Determining Staffing Needs for Administrative, Professional, and Technical Workers in the U.S. Secret Service

A User Guide for Workforce Staffing Models

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HOMELAND SECURITY OPERATIONAL ANALYSIS CENTER

An FFRDC operated by the RAND Corporation under contract with DHS
This user guide is provided as part of a project designed to help the U.S. Secret Service determine staffing needs in a subset of administrative, professional, and technical work functions. For the project, researchers from the Homeland Security Operational Analysis Center (HSOAC) analyzed organizational structures, workflows, and available data and compared these factors with possible approaches to build tools for workforce planners to use in making staffing determinations.

This research was sponsored by the U.S. Secret Service Workforce Planning Division and conducted within the Personnel and Resources Program of the HSOAC federally funded research and development center (FFRDC).

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The results presented in this report do not necessarily reflect official DHS opinion or policy.
For more information on HSOAC, see www.rand.org/hsoac. For more information on this publication, see www.rand.org/t/TL353.
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Summary

This user guide provides information for users of a workforce staffing estimation tool developed in a Homeland Security Operational Analysis Center project executed for the U.S. Secret Service. The guide also provides several use cases outlining ways for practitioners to use the models for workforce planning.

The guide shows how to construct a process map as a foundation for a staffing model. It describes how to capture task frequency and time per task in the process maps, export a map to a Microsoft Excel workbook formatted for this purpose, and use the workbook tool to calculate current workforce requirements and planned or desired workforce requirements (see Figures S.1 and S.2).

The tool can be used in myriad contexts requiring adjustments to staffing levels. Typical use cases include right-sizing a staff, responding to changes in workload drivers, responding to changes in work processes, responding to changes in organizational structures, and establishing new processes.

Figure S.1
A Sample Workbook Tool
NOTE: HAL = Health and Life (a Microsoft Access database). NFC = National Finance Center. HRConnect is a PeopleSoft payroll system. SINQ = suspense inquiry. Laserfiche is a database of scanned beneficiary forms that serves as a backup to the electronic official personnel folder (eOPF).
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>eOPF</td>
<td>electronic official personnel folder</td>
</tr>
<tr>
<td>HAL</td>
<td>Health and Life database</td>
</tr>
<tr>
<td>HRM</td>
<td>human resource management</td>
</tr>
<tr>
<td>NFC</td>
<td>National Finance Center</td>
</tr>
<tr>
<td>SINQ</td>
<td>suspense inquiry</td>
</tr>
</tbody>
</table>
Every organization must determine the number of workers required for its various functions. Some organizations use a structured, analytic approach to relate organizational outputs to the human resources required to produce them. The tools developed through these analyses can be referred to as **staffing models**. A staffing model will generally have the form depicted in Figure 1.1.

In fiscal year 2019, the U.S. Secret Service Workforce Planning Division, a component of the Office of Human Resources, asked the Homeland Security Operational Analysis Center to develop a set of improved staffing models for selected administrative, professional, and technical (APT) workforces. This guide is intended to help users in the Workforce Planning Division and elsewhere in the Secret Service to employ the most common type of staffing model—a Microsoft Excel–based staffing tool—developed in this project.¹

The primary purposes of the models are to document the workforce size required for current workloads and to project the changes in workforce size required for new or changing workloads. Additionally, the models and the process maps constructed as a basis for those models can be used as baselines for process improvement efforts.

The backbone of a bottom-up staffing model like this is a process-oriented description (or, more simply, a process map), which, for each process, identifies the included tasks and the conditions that influence the frequency with which the tasks are performed. Process maps help clarify the data needed for a staffing model: estimates of

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1 For information about how the steps were determined, see Schulker, Robbert, and Lim, forthcoming.
the number of process iterations in a given time period and the average time for each task within a process.

In developing the staffing models in this project, the authors used Microsoft Visio to create process maps.\(^2\) The process-frequency and time-per-task data associated with the maps were recorded in data fields in Visio, which were then exported to the Microsoft Excel–based staffing tool. The staffing tool uses the data, along with supervisory or other effort not directly related to production tasks, to determine full-time–equivalent staffing requirements.

## Organization of This Guide

Chapter Two provides information for users of the staffing models developed in this project. Chapter Three provides several use cases outlining ways for practitioners to use the models for workforce planning.

\(^2\) Microsoft Visio is the diagramming and vector graphics application in the Microsoft Office suite. It facilitates development of process maps using standard flowcharting shapes, allows customized data to be associated with the various shapes, and includes a feature to allow export of the data to a Microsoft Excel spreadsheet.
The two interrelated elements of the models used for this tool are process maps and staffing tools.¹ The general flow of work activity is depicted using shapes in the process maps. Using the shape-data feature in Microsoft Visio, process frequencies, task times, and other parameters are captured in data fields tailored to the various shapes.² Using the shape-report feature in Visio, these data are then exported in a Microsoft Excel format for inclusion as inputs in an Excel-based staffing tool. The staffing tool is prefigured to use the data to compute staffing requirements.

### Process Maps

Our process maps use standard flowcharting shapes to represent work activity. Typically, process maps use various shapes to depict both work activity and the inputs to and outputs from that activity. Because our focus is on task frequencies and times, we used a reduced shape set in our maps, focusing on task concatenations and eliminating input and output shapes. The four shapes used in our approach are shown in Figure 2.1.

Figure 2.2 shows a section of a process map using each of the shapes indicated in Figure 2.1.

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¹ In this guide, each Excel workbook is a separate tool. However, there are often multiple process maps associated with a single tool. For example, we generally have one Excel workbook for a division but separate process maps for branches within a division.

² Different shapes have different data fields. For example, one type of shape captures process frequencies, and a different one captures task times.

A process generally contains multiple tasks. We capture the frequency of the process then, in the staffing tool, apply it to the various tasks in the process.
**Figure 2.1**
Process Mapping Shapes

- **[Process]** An oval is at the beginning of each process. It captures the process frequency—how often the process is executed per day, week, month, quarter, or year.

- **[Task]** A rectangle represents a task. It captures the touch time (hands-on time someone spends performing the task), in minutes or hours, required for one cycle of the process.

- **[Decision node]** A diamond is a decision or branching node. It occurs in the middle of a process, where some but not all of the tasks in a process are executed. It captures the percentage of process iterations for which a condition question in the diamond branches to **yes**.

- **[Subprocess]** A rectangle with two extra vertical lines is a subprocess. The tasks associated with it are executed more than one time for each cycle of the main process. An oval immediately following this symbol is used to capture how many times the subprocess tasks are executed for each iteration of the main process.
Figure 2.2
A Sample Process Map Segment

Key
Current process
Planned or desired process

01.01 New hire
01.02 Receive and review new-employee forms
01.03 Incomplete?
01.03.1 Correctable?
01.03.2 Correct errors
01.03.3 Correct errors
01.03.4 Not correctable?
01.04 Certify forms; put in effective date and contact info
01.05 Email copy to employee
01.06 Log into HAL and enter data
01.07 Check NFC
01.08 Check HRConnect for transfer within DHS
01.09 Not a transfer?
01.10 Upload beneficiary forms from Laserfiche into eOPF
01.11 Enter other benefit forms into eOPF
01.12 Fax forms to health carrier
01.13 File forms

NOTE: HAL = Health and Life (a Microsoft Access database). NFC = National Finance Center. HRConnect is a PeopleSoft payroll system. SINQ = suspense inquiry. Laserfiche is a database of scanned beneficiary forms that serves as a backup to the electronic official personnel folder (eOPF).
Shape Data

In addition to depicting a sequence of tasks, Visio files capture data fields specific to each shape, exportable in Excel format for use in the Excel-based staffing tools.

Viewing a Shape's Data Fields

To see the data fields associated with a shape, perform these steps:

1. In Visio, right-click the shape. A pop-up menu appears.
2. From the pop-up menu, choose Data Shape Data.

The Shape Data window appears.

For a list of the full set of data fields used for each shape, see Table 2.1.

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3 These data fields and specifications for the data-extract report are not standard Visio features. They are customized features built using functions enabled through the Developer topline menu item. They are embedded in
Table 2.1
Shape Data Fields

<table>
<thead>
<tr>
<th>Shape</th>
<th>Field</th>
<th>Allowable Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oval</td>
<td>Current frequency count</td>
<td>Numeric</td>
</tr>
<tr>
<td></td>
<td>Current frequency period</td>
<td>Daily, Weekly, Biweekly, Monthly, Quarterly, or Yearly</td>
</tr>
<tr>
<td></td>
<td>Planned/desired frequency count</td>
<td>Numeric</td>
</tr>
<tr>
<td></td>
<td>Planned/desired frequency period</td>
<td>Daily, Weekly, Biweekly, Monthly, Quarterly, or Yearly</td>
</tr>
<tr>
<td>Rectangle</td>
<td>Current time amount</td>
<td>Numeric</td>
</tr>
<tr>
<td></td>
<td>Current time unit</td>
<td>Hours or Minutes</td>
</tr>
<tr>
<td></td>
<td>Planned/desired time amount</td>
<td>Numeric</td>
</tr>
<tr>
<td></td>
<td>Planned/desired time unit</td>
<td>Hours or Minutes</td>
</tr>
<tr>
<td>Diamond</td>
<td>Percentage branching to yes</td>
<td>Numeric</td>
</tr>
</tbody>
</table>

Extracting Shape Data

A knowledgeable user can replicate our analytic process to either refresh an existing staffing model or build a new one. In doing so, understanding the process of moving data from Visio to Excel will likely be found useful. Note, however, that the instructions provided here will work only with the customized Visio files provided in conjunction with this tool.

As described under “The Staffing Tool” on page 11, the staffing tool is implemented in Excel workbooks. The tool uses the shape data recorded in Visio process maps as the basis for computing staffing requirements. A report feature available in Visio is used to extract the text label for each shape and the underlying shape data and export them in an Excel format. Then you export the data and copy and paste them into an Excel workbook formatted to serve as a staffing tool.
Extracting the Data from Visio

To run a report, perform these steps:

1. In Visio, choose **Review** | **Shape Reports**. The **Reports** dialog box appears.

2. In the dialog box, choose **Process and Task Data**.
3. Click **Run**. The **Run Report** dialog box appears.

4. Select the Excel format. Visio generates the staffing model data file in Excel format containing a row for each shape in the process map. More specifically, it generates a row for each shape that has yes in the **Include in Excel extract** field, as shown in step 2 of the procedure in “Shape Data” earlier in this chapter. Column A contains the text included in each shape, with columns B through K containing data from the various shapes. Columns L through O contain other data fields not currently used in our processes.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
<th>Column E</th>
<th>Column F</th>
<th>Column G</th>
<th>Column H</th>
<th>Column I</th>
<th>Column J</th>
<th>Column K</th>
<th>Column L</th>
<th>Column M</th>
<th>Column N</th>
<th>Column O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text</td>
<td>Data 1</td>
<td>Data 2</td>
<td>Data 3</td>
<td>Data 4</td>
<td>Data 5</td>
<td>Data 6</td>
<td>Data 7</td>
<td>Data 8</td>
<td>Data 9</td>
<td>Data 10</td>
<td>Data 11</td>
<td>Data 12</td>
<td>Data 13</td>
<td>Data 14</td>
</tr>
</tbody>
</table>

Table 2.2 shows the column headings and the shapes to which they apply, along with a screenshot of the resulting spreadsheet.
Table 2.2
Shape Data in the Data Extract Report

<table>
<thead>
<tr>
<th>Shape</th>
<th>A. Displayed Text</th>
<th>B. Yes %</th>
<th>Frequency</th>
<th>Time</th>
<th>Frequency</th>
<th>Time</th>
<th>Planned or Desired</th>
<th>Frequency</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oval</td>
<td>x</td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Rectangle</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Diamond</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of Staffing Model Data Format](image-url)
Bringing the Extracted Data into the Staffing Tool

To copy and paste data from the Visio data extract into the staffing tool, follow these steps:

1. In the Visio output report, highlight columns A through K and all rows containing data.\(^7\)
2. Choose **Edit | Copy** (or use a shortcut key or toolbar button to copy).
3. In the staffing tool, choose the **Production Tasks** worksheet.
4. Ensure that the destination contains at least as many blank rows as the number of rows in the source (copied) data. If it does not, see “Modifying the Staffing Tool” and perform these additional steps:
   a. Insert enough additional rows on the **Production Tasks** worksheet to have sufficient space for the copied rows.
   b. Copy the formulas in columns M through P from an existing row into the corresponding cells of the inserted rows.
4. On the **Production Tasks** worksheet, click in column B of the first row of the section in which the copied rows are to be pasted.

\(^7\) The output report is an Excel file but is not the same file as the staffing tool. It is discarded after the copied data are pasted into the staffing tool.
5. Choose **Edit > Paste Special**.

6. Choose **Values**. (If your version of Excel has different options, choose one that does not apply any formatting and instead pastes only the data into the destination cells.) This is necessary to preserve functionality tied to cell formatting in the staffing tool.

7. Place the task frequency data in the rows containing task times. See “The Production Tasks Worksheet” on page 15.

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**The Staffing Tool**

The staffing tool is implemented in an Excel workbook. Each workbook contains the worksheets shown in Figure 2.3.

Two versions of the staffing tool are provided: fixed structure and flexible structure. In each version, the structure of the workbook is locked by default, and user entries are allowed only in specified cells (indicated by yellow fill). Locking the structure prevents insertion or deletion of worksheets or rows and columns within a worksheet, in turn preventing accidental changes to cells containing formulas or values needed for the tool to function properly. In the fixed-structure version, the locked structure is password protected so that a user cannot unlock it. In the flexible-structure version, the structure is locked but not password protected, so a user can unlock various worksheets and modify their structures as needed. The fixed or flexible structure of the workbook is indicated on the workbook’s home page (see Figure 2.4). The Homeland Security Operational Analysis Center certifies the functionality of the fixed-structure
version but is not responsible for loss of functionality caused by modifications of the flexible-structure version.

Color Coding
Throughout the workbook, a consistent color-coding scheme is maintained, as shown in Figure 2.5:

- A yellow cell can be modified by the user. Additionally, in some yellow cells, Excel’s data validation standardizes entries for some user-provided information (process frequency and time per task).
- A blue cell contains a non–user-modifiable calculation.\(^8\)
- A white or gray cell provides information, such as fixed values or instructions.
- A beige cell contains a formula that uses values from other cells.

\(^8\) This restriction is enforced only when worksheets remain protected by Excel’s security features.
The Staffing Models

• A salmon gradient indicates a high-cost cell (see discussion under “The Lists and Factors Worksheet” next).
• Other colors differentiate organizational units represented in the staffing tool.

The Lists and Factors Worksheet
Several factors used in the model are provided or calculated on the Lists and Factors worksheet. One section contains the tables providing the values for the frequency period and time unit drop-down lists on the Production Tasks worksheet (see Figure 2.6). The frequency period table also contains factors to convert process frequency counts for daily, weekly, biweekly, quarterly, or yearly periods to monthly counts.
Table 2.3 shows the derivation of factors used to convert frequencies expressed in other time periods to monthly. These conversions are embedded in the formulas in columns M and O of the Production Tasks worksheet (see “The Production Tasks Worksheet” on page 15).

Another section of this worksheet calculates the annual person-hour availability factor used in the model (see Figure 2.7). The sum of computed work-hours for a work unit is divided by this factor to determine the number of full-time-equivalent staff.

### Table 2.3
Factors for Converting Other Frequency Periods to Monthly

<table>
<thead>
<tr>
<th>Period</th>
<th>Conversion Factor</th>
<th>Calculation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>20.9077</td>
<td>$(\text{weekly} \times 5 - 10)/12$</td>
<td>The number of workdays per year is calculated as the average number of weeks per year multiplied by five workdays per week, with ten holidays per year subtracted. The tool then divides the number of workdays per year by the number of months in a year.</td>
</tr>
<tr>
<td>Weekly</td>
<td>4.3482</td>
<td>$\frac{366}{7} + \left(3 \times \frac{365}{7}\right)/4$</td>
<td>This is the average number of weeks in a year, accounting for leap years, divided by the number of months in a year.</td>
</tr>
<tr>
<td>Biweekly</td>
<td>2.1741</td>
<td>$\text{weekly}/2$</td>
<td>This is half the weekly factor.</td>
</tr>
<tr>
<td>Monthly</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quarterly</td>
<td>0.3333</td>
<td>$1/3$</td>
<td>A month is one-third of a quarter.</td>
</tr>
<tr>
<td>Yearly</td>
<td>0.0833</td>
<td>$1/12$</td>
<td>A month is 1/12th of a year.</td>
</tr>
</tbody>
</table>
positions required for the specified workload. Default input values are provided, but, as indicated by the yellow cells, the user can modify the inputs, and extra rows are provided to allow entry of additional forms of time away from work.

During time at work, various breaks away from production tasks are needed for personal and official reasons. To account for this, a nonproduction factor is calculated as the number of hours in a standard workweek (by default, 40 hours) divided by the number of hours available for direct effort in a workweek (see Figure 2.8). Time available for direct effort is determined by subtracting approved personal or official nonproductive time from 40 hours. In determining staffing requirements, direct effort required for production tasks is scaled up using this factor to determine the total number of hours required in the workplace. The screenshot shows the default values and space available for user-added events.

A final section of the Lists and Factors worksheet provides a utility for identifying high-cost tasks (see Figure 2.9). The user can set a threshold in hours per month (the only user entry in this section). On the Production Tasks worksheet, any task requiring monthly effort above this threshold is highlighted using the yellow-to-salmon gradient. The total task count and the number of tasks exceeding the threshold are shown in Figure 2.9.

The Production Tasks Worksheet

An example of a completed Production Tasks worksheet is shown in Figure 2.10. Yellow cells on the Production Tasks worksheet correspond to shapes in an accom-
### Figure 2.8
The Nonproduction Allowances Table

<table>
<thead>
<tr>
<th>Event</th>
<th>Event Frequency</th>
<th>Time per Event</th>
<th>Hours per Week</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rest breaks</td>
<td>2 Daily</td>
<td>15 Minutes</td>
<td>2.40</td>
<td></td>
</tr>
<tr>
<td>Team and supervisory</td>
<td>1 Weekly</td>
<td>2 Hours</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>Training</td>
<td>15 Yearly</td>
<td>1.5 Hours</td>
<td>0.43</td>
<td></td>
</tr>
</tbody>
</table>

Total Non-production Hours per Week: 4.84
Nominal Work Week: 40.00
Total Production Hours per Week: 35.16
Non-production Allowance Factor: 1.14

### Figure 2.9
The High-Cost Task Table

<table>
<thead>
<tr>
<th>Task Category</th>
<th>This display shows the count and total hours per month for current tasks that equal or exceed the specified hours-per-month threshold.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Task Count</td>
<td>257</td>
</tr>
<tr>
<td>High-cost Task Count</td>
<td>17</td>
</tr>
<tr>
<td>% of Total Tasks</td>
<td>6.0%</td>
</tr>
<tr>
<td>Total Task Hours per Month</td>
<td>1,820.6</td>
</tr>
<tr>
<td>High-cost Hours per Month</td>
<td>581.0</td>
</tr>
<tr>
<td>% of Total Hours per Month</td>
<td>31.9%</td>
</tr>
</tbody>
</table>
panying process map. Some cells on this worksheet contain data imported from a process map. Others contain either data or formulas entered directly in the worksheet by users.

As indicated in Table 2.1, shape data fields in process maps are specific to each shape. A row corresponding to an oval (the beginning of a process) contains only process frequency data. A row corresponding to a diamond (a branching node) contains only the proportion branching to yes. A row corresponding to a rectangle (a task), when initially imported from the process map, contains only the time to complete a single iteration of the task. However, to compute staffing requirements, a process frequency must be associated with each task in the process. This is done by placing cell references or formulas in the Task Frequency columns of the rows pertaining to tasks. As an aid in developing the tool, any cell on the Production Tasks worksheet containing a user-specified reference or formula is converted from yellow to beige (see Figure 2.11).

When a task frequency is calculated or entered in a row containing an amount of time per task, the worksheet calculates the required workload for the task, expressed in hours per month. This number appears in column M for current processes or O for planned or desired processes (see Figure 2.12).

Columns N and P then convert the hour-per-month calculations to fractions of a full-time staff equivalent. The key point here is that a workload is calculated only when a task has both a frequency and an amount of time associated with it.

An advanced feature allows the rows in an Excel file to be linked to shapes and their included data in a Visio file. With this linkage established, updates to data in the Excel file will be propagated to the Visio file. Unfortunately, this feature works in only one direction: Updates to data in the Visio file will not automatically update the Excel file. See the appendix for instructions on establishing this link.

The Staffing Assessment Worksheet
Totals for various organization units on the Production Tasks worksheet are carried into the display on the Staffing Assessment worksheet, as illustrated in Figure 2.13. This display accepts user input regarding current and, if different, planned or desired staffing. These figures can then be shown as proportions of required staffing calculated by the model.

Several types of positions can be shown in the current staffing or planned or desired staffing area.

Some requirements are based at least partially on position staffing rather than on documented workloads. Position staffing refers to requirements derived from organizational norms for certain positions rather than from documented workloads, such as

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9 In some cases, adjustments, such as the addition of new tasks, can be made in the staffing tool without corresponding adjustments in the accompanying process map. Although maintaining consistency between process maps and the staffing tool is ideal, it is not absolutely necessary for effective use of the staffing tool.
Figure 2.10
The Staffing Tool: The Production Tasks Worksheet

<table>
<thead>
<tr>
<th>Office of HRM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benefits and Payroll Division</strong></td>
</tr>
<tr>
<td><strong>Benefits Branch</strong></td>
</tr>
<tr>
<td><strong>Task</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>G.01</strong> New hire</td>
</tr>
<tr>
<td><strong>G.02</strong> Receive and review new employee forms</td>
</tr>
<tr>
<td><strong>G.03</strong> Incomplete?</td>
</tr>
<tr>
<td><strong>G.03.1</strong> Correctable?</td>
</tr>
<tr>
<td><strong>G.03.2</strong> Correct errors</td>
</tr>
<tr>
<td><strong>G.03.3</strong> Not correctable?</td>
</tr>
<tr>
<td><strong>G.03.5</strong> Return to employee for correction</td>
</tr>
<tr>
<td><strong>G.04</strong> Certify forms, put in effective date and contact info</td>
</tr>
<tr>
<td><strong>G.05</strong> Email copy to employee</td>
</tr>
<tr>
<td><strong>G.06</strong> Log into HR and enter data</td>
</tr>
<tr>
<td><strong>G.07</strong> Check FFC</td>
</tr>
<tr>
<td><strong>G.08</strong> Check HRConecct for transfer within DHS</td>
</tr>
<tr>
<td><strong>G.09</strong> Not a transfer?</td>
</tr>
<tr>
<td><strong>G.09.1</strong> Enter same info in HRConecct</td>
</tr>
<tr>
<td><strong>G.09.2</strong> Sync errors?</td>
</tr>
<tr>
<td><strong>G.09.3</strong> Correct errors</td>
</tr>
<tr>
<td><strong>G.10</strong> Upload beneficiary forms from laser fish into eOFF</td>
</tr>
<tr>
<td><strong>G.11</strong> Enter other benefit forms into eOFF</td>
</tr>
<tr>
<td><strong>G.12</strong> Fax forms to health carrier</td>
</tr>
<tr>
<td><strong>G.13</strong> File forms</td>
</tr>
<tr>
<td><strong>G.02.01</strong> Qualifying life event</td>
</tr>
<tr>
<td><strong>G.02.02</strong> Respond to employee call or email, send Form 2895, ask for proof of event</td>
</tr>
<tr>
<td><strong>G.03</strong> Receive and inspect form</td>
</tr>
</tbody>
</table>

**NOTE:** HRM = human resource management. (The office is actually called the Office of Human Resources.)
The Staffing Models

director; deputy director; chief of a division, branch, section, or team; and dedicated administrative support personnel. In some cases, the incumbent of such a position is partially available for work on the production tasks of their organization. These types
Determining Staffing Needs for Workers in the U.S. Secret Service

of positions can be listed in column C of the Staffing Assessment worksheet. The number of each type of position is shown in columns D and E, and the proportion of their time available for production tasks is shown in columns F and G. These production task availability entries for higher-level supervisors would generally be 0 percent, while the normal entry for most other positions in a unit would be 100 percent. Team leads or supervisors of smaller units might have production task availability between these extremes. For any type of position, position staffing requirements, shown in columns H and I, are computed as 1 – the production task availability proportion.

Modifying the Staffing Tool
Changes that can be made without unlocking the structure of the workbook include changes in process frequency, time per task, percentages branching to yes, production task descriptions, and comments. A production task can be eliminated only by deleting the contents of a yellow cell, not by deleting an entire row. New production tasks can be added in the extra rows provided in each section’s segment of the production task list. For other changes, such as adding or realigning branches and sections within the division, the structure must be unlocked. To unlock a worksheet, choose Review | Unprotect Sheet. Restoring sheet protection after changes are made is strongly recommended. In the non–password-protected version of the workbook, a

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10 In the unlocked structure, the menu item for deleting a row is grayed out and cannot be used.
change log is provided (see the last worksheet in the workbook) to (manually) record dates and summaries of changes made to the workbook structure.

When inserting an additional row for an organizational unit on the **Production Tasks** worksheet, ensure that the insertion point (the selected cell) should be below the first row of the organizational unit or above the last row of the unit. This preserves the summation formulas in columns M and O. It also preserves the formatting of the inserted rows, but it does not replicate the workload calculation formulas in columns M through P. To provide those formulas in the inserted rows, copy columns M through P from a previously existing row and paste into the inserted rows, ensuring that the cell references in the formulas are to cells in the same row as the formula.

Note that changes in the organizational structure (i.e., addition of a new division, branch, or section) of the **Production Tasks** worksheet require more-complex modifications on the **Production Tasks** worksheet and corresponding changes to the **Staffing Assessment** worksheet.

**Adding an Organizational Section for Production Tasks**

To add an organizational section on the **Production Tasks** worksheet, perform these steps:

1. Select the last row containing the name of the organizational unit before which the new unit will appear. (To avoid errors in this and subsequent steps, select the entire row rather than a range of cells.) In the sample workbook (Figure 2.13), that row would contain either **Benefits Branch** or **Payroll Branch**.
2. Insert blank rows.
3. Copy the row containing the organizational name.
4. Select the first inserted row and choose **Edit | Paste** (or use your preferred method of pasting).
5. In the cell containing the name on that row, type the new organizational unit.
6. Select a previously existing yellow row.
7. Choose the format paintbrush to pick up the format of that row.
8. Select the newly inserted rows below the one containing the new organizational name. This transfers formatting, data validation, and cell protection settings to the inserted rows.
9. In columns M and O of the new row containing the organizational unit’s name, change the summation formulas to show the first and last rows included in the new unit’s section of the worksheet.
10. Check the summation formulas in the rows of organizational units immediately above and below the newly inserted unit to ensure that they reference the appropriate rows. Add data entry rows in the new section as needed.
Adding an Organizational Section for Staffing Assessment

To add the same section on the Staffing Assessment worksheet, perform these steps:

1. Select all rows pertaining to the organizational unit that follows the new unit being inserted. Generally, this will be six rows, starting with the row containing the unit name and ending with the row containing totals for the unit.
2. From the Home ribbon, choose Insert | Insert Sheet Rows.
3. Copy the rows from the old unit below the one being added and paste them into the inserted rows.
4. In column B of the first row pertaining to the new unit, provide a cell reference to the unit name on the Production Tasks worksheet.
5. In column J of the totals row pertaining to the new unit, provide a cell reference to column M in the same row as the name of the new unit on the Production Tasks worksheet.
6. In column L of the totals row pertaining to the new unit, provide a cell reference to column O in the same row as the name of the new unit on the Production Tasks worksheet.
7. In the Totals row for any higher-level organizational units that contain the new unit, modify the formulas in columns D, E, and H through O to include the totals from the new unit. Note that the formulas in columns N and O can differ from columns H through M in that they include the position staffing requirements from the higher-level organizational unit.

Some staffing tools can contain three or more organizational levels. In these cases, adding a new multilevel organizational unit requires much the same steps plus additional steps to insert and populate rows for the higher level of the new multilevel organizational unit in the Production Tasks and Staffing Assessment worksheets.

An Analysis of Alternatives

The provision for entering planned or desired process frequency and time per task allows the model to be used to estimate staffing requirements for mission requirements that are not being fully met or for planned or desired changes in mission. The need for a staffing adjustment can be driven by an external change in a workload driver, a new requirement, or a planned or desired change in a service level. An increase in annual hires is an example of change in external demand to which the HRM function must respond, resulting in increased workloads associated with processing new hires. Expanding employee resiliency programs is an example of a new requirement or a change in service level—the HRM function retains some discretion over the scope of these programs and, therefore, over the level of staffing required to execute them. In both cases, additional staffing requirements can be estimated by entering modified process frequency or time per task (or both) in the Planned/Desired input columns.
of the staffing tool or by adding new tasks with process frequency and time per task in the Planned/Desired input columns.

Before using the staffing tool to explore an alternative, it should be calibrated so that the staffing requirement calculated for current processes is approximately equal to the staffing in place when the current process frequency and time per task were measured or estimated. If the frequencies and times expended on current tasks are accurate, the task list is comprehensive, and there is no appreciable slack in current staffing, the current required staffing calculated by the workbook should approximately equal the current staffing, including the full-time equivalent of average overtime being worked.

When the tool is calibrated this way and current staffing is inadequate, the frequencies and times indicated for current tasks will (and should) be less than what is considered ideal. The Planned/Desired Task Frequency and Time per Task cells can then be used to show ideal levels of effort. Consequently, planned or desired staffing requirements calculated by the model will represent a target staffing size. Managers seeking resources for the planned or desired staffing size would supplement the quantitative data from the staffing tool with the rationale for new tasks or increased task frequency or time per task.

An analysis of alternatives will typically require either the addition of new tasks or changes in the task frequency or time per task for existing tasks.

**Adding Tasks**

To add tasks, perform these steps:

1. Make a copy of the staffing tool file and give it a filename that indicates its purpose. Work with the copy rather than the original file.
2. On the Staffing Assessment worksheet, copy the entire matrix (all rows and columns containing nonwhite cells).
3. Select a cell a few rows below the bottom of the original matrix, in column A.
5. Choose Paste Special | Formats.
6. Choose OK.

Blank rows have been left in each section of the Production Tasks worksheet to allow for additional tasks. Note that the cells in columns M through P will remain blank until the four elements of a task workload (task frequency count, task frequency

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11 If a task is planned or desired but is not currently exercised, a user would leave current frequency and duration cells blank and enter data only in the Planned/Desired Task Frequency and Time per Task cells.
12 If the number of blank rows is insufficient, insert additional rows. This requires unlocking the structure of the workbook, inserting additional rows, copying the formulas in columns M through P into the inserted rows, and ensuring that the Totals cells in columns M and O, at the top of the section to which the rows are inserted, still include all rows in the section.
period, time per task amount, and time per task unit) are provided in columns D through G or H through K (or both sets of columns).

**Changing Existing Tasks**

For analyses involving changes to existing tasks, perform these steps:

1. On the Production Tasks worksheet, locate the task for which changes you want to explore.
2. If adjusting a task frequency, first determine all related tasks affected by the same workload drivers: Reference the accompanying process map, the numbering system used in the production task, or formulas found in the Task Frequency Count column. Typically, multiple tasks in the same process will be tied to the same process frequency. It is good practice to audit all formulas and data entries in the process to ensure that any change in frequency entries will be propagated properly to all related tasks.\(^{13}\) Note that some task frequencies will be the product of process frequencies, a decision node percentage, or a subprocess multiplier or some combination of these.
3. Before making any changes, if you want to be able to see the effects of your planned changes, copy the cells in columns C through P from the affected rows, select the top left cell in a blank column adjacent to the original matrix, then choose **Edit | Paste Special | Values and Source Formatting**.
4. If adjusting a time per task, consider whether times for other related tasks should also be adjusted. Adjustments can be made in a Current Process or a Planned/Desired Process column. For Current Process columns, the differences can be seen in the current workload calculations in columns M and N and compared with the original workloads copied and pasted like in step 3. If differences are introduced as task frequency counts and times per task in the Planned/Desired Process columns, the differences are shown in columns O and P as additions to or subtractions from the workload in the Current Process columns.
5. To get total staff requirements for individual processes or tasks shown on the Production Tasks worksheet, multiply the staff requirements (or some subtotal of staff requirements for a process or task) by the nonproduction allowance factor shown in cell G52 on the Lists and Factors worksheet. The staff requirements shown in column N (for current processes) or P (for planned or desired processes) on the Production Tasks worksheet are the direct requirements for the production tasks indicated and do not include the nonproduction allowance.

\(^{13}\) When we constructed the staffing tool, some task frequency entries were linked by cell formula to the row containing the process frequency of the production task list (corresponding to an oval shape on a process map). In other cases, task frequencies were input without links to the process frequency row. If linking formulas are provided, changing the process frequency row will automatically change the frequencies of all related tasks. If linking formulas are not provided, all related task frequencies must be calculated and entered manually.
(calculated as shown on the Lists and Factors worksheet). On the Staffing Assessment worksheet, the nonproduction allowances are computed for each production task total and shown in columns K and M.
In this chapter, we describe several use cases for bottom-up staffing tools. Most of these uses will involve varying treatment of the specifications for planned or desired task or outcome characteristics.

**Right-Sizing a Staff**

The most common use of a staffing model is likely to be determining the appropriate size for a staff, given its current responsibilities or planned or desired responsibilities and their associated workloads. To determine the appropriate size for a staff, you will typically perform these steps:

1. Eliminate any processes or individual tasks deemed unnecessary or providing insufficient value.
2. Review all remaining frequencies and task times to determine whether any represent an inefficient level of effort.
3. Add any new processes or tasks not previously included in the tool.
4. Observe changes in the **Staffing Assessment** worksheet.

**Changes in Workload Drivers**

Another common use of a staffing model is estimated the staffing changes required for a change in workload. For example, at the time of this writing, the U.S. Secret Service was contemplating an increase in its total workforce size from about 7,600 to 9,595 employees—a 26-percent increase. Accordingly, the frequency of any process tied to workforce size, such as new-employee onboarding or retirement or other separation, would be expected to eventually increase by about 26 percent. During a period of transition to the new workforce size, and even for some period after the workforce size stabilizes, the actual workforce onboarding and separation and retirement actions would tend to surge above or lag below the expected overall proportion of change in
the workforce size. Other types of modeling, external to the staffing tool provided for this project, would be required to determine those proportions. To estimate the staffing changes required for a change in workload, you will typically perform these steps:

1. Identify the processes that the changing workload driver will affect.
2. Rescale the process frequency proportionally (or using another valid method) according to the increase in the underlying workload driver. The changes would typically be entered as planned or desired processes so that, by contrasting with current processes, the change in workforce requirements can be readily observed in the staffing tool.
3. Modify any task times that are expected to change as a result of the increased volume of work.
4. Observe changes in the Staffing Assessment worksheet.

**Changes in Work Processes**

Data automation, process improvement, and other sources of process change can lead to staffing changes. To the extent that supervisors or subject-matter experts can anticipate the changes in process frequencies, time per task, or the tasks associated with process changes, a staffing model can provide an informed estimate of the required staffing changes. If, as is likely, tasks within a process are added or deleted as part of the process change, a revised process map would provide a good foundation for changes introduced in a staffing tool. To determine staffing changes needed for a change in a work process, you will typically perform these steps:

1. Construct a process map that captures the tasks, subprocesses, and decision nodes in the revised process.
2. Collect data on the frequencies, task times, and other parameters of the revised process.
3. Either modify existing process and task entries in the staffing tool or delete the existing process or task entries and create new ones corresponding to the process map.
4. Observe changes in the Staffing Assessment worksheet.

**Changes in Organizational Structures**

When current process responsibilities shift among organizational units, with or without the formation of new organizational units, the tasks represented in a staffing model can be redistributed within the model to determine an appropriate redistribution of staff. For a bottom-up staffing tool, as discussed in Chapter Two, this might require
unlocking the structure of the workbook in which the model is embedded in order to conform the model to a modified organizational structure. To determine staffing changes needed for a change in organizational structure, you will typically perform these steps:

1. If needed, create new sections in the Production Tasks and Staffing Assessment worksheets of the staffing tool.
2. Cut and paste current processes from one section to another as appropriate.
3. Observe changes in the Staffing Assessment worksheet.

**Establishing New Processes**

In certain limited circumstances, a staffing model can be useful in estimating the staffing required for new processes. Measurements from similar processes might be used as a guide, or subject-matter experts might be asked to provide their best estimates. A fundamental step in using the model for this purpose would be development of a process map for the new process. To estimate the staffing needed for a new process, you will typically perform these steps:

1. Construct a process map that captures the tasks, subprocesses, and decision nodes in the new process.
2. Collect data on the frequencies, task times, and other parameters of the new process.
3. Insert process and task entries in the Production Tasks worksheet corresponding to the process map.
4. Observe changes in the Staffing Assessment worksheet.
Microsoft Visio and Microsoft Excel communicate with each other in a one-way fashion. Information that is modified in Excel can automatically update information in Visio, but the reverse is not true. Updating Visio diagrams cannot automatically update Excel tables in our current configuration using custom Visio maps. You will need to ensure that any changes to data are manually entered in Excel rather than Visio. This appendix covers procedures for linking Excel and Visio files, updating a Visio file with changed Excel data, and viewing additional Excel data in Visio.

**Linking Excel Rows to Their Corresponding Visio Shapes**

To record changes in Excel and update Visio automatically, follow these steps to ensure that the Excel worksheet is linked to the Visio map:

1. Ensure that the field names in the Excel and Visio files match exactly.
2. Save the Excel and Visio files to the same folder on your computer.
3. In Visio, under the **Data** tab, choose **Advanced Data Linking | Link Data**. If **Link Data** is grayed out, see the steps below this procedure.
4. In the pop-up window, select **All shapes on this page**, then choose **Next**.
5. In the dropdown menu under **Data Column**, select the column with the tasks represented by the Visio shapes (it will be identified by the first entry in the column or by F and the number of the column, such as F2).
6. From the **Shape Field** dropdown menu, choose **Shape Text**, then choose **Next**.
7. Choose **Finish**. All data from the selected column in Excel appears in Visio on the **External Data** pane on the right. Those entries that are linked to an identically named shape have a chain-link icon to the left, showing that the Excel data have been automatically linked to the shape.
8. If there is more than one page in Visio (apparent in the bottom, left-hand corner), choose **next page** and repeat from step 3. The Visio map is linked to the Excel files. It will now update with Excel data.
If **Link Data** is grayed out when attempting to link the Excel data to Visio shapes, perform these steps:

1. In Visio, navigate to the **Data** tab.
2. In the **Show/Hide** group, choose **External Data Window**.
3. In the pane that opens on the right, choose **Quick Link Data to Shapes**.
4. In the pop-up window, select **Browse** and navigate to the Excel sheet saved with the Visio template.
5. Choose **Done**.
6. After the Excel sheet and the pop-up box open, select the range of cells in Excel that correspond to the names of the shapes in Visio, then choose **Done**.
7. In the pop-up box in Visio, choose **Done**. All data from the selected column in Excel will appear in Visio on the **External Data** pane on the right. Each entry linked to an identically named shape has a chain-link icon to the left.

### Updating Excel or Visio Data

Changes saved in Visio will not write to Excel, but changes in Excel will write to Visio if saved in Excel and updated in Visio. To update Visio with revised Excel data, perform these steps:

1. Save the changes in Excel.
2. In Visio, on the **Data** tab, under the **External Data** group, choose the arrow for **Refresh All**.
3. Choose **Refresh Data**.
4. Select the source document to refresh and choose **Refresh All**.
5. Choose **Close**. The changes saved in Excel are now updated in Visio.

### Viewing Additional Excel Data in Visio

To view additional Excel data in Visio once the files are linked, perform these steps:

1. Open the **Shape Data** window.
2. On the **Data** tab, in the **Show/Hide** group, choose **Shape Data Window**. The **Shape Data** window appears.
3. Select a shape in Visio. The **Shape Data** window displays all the data values in Excel recorded in the same row.
4. If the Visio map has multiple pages, choose the next page (at the bottom left) and repeat the procedure described in “Linking Excel Rows to Their Corresponding Visio Shapes” earlier in this appendix.
References


This user guide provides information for users of workforce staffing estimation tools developed in a Homeland Security Operational Analysis Center project for the U.S. Secret Service. The guide also provides several use cases outlining ways for practitioners to use the models for workforce planning.

The guide shows how to construct a process map as a foundation for a staffing model. It describes how to capture task frequency and time per task in the process maps, export these data from a map to a Microsoft Excel workbook formatted for this purpose, and use the workbook tool to calculate current workforce requirements and planned or desired workforce requirements.

The staffing tool can be used in myriad contexts requiring adjustments to staffing levels. Typical use cases include right-sizing a staff; responding to changes in workload drivers, work processes, and organizational structures; and establishing new processes.