For all agencies that provided more than 1400 customers, we used 1400 as our target sample size. Actual sample sizes ranged from 114 to 1500 customers for each agency, resulting in a total mailing of about 22,000 questionnaires.

We asked each operating unit to create a classification of the customers they provided. This was used to provide equal representation of certain types of customers in the sample and to allow for analysis of the survey data by this customer classification. This classification was done by assigning a meaningful customer classification flag to each record on an agency's file. The definition of the classification flags was determined by the agency and could be used to sub-divide the customers by such characteristics as type of product or service used, amount of money spent, size of customer, or any other relevant characteristic. For those agencies where a sample was selected, customer files were sorted on customer classification flags before sampling to ensure proportional representation in the sample.

Thirteen of the twenty operating units used some type of classification code scheme. The number of codes the thirteen agencies used ranged from 2 to 58.

## Deleted records after sampling

After sampling the universe files, a clerical review was done to remove further duplicates, incomplete addresses, and DOC employees. This review resulted in the removal of 0% to 13% of each operating unit's sample file.

It would have been more accurate to remove these cases prior to sampling, but we were unable to do so because of the size of the lists we received and the inability to complete the removal electronically. Therefore, these percentages only represent the cases that were deleted from the sample that was selected. One could assume that these percentages are somewhat representative of the universe.

## Out-of-Scopes

With the other inaccuracies in the customer lists, we expected to experience some level of out-of-scopes as we started the mailout operation. We considered out-of-scope customers to be those that are no longer in business, those whose address is no longer valid, and Postmaster returns (PMRs) without address corrections. The PMRs that we considered to be out-of-scope included questionnaires that were returned from the Post Office for such reasons as "address unknown", "return, unclaimed", or "attempted, unknown". We did not define out-of-scope to mean that the customer is no longer a customer of the DOC, since we wanted to include past customers as long as we had records of them. The out-of-scope rates, including PMRs ranged from 1.1% to 17.8%.

A high percentage of out-of-scopes probably indicates that a customer file is old. An old customer list is not cost effective for a mailout survey because you waste money producing and mailing questionnaires that are never used. However, depending on an agency's needs, it may be better to add records to the file instead of updating it by deleting old cases. It is probably good to survey past customers because they could provide valuable insight into the reasons why customers choose not to remain agency customers. However, older addresses tend to be less reliable and may result in higher out-of-scope rates.

## Relationship Between Response Rates and List Quality

In addition to looking independently at each aspect of customer list quality, we began to examine how these aspects seem to relate to the response rates from the various agencies. Having used the same survey instrument and operational procedures for all 20 operating units, we looked at what is different about these operating units that might relate to the wide range of response rates.

First, we looked at the operating units with the highest response rates, all above 56%. We'll call these operating units A, B, C, D, and E. Operating units A, C, and E were among the 4 operating units with the lowest percentages of respondents who consider themselves to be former customers. However, operating unit C actually had the 6th highest percentage of customers who consider themselves to be former customers. Operating units A, B, and D were among the 5 operating units with the lowest percentages of respondents who did not consider

themselves to be customers of the operating units. Operating units A, B, C, and D had the 4 lowest percentages of respondents who never contacted the agency in the past year. However, operating unit E actually had the 6th highest percentage of respondents who said they never contacted the agency in the past year. Operating units C and E had the lowest and the 5th lowest out-of-scope rates in the survey with 1.1% and 3.5%, respectively.

Next, we looked at the operating units with the lowest response rates, all below 34%. We'll call them V, W, X, Y, and Z. These operating units had the 5 highest percentages of respondents identifying themselves as former customers. Operating units W, X, Y, and Z had 4 of the 5 highest percentages of respondents who did not consider themselves to be customers of the operating unit. These 4 operating units were also among the operating units with the 5 highest percentages of respondents who didn't contact the agency within the past year. Operating units V, X, and Z had the highest rate of out-of-scope cases in the survey with 12.6%, 17.8%, and 13.0% respectively.

It seems that the size of the original lists may be related to response rates as well. Four of the 5 operating units with the lowest response rates were among the 10 operating units with the largest lists that we sampled from. Four of the 5 operating units with the highest response rates were among the 10 smallest lists we sampled from.

When the operating units with the 5 highest response rates are ranked by the 5 characteristics listed above, none fall in the bottom quarter in any category. Also, in 4 of the 5 rankings, at least 3 of these operating units are in the top quarter of each rating.

When the operating units with the 5 lowest response rates are ranked by the 5 characteristics listed above, none fall in the top quarter of any category. Also, in 4 of the 5 rankings, at least 3 of these operating units are in the bottom quarter of each rating.

At a cursory review, it appears that all of the characteristics described above may be related to the response rates in some form or another. Putting some effort into developing a high quality customer list may help keep the response rates high in a survey of this type.

To summarize, operating units with the highest response rates generally had:

- lower percentage of former customers,
- lower percentage of non-customers,
- lower percentage of customers who did not contact the agency in the last year,
- lower rate of out-of-scope cases, and
- a smaller sampling list.

## CONCLUSION

As discussed here, there are many issues to consider when developing frames of customers and sampling for customer surveys within the government. There are several factors that will help an agency be more successful in measuring the satisfaction of these customers. They include:

- the ability of an agency to clearly identify their customers,
- the ability to classify their customers by the type of products and services they receive and the types of customers they are, and
- the ability to maintain a current, accurate, and complete universe of customers.

Response rates are an additional factor in the success of the survey. Methods should be used to maximize response rates so that data are more accurate and comparable across agencies or time periods. Although we used consistent methods to maximize response rates, we saw great variations in the actual response rates by operating unit. We intend to do further analysis to determine the characteristics that lead to higher response rates.

More detailed information is available in the complete paper. For a copy, contact the authors.

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