**MET AD 571 Assignment 5**

**Prescriptive Analytics**

**8 points**

**Assignment 5 Objective:** Prepare a managerial report, starting with an executive summary; expected length up to 4 pages APA format, excluding cover page, table of content, and appendixes.

1. Develop an optimization model to determine the best course of action for your real estate company, using the following assumptions:
   * You wish to maximize the net present value of profit over the next eight quarters. Assume 6% IRR, compounding quarterly. (so 1.5% per quarter).
   * In each neighborhood in which they open an office, they will achieve a baseline of 5.5% market penetration, and earn a 5% commission on sales. For every .1% the commission you charge decreases, your market penetration will increase by .15%, (down to a minimum of 4% or a maximum of 5%).
   * You must pay rent and utilities in each office you open each month. Determine the average cost per gross square foot of commercial real estate in your neighborhood for the last year (NYC\_TRANSACTIONS). [When determining this value, you should exclude properties where gross square feet or sale price is unknown.] Each month you will pay 1.5% of this for rent and utilities for each square foot of office space you rent. You must rent at least 250 square feet of office space, plus 125 for each employee you hire.
   * You may hire up to 3 employees. Each employee you hire costs a yearly salary $65,000 including benefits, and increases your market penetration by .5%.
   * Your monthly operating budget is $15,000.
2. Outline assumptions about market penetration, costs associated with opening and staffing an office, and the impact of the percent commission your office takes.
3. Write 2-3 pages summarizing your findings with a focus on the output, interpretation of the output, and what the insights mean for our decision-making process.