

Mass Evacuation Transportation Model: User Manual

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1. Introduction

The AHRQ Mass Evacuation Transportation Model estimates the time required to evacuate patients from healthcare facilities and transport them to receiving facilities. The model considers the transportation requirements of different types of patients (for example, ambulatory patients or patients requiring constant medical attention during the evacuation); the availability of ambulances, wheelchair vans, and buses; the location of evacuating and receiving facilities; and the surge capacity of receiving facilities. Any number of evacuating and receiving facilities can be specified.

The model was pilot tested in New York City (to estimate the time to evacuate coastal hospitals and nursing homes in the event of a major hurricane) and Los Angeles (to estimate the time to evacuate three hospitals damaged in a major earthquake).

How to Run the Model

The model is accessible via the AHRQ Web site: massevacmodel.ahrq.gov. No login or password is required to run the model.

Entering a Scenario

When you use the model, you enter a “scenario.” Scenarios include all the inputs needed to run the model. Most importantly, a scenario specifies:

- one or more evacuating facilities, in which patients have varying transportation needs during the evacuation;
- one or more receiving facilities where evacuated patients will be transported;
- one or more buses, wheelchair vans, BLS (basic life support) ambulances, and ALS (advanced life support) ambulances that are available to transport patients from evacuating to receiving facilities.

The simplest way to use the model is to create a new scenario and estimate the evacuation time for that scenario. To do this:

1. Click New Scenario on the Home Page
2. Fill out the data elements on the Scenario Input Page (see Section 2).
3. Click Run Scenario on the Scenario Input Page.

Alternatively, you can create a new scenario, estimate the evacuation time, and then do a series of runs with different inputs in order to explore the sensitivity of evacuation time to changes in inputs (e.g., keep increasing by one the number of available ALS ambulances). To do this:

1. Click New Scenario on the Home Page.
2. Fill out the data elements on the Scenario Input Page.
3. Click Run Scenario on the Scenario Input Page.
4. Click Modify Scenario on the Scenario Results Page and change one or more inputs on the Scenario Input Page.
5. Click Run Scenario on the Scenario Input Page.
6. Repeat steps 4 and 5.

Saving Scenarios

A key concept in using the model is that *scenarios can be saved and loaded into the model later*. A scenario is saved in an XML (Extensible Markup Language) file. An example is shown in section 4. *The file is saved locally* (e.g., on your hard disk or memory stick), as opposed to on a web server.

To create a new scenario, estimate the evacuation time, and save the scenario so that it can be modified at a later date:

1. Click New Scenario on the Home Page.
2. Fill out the data elements on the Scenario Input Page (see Section 2 for an explanation of the data elements).
3. Click Run Scenario on the Scenario Input Page.
4. Click Save Scenario on the Scenario Results Page.

To open a previously saved scenario, modify the scenario, run the model, and save the inputs:

1. Click Open Saved Scenario on the Home Page.
2. Navigate to the folder that contains the saved scenario and open it.
3. Modify, as necessary, the scenario on the Scenario Input Page.
4. Click Run Scenario on the Scenario Input Page.
5. Click Save Scenario on the Scenario Results Page.

Additional information

As with any model, the Mass Evacuation Transportation Model is based on many assumptions. For a complete discussion of the model and its assumptions, see the Mass Evacuation Model Description, which is available on the AHRQ Web site. Or, contact:

- Tom Rich (the Abt Associates Project Director): tom_rich@abtassoc.com
- Sally Phillips (the AHRQ Project Officer): Sally.Phillips@ahrq.hhs.gov

For technical support contact Tom Rich.

2. Scenario Inputs

Scenarios are specified on the Scenario Input Page (see exhibit 1). You can:

- **create a new scenario** by clicking “New Scenario” on any of the model’s pages. Default values are loaded and shown on the page.
- **modify a previously saved scenario** by clicking “Open Saved Scenario,” clicking the Browse button on the Open Saved Scenario Page, and navigating to the folder where you saved the scenario.

Exhibit 1: Illustrative Scenario Input Page

Mass Evacuation Transportation Planning Model

HOME | NEW SCENARIO | OPEN SAVED SCENARIO | HELP

Scenario Input

SAVE SCENARIO | RUN SCENARIO

Scenario Name - Give this scenario a name.

Vehicles Used - Specify the fleet of vehicles that will be used for the evacuation. (ALS = Advanced Life Support; BLS = Basic Life Support)

TYPE	#USED	CAPACITY	PER PATIENT LOAD TIME
ALS Ambulance	3	1	25 min.
BLS Ambulance	5	1	15 min.
Wheelchair Van	6	4	20 min.
Bus	2	30	2 min.

Traffic Congestion Factor - Specify traffic congestion factor (e.g., 1 is normal speed, 0.5 is twice as fast, and 2 is twice as slow).

Overflow Receiving Facility - Specify the travel time in minutes to the overflow facility.
 Minutes

Surge Capacity - Specify the surge capacity of the receiving facilities (% of normal capacity).
 %

Geographic Area - Select your geographic area or the one that is closest in population density to your area.

Evacuating and Receiving Facilities - Add new facilities, as needed. Select the desired facility status by clicking on its Status icon (see the legend, at right).

Enter Name of New Facility

= Evacuating Facility = Receiving Facility
 = Delete From List = Not Included in Scenario

STATUS	Name	ALS	BLS	WC VAN	Bus	CAPACITY	OCCUPANCY RATE	LONGITUDE	LATITUDE
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Receiving Hosp 1	20 %	30 %	30 %	20 %	500	100 %	-70.1111	43.1111
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Evac Hosp 1	20 %	30 %	30 %	20 %	500	100 %	-70.2222	43.2222
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Evac Hosp 2	10 %	10 %	40 %	40 %	300	95 %	-70.1555	43.2444

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To run the model, you must enter data about the scenario. The data requirements are described below. Key assumptions that were used in the New York City and Los Angeles pilot tests, which were developed in consultation with city officials, are shown below. These assumptions may provide guidance to users of this model. See the companion report, Mass Evacuation Transportation Model: Description for complete details on the assumptions used in the pilot tests.

Scenario Name

You should specify a meaningful name for the scenario, such as “evacuation of Downtown Hospital with 25 percent of the city’s ambulances assisting in the evacuation.”

Vehicles Used

The model assumes that evacuated persons are transported to receiving facilities on either *buses*, *wheelchair vans*, *BLS ambulances*, or *ALS ambulances*.

For each of these four types of vehicles, you must specify the following:

- **Number available.** The number available should reflect the number that will be *used* to transport patients from evacuating to receiving facilities, as opposed to the total vehicle fleet size in your jurisdiction. In the New York City and Los Angeles pilot tests, the figures for the ALS ambulances were perhaps the most critical assumption in terms of its effect on the total evacuation time.
 - In New York City, we assumed that 40 percent of the City’s ambulances would be assigned to the evacuation, with the remainder saved for other emergencies as they arise during the day; in Los Angeles, we assumed that 5 percent would be assigned to the evacuation.

Tip: The model was designed under the assumption that multiple round trips will be required for each vehicle participating in the evacuation. Thus, the total number of patients that can be moved in a single trip by all vehicles of a particular type should be *less* than the total number of patients requiring that type of transport. For example, if you specify that 100 buses are available for the evacuation and that each can carry 30 patients, the number of patients that require bus transport (see “patient transportation needs” below) should be greater than 3000. If this is not the case, you should reduce the number of buses so that each bus must make more than one round trip during the evacuation; otherwise, the model allocates patients to buses inefficiently and the output of the model may be nonsensical. This is usually only an issue for buses and possibly wheel chair vans, but not for ambulances (assuming that ambulances are in short supply).

- **Capacity.** Specify the number of patients who can be transported at any given time on the vehicle. Do not include the driver or other medical personnel who have to be on the vehicle during transport.
- **Per patient load time.** The time it takes to load a patient into the vehicle can either assume (1) the patient is waiting for the vehicle in the lobby or near the curb or (2) the vehicle driver (e.g., paramedic or EMT) must retrieve the patient from his/her

room. The vehicle “unload” time per patient at the receiving facility is assumed to be the same as the vehicle load time.

Evacuating and Receiving Facilities

The model assumes that persons to be evacuated are located in one or more evacuating facilities and that they need to be transported to one or more receiving facilities. If there isn't sufficient room in the receiving facilities, an overflow facility is used (see Overflow Receiving Facility below).

For each facility, you must specify the following information:

- **Status.** On the Scenario Input screen, you must designate a facility as either evacuating, receiving, or not included. Not included means that the facility is ignored when the model is run.
- **Name.** Enter the name of the facility.
- **Patient transportation needs.** For each evacuating facility, you must specify the percentage of patients in the facility who require each of the four vehicle types (bus, wheelchair vans, BLS ambulances, and ALS ambulances). The percentages should add to 100%. (These data can be ignored for receiving facilities.)
 - In New York City, we assumed that the percentage of patients requiring each vehicle type was the same at all evacuating hospitals and based the percentage on data obtained from six New York City hospitals. The assumptions were: bus – 33 percent; wheel chair vans – 40 percent; BLS ambulance – 13 percent; ALS ambulance – 14 percent.
 - In Los Angeles, we obtained a single day's census data from each of the three evacuating hospitals, which included the number of patients in the ICU/CCU, the number on ventilators, and the number on monitors. We mapped those counts into the vehicle requirements, as described in the companion report, Mass Evacuation Transportation Model: Description.
- **Capacity and occupancy rate.** Capacity and occupancy together determine the number of persons who will need to be evacuated from each evacuating facility. For receiving facilities, these two figures – combined with the surge capacity figure (see below) – determine the number of patients that a receiving facility can accept.
- **Location.** For each facility, specify the latitude and longitude (in decimal degrees). This is used to estimate the travel time between evacuating and receiving facilities. If the geographic coordinates of your hospitals are not readily available from local

agencies, there are a number of public Web sites that provide the latitude and longitude for a specified address.¹

At any time while you are entering input data, you can save the scenario by clicking the Save Scenario button. The inputs are saved in an XML file (see Section 4).

Tip: Enter all the hospitals in your area once and then save the scenario. You can then reload this scenario each time you run the model and change the status of facilities. For example, you can change a facility's status from receiving to evacuating or from evacuating to receiving. Or, you can change a facility's status to "not included in this scenario."

Tip: If data on your hospitals already exist in an electronic file, it is possible to build the XML file with these data using a spreadsheet, rather than retyping the data into the model (see Section 4).

You can load a saved scenario into the model by clicking Open Saved Scenario and then navigating to the folder where you previously saved the scenario.

Surge Capacity of Receiving Facilities

You can specify a surge capacity percentage, which will represent the percentage over normal capacity that all receiving facilities can accept in an emergency. For example, a 10% surge capacity at a 400 bed receiving facility that is 90% occupied could receive 80 evacuated patients:

- 40 additional patients, because it is assumed to be 90% occupied, plus
- 40 additional patients, because of the 10% surge capacity

In both New York City and Los Angeles, we assumed receiving hospitals have a 15 percent surge capacity.

Overflow Receiving Facility Location

The model assumes that patients who cannot be accommodated in the receiving facilities are transported to an overflow facility. You must specify an average travel time to this facility from the evacuating facilities. In reality, the overflow facility could represent several out-of-county locations or an airport where patients will be loaded onto airplanes for transport to another state.

¹ See, for example, <http://www.mashupsoft.com/maps/latlonlocator> or <http://www.batchgeocode.com/lookup/>.

Traffic Congestion Factor and Geographic Area

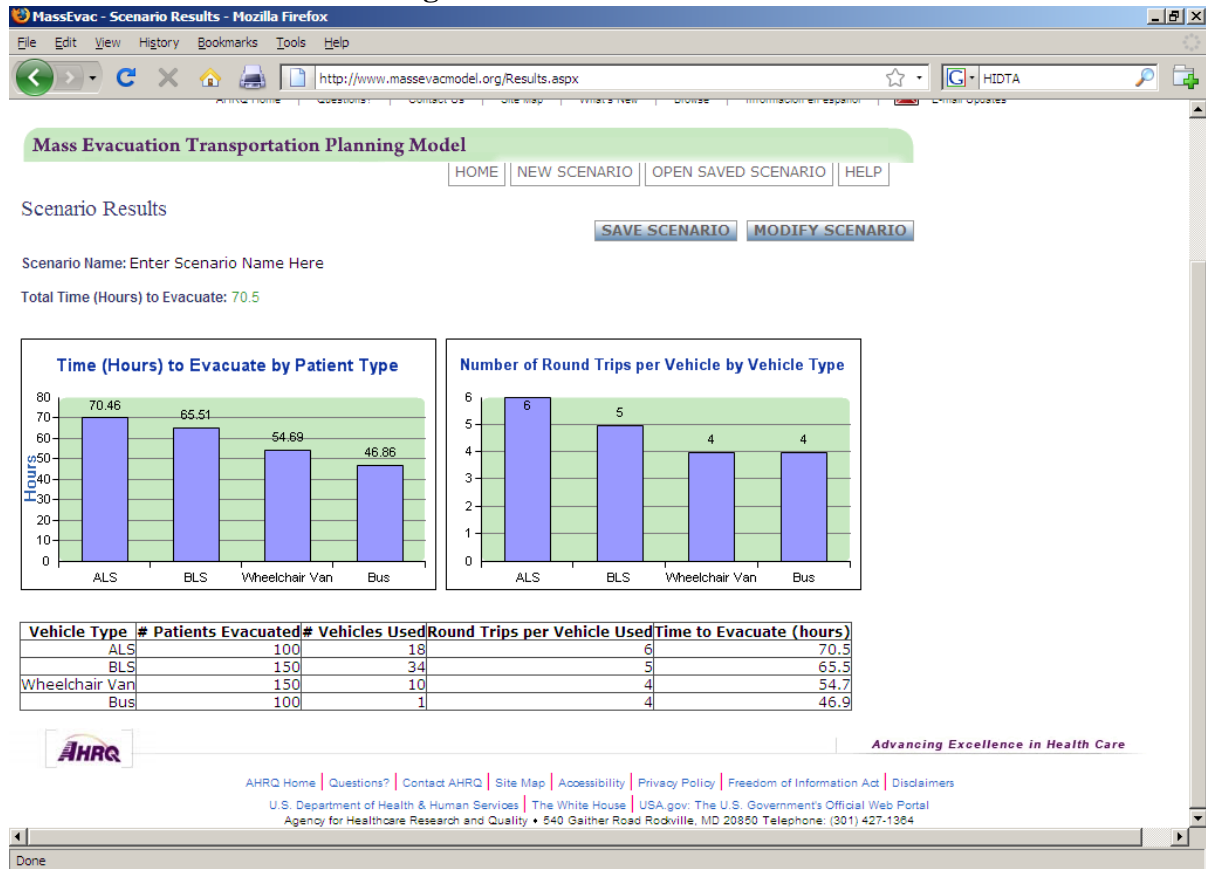
The model contains a travel time estimator that uses the facility locations to calculate travel times between evacuating and receiving facilities (see the companion report Mass Evacuation Transportation Model: Description). The travel times assume an average speed that clearly may not be achievable during a mass evacuation incident. You can increase the travel times by specifying a traffic congestion factor – e.g., 1 is normal speed, 0.5 is twice as fast, and 2 is twice as slow.

The travel time estimator also takes into consideration the population density of the area. Select your area from the drop down list of all Metropolitan Statistical Areas (MSA). If your area is not in the list, select the MSA that most closely resembles your area's population density.

3. Scenario Outputs

When you run the model, the output is displayed on the Scenario Results page (see Exhibit 2).

Exhibit 2: Scenario Results Page



Displayed on the Scenario Results page is:

- The total evacuation time. The evacuation time is defined as the *elapsed time from when the first patients begin loading on vehicles at evacuating facilities to when the last patient has been loaded on a vehicle at an evacuating facility*. Total evacuation time *does not* include:
 - the time from when the evacuation decision is made to when the evacuation actually begins and patients start to be moved;
 - the travel time from vehicle staging areas to an evacuation facility at the beginning of the evacuation process;
 - the travel time for the last evacuated patient from an evacuating to receiving facility.

- The total evacuation time by vehicle type – that is, the time required to evacuate all the patients evacuated on ALS ambulances, the time required to evacuate all the patients evacuated on BLS ambulances, etc.
 - *For both the New York City and Los Angeles pilot tests, the total evacuation time was equal to the evacuation times for patients requiring ALS transport.* That is, the availability of ALS was the key constraint that determined the total evacuation time.
- The number of round trips per vehicle per vehicle type made during the evacuation.
 - As noted earlier, the model was built under the assumption that multiple round trips would be required for each vehicle participating in the evacuation. If your output indicates that only a single round trip is required, you should reduce the number of available vehicles specified on the Scenario Input page; otherwise, the model allocates patients to vehicles inefficiently and the output of the model may be nonsensical. This is generally only an issue with buses and wheelchair vans, not ambulances.

On the Scenario Results page you can:

- ***Print the results.*** Use your browser print button to print the output. You can print the associated inputs by printing the Scenario Input screen using your browser's print button.
- ***Modify the inputs and re-run the model.*** Click the Modify Scenario button to return to the Scenario Inputs page, where you can modify one or more data elements and re-run the model.

Tip: So that you have a clear understanding of how changes in inputs affect the output, you should only change one data element at a time.

- ***Save the inputs.*** Click the Save Scenario button to save the inputs.

4. Reference

Home Page Commands

The Home Page is displayed by clicking Home on any of the model Web pages. On the Home Page you can:

- Click **New Scenario** to load an empty scenario onto Scenario Input page.
- Click **Open Saved Scenario** to select a previously saved scenario and load the scenario onto the Scenario Input page.
- Click **Help** to display the User Manual.

Open Saved Scenario Page Commands

The Open Saved Scenario page is displayed by clicking Open Saved Scenario on any of the model Web pages. On the Open Saved Scenario page you can:

- Click **Home** to display the home page.
- Click **New Scenario** to load an empty scenario onto the Scenario Input page.
- Click **Open Saved Scenario** to select a previously saved scenario and load the scenario onto the Scenario Input page.
- Click **Help** to display the user manual.
- Click **Browse...** to select a previously saved scenario.
- Click **Open** to load the scenario that was selected by clicking Browse... and display it on the Scenario Input Page.

Scenario Input Page Commands

The Scenario Input Page is displayed by clicking the New Scenario, Open Saved Scenario, or Modify Scenario button. On the Scenario Input Page you can:

- Click **Home** to display the home page.
- Click **New Scenario** to load an empty scenario onto Scenario Input page.
- Click **Open Saved Scenario** to select a previously saved scenario and load the scenario onto the Scenario Input page.
- Click **Help** to display the user manual.
- Click **Save Scenario** to save the data entered on the Scenario Input Page into an XML file, which can later be redisplayed on the Scenario Input Page by clicking Open Saved Scenario.
- Click **Run Scenario** to run the Mass Evacuation Transportation Model with the inputs that are currently displayed on the Scenario Input Page.

Scenario Results Commands

The Scenario Results Page shows the estimated time to complete the evacuation specified on the Scenario Input Page. On the Scenario Input Page you can:

- Click **Home** to display the home page.
- Click **New Scenario** to load an empty scenario onto Scenario Input page.
- Click **Open Saved Scenario** to select a previously saved scenario and load the scenario onto the Scenario Input page.
- Click **Help** to display the user manual.
- Click **Save Scenario** to save the data entered on the Scenario Input Page into an XML file, which can later be redisplayed on the Scenario Input Page by clicking Open Saved Scenario.
- Click **Modify Scenario** to reload the current scenario onto the Scenario Input Page and, if desired, modify one or more data elements and rerun the model.

XML Schema for Input Files

When you save a scenario, all the data on the Scenario Input Page are saved to an XML file, which can later be loaded into the model by clicking “Open Saved Scenario.” In this section, the structure of the XML file is explained. You do not need to understand this structure in order to run the model. However, by understanding the structure you can enter the data needed to run the model in a spreadsheet, save the file as an XML file, and then import the XML file into the model (via the Open Saved Scenario command). The alternative is to enter these data directly into the model. Using the XML approach may be useful if you have a long list of hospitals you want in the model and you can easily assemble the required data for each hospital (i.e., patient mix, capacity, occupancy rate, and location) in electronic form in some other application.

Sample Input File

The screen shot in Exhibit 3 shows an illustrative scenario. When the Save Scenario button is clicked, the XML file shown in Exhibit 4 is produced. Inspection of the XML file enables you to easily see the relationship between the data elements on the Scenario Input Page and the XML file.

Exhibit 3: Illustrative Scenario

Mass Evacuation Transportation Planning Model

Scenario Input

Scenario Name - Give this scenario a name.

Vehicles Used - Specify the fleet of vehicles that will be used for the evacuation. (ALS = Advanced Life Support; BLS = Basic Life Support)

TYPE	#USED	CAPACITY	PER PATIENT LOAD TIME
ALS Ambulance	10	1	20 min.
BLS Ambulance	10	1	15 min.
Wheelchair Van	40	6	5 min.
Bus	100	30	1 min.

Traffic Congestion Factor - Specify traffic congestion factor (e.g., 1 is normal speed, 0.5 is twice as fast, and 2 is twice as slow).

Overflow Receiving Facility - Specify the travel time in minutes to the overflow facility.
 Minutes

Surge Capacity - Specify the surge capacity of the receiving facilities (% of normal capacity).
 %

Geographic Area - Select your geographic area or the one that is closest in population density to your area.

Evacuating and Receiving Facilities - Add new facilities, as needed. Select the desired facility status by clicking on its Status icon (see the legend, at right).

= Evacuating Facility
 = Receiving Facility
 = Delete From List
 = Not Included in Scenario

STATUS	Name	ALS	BLS	WC VAN	Bus	CAPACITY	OCCUPANCY RATE	LONGITUDE	LATITUDE
	Facility 1	20 %	30 %	30 %	20 %	500	100 %	-70.0	43.0
	Facility 2	20 %	30 %	30 %	20 %	500	100 %	-70.1	43.1

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Exhibit 4: XML File Created When the Scenario in exhibit 3 is Saved

```
<?xml version="1.0" encoding="utf-8" ?>
- <scenario xmlns="http://www.massevacmodel.org/scenario"
  scenarioName="Enter Scenario Name Here" trafficCongestionFactor="1"
  minutesToOverflowFacility="150" overflowLatitude="10.0"
  overflowLongitude="20.0" surgeCapacity="0.15" msaFipsCode="0040">
- <vehicles>
  <alsAmbulance vehicleType="ALS Ambulance" numAvailable="10" capacity="1"
    loadMinutes="20" />
  <bisAmbulance vehicleType="BLS Ambulance" numAvailable="10" capacity="1"
    loadMinutes="15" />
  <wheelchairVan vehicleType="Wheelchair Van" numAvailable="40" capacity="6"
    loadMinutes="5" />
  <bus vehicleType="Bus" numAvailable="100" capacity="30" loadMinutes="1" />
  </vehicles>
- <facilities>
  <facility facilityName="Facility 1" status="evacuating" patientMixBus="20"
    patientMixWheelchairVan="30" patientMixBisAmbulance="30"
    patientMixAlsAmbulance="20" capacity="500" occupancyRate="100"
    latitude="43.0" longitude="-70.0" />
  <facility facilityName="Facility 2" status="receiving" patientMixBus="20"
    patientMixWheelchairVan="30" patientMixBisAmbulance="30"
    patientMixAlsAmbulance="20" capacity="500" occupancyRate="100"
    latitude="43.1" longitude="-70.1" />
  </facilities>
</scenario>
```

With a spreadsheet that supports XML, you can open the saved XML file, enter the input data for the model directly into the spreadsheet, save the spreadsheet as an XML file, and then open the file in the model. The steps for doing this are:

- Click the Save Scenario button to create an XML file, such as the one shown above in exhibit 4.
- Open the XML file within a spreadsheet that supports XML.
- Display the schema of the XML file.
- Map elements of the schema onto the spreadsheet (see, for example, Exhibit 5).
- Enter (or paste from another application) the model input data on to the spreadsheet.
- Save the spreadsheet as an XML file.
- Click Open Saved Scenario in the model and browse to the saved XML file.

Exhibit 5: Illustration of how XML schema elements are mapped onto a spreadsheet

The screenshot shows a Microsoft Excel spreadsheet titled "MassEvacScenarioCreator.xls". The spreadsheet is organized into several sections corresponding to XML schema elements:

- Scenario Information (Rows 2-7):**
 - 2: Scenario Name
 - 3: Traffic Congestion
 - 4: Minutes to Overflow
 - 5: Overflow Latitude
 - 6: Overflow Longitude
 - 7: Surge Capacity
- Vehicles (Rows 9-13):**
 - 9: Header row with columns: Type, Capacity, Load Time, Number Available
 - 10: Bus
 - 11: WheelChairVan
 - 12: BLS Ambulance
 - 13: ALS Ambulance
- Facilities (Row 17):**
 - 17: Header row with columns: facilityName, status, patientMixBus, patientMixWheelchairVan, patientMixBlsAmbulance, patientMixAlsAmbulance, capacity, occupancyRate, latitude

The spreadsheet interface includes the standard Microsoft Excel menu bar (File, Edit, View, Insert, Format, Tools, Data, Window, Help), a toolbar with various icons, and a status bar at the bottom showing "Ready" and "NUM".

Appendix: Project Steering Committee Members

Development of the Mass Evacuation Transportation Model was part of an AHRQ Task Order with Abt Associates that was intended to support development of a national strategy for the design, development, and implementation of an interagency mass patient and evacuee movement, regulating and tracking system. The National Response Plan assumes that up to 100,000 patients and evacuees may require transport, regulating, and tracking during a catastrophic incident. The AHRQ project was undertaken in collaboration with the Federal Emergency Management Agency, the U.S. Department of Defense, and the U.S. Department of Health and Human Services' Office of Public Health Emergency Preparedness. AHRQ and DoD jointly led the project.

A project steering committee was also convened that guided the project. The persons listed below attended at least one of the three day-long meetings held on December 1, 2005, April 12, 2006, and October 27, 2006.

Sally Phillips (Project Officer)	Director of Public Health Emergency Preparedness Research Program Agency for Healthcare Research and Quality U.S. Department of Health and Human Services
F. Christy Music	Office of the Assistant Secretary of Defense for Homeland Defense Department of Defense
Knox Andress	Emergency Preparedness Coordinator CHRISTUS Schumpert Health System
Brad Austin	Office of Public Health Emergency Preparedness U.S. Department of Health and Human Services
Janet Benini	Senior Advisor, Intelligence Security and Emergency Response US Department of Transportation
Kathryn Brinsfield	Associate Medical Director Boston EMS
Stephen Cantrill	Department of Emergency Medicine Denver Health Medical Center

Michael Feeser	Office of Policy, Plans and Preparedness Department of Veterans Affairs
Edward Gabriel	Director of Crisis Management Walt Disney Corporation
Derek Goldstein	Agency for Healthcare Research and Quality U.S. Department of Health and Human Services
Dan Hanfling	Emergency Management and Disaster Medicine Inova Health System
Scott Henderson	Manager, Web and Applications Development Northrop Grumman Force Health Protection
Nathaniel Hupert	Department of Public Health Weill Medical College of Cornell University
Ann Knebel	Office of the Assistant Secretary for Public Health Emergency Preparedness U.S. Department of Health and Human Services
Harry Koerner	Operations Support Center Manager Federal Emergency Management Agency
Bill Kormos	Office of the Assistant Secretary of Defense Force Health Protection & Readiness Department of Defense
James Lawler	Director for Biodefense Policy Homeland Security Council
Deborah Levy	Division of Healthcare Quality Promotion Centers for Disease Control and Prevention
Teresa Lustig	Science and Technology Directorate U.S. Department of Homeland Security
Leonard Marcus	National Preparedness Leadership Initiative Harvard School of Public Health
Michael Meit	Department of Health Policy & Evaluation NORC at the University of Chicago

Vincent Mercadante	Office of Intelligence, Security and Emergency Response US Department of Transportation
David Persse	Department of Health and Human Services City of Houston
Mark Roupas	Office of the Assistant Secretary of Defense for Homeland Defense Department of Defense
Bill Savage	Research Computing Division RTI International
James Sims	Emergency Preparedness Department City of Los Angeles
Arlene Stephenson	Springfield Hospital Center Maryland Department of Health and Mental Hygiene
Jennifer Todd	Agency for Healthcare Research and Quality U.S. Department of Health and Human Services
Scott Wetterhall	Health Security & Systems Research RTI International