**Flu Vaccines Model**

This project considers a company that orders and distributes flu vaccines in the tri-state area of New York, New jersey and Connecticut. We considered a company with two main departments: the procurement department whose objective is to come up with a constant order size that each warehouse in each state must order every month in order to satisfy the demand in the high flu season.

Once the optimal order is determined, the Sales and Operations department will simulate the excepted profits that will be generated considering that vaccines can be sent from one state to the other in order to satisfy demand and maximize profits for the company.

The results and analysis of our project can be found in the excel spreadsheets and the power point presentation included in the zip file.

INSTRUCTIONS TO RUN THE MODEL

1. The first part of the model consists of determine the optimal amount of monthly orders that each state should buy. In order to do so we use the CrystalBallModel.xlsx file🡪 In this file there is a simulation for the demand of each state and the profit generated with different order quantities; the optimal one is the quantity that yields the biggest average profit for each state.
2. The second part of the task is to simulate what will happen in the high flu season when each state orders the Q\* determined in step one, and demand changes forcing transportation of vaccines from one state to the other. In order to figure this transportation simulation we use the SolverModel.xlsx file🡪
   * + 1. Generate demands (100 different runs) for each day using the Crystal Ball simulation tool.
       2. Run the solver model with the GRG Non-Linear method to find the combination of vaccine transportation that maximizes profit for the company.
          - If a solution is not found simply fill in the transportation matrix in the model with the use of random numbers between 0 and the demand.