2. At one time, the policy of the Fire Department was to dispatch the nearest engine (pumper) or truck (aerial ladder truck) to a traffic accident. Typical arrival times are between three and eight minutes. If the first arriving unit determined that there were trapped victims, the officer would request that extrication equipment be brought to the scene. Depending on the location from which the equipment was coming, (not all stations have extrication equipment), the typical arrival time of the equipment was three to twelve minutes. Believing that the medical condition of trapped patients was adversely affected by the time elapsed between the occurrence of the accident and the removal of patients from the wreckage, the policy was changed at the beginning of the second quarter of 2009.

* The extrication equipment was removed from auxiliary vehicles and placed on trucks. Each of the Fire Department’s truck companies now carries extrication equipment.
* Dispatchers were instructed to ask questions of the reporting party to determine if patients were trapped.
* If it cannot be determined that no patients are trapped, a truck is automatically dispatched initially, along with the engine.
* If the first arriving unit determines that no patients are trapped and the truck has not arrived yet, it is canceled en route.

The Chief has asked for a report on the effectiveness and efficiency of this policy change. Please outline what analysis you would perform. In your answer, please specify the following:

* Questions you would seek to answer or hypotheses you would seek to test,
* Variables to be included in the analysis (describe data elements needed – use, but don’t limit yourself to, the data provided in Question 1.),
* The techniques or approaches you would use to analyze the data, and
* The outcome measures you would use.

3. The Fire Department recognizes the need to open a new fire station in a developing area of the city. However, it is unlikely that budget dollars will be available to hire additional staff for the station. The Chief is considering moving one fire company (i.e., the apparatus and the crew that staffs the apparatus) from a station with two companies to the new station. He wants to know the impact of the move on the primary running district of the new station and the primary running district of the station that currently has two companies.

* Describe what data you would need to address the Chief’s question.
* Choose a method (i.e. technical approach) for answering the question and explain why you chose that method.
* How would you validate the method to ensure that your results are reasonably accurate?
* Describe the steps you would take to determine the impacts on fire services in both areas.
* Describe how you would present the results of your analysis to management.

4. Drawing on your experience, describe where and how you think technology might be applied to help the Fire Department in performing its mission.