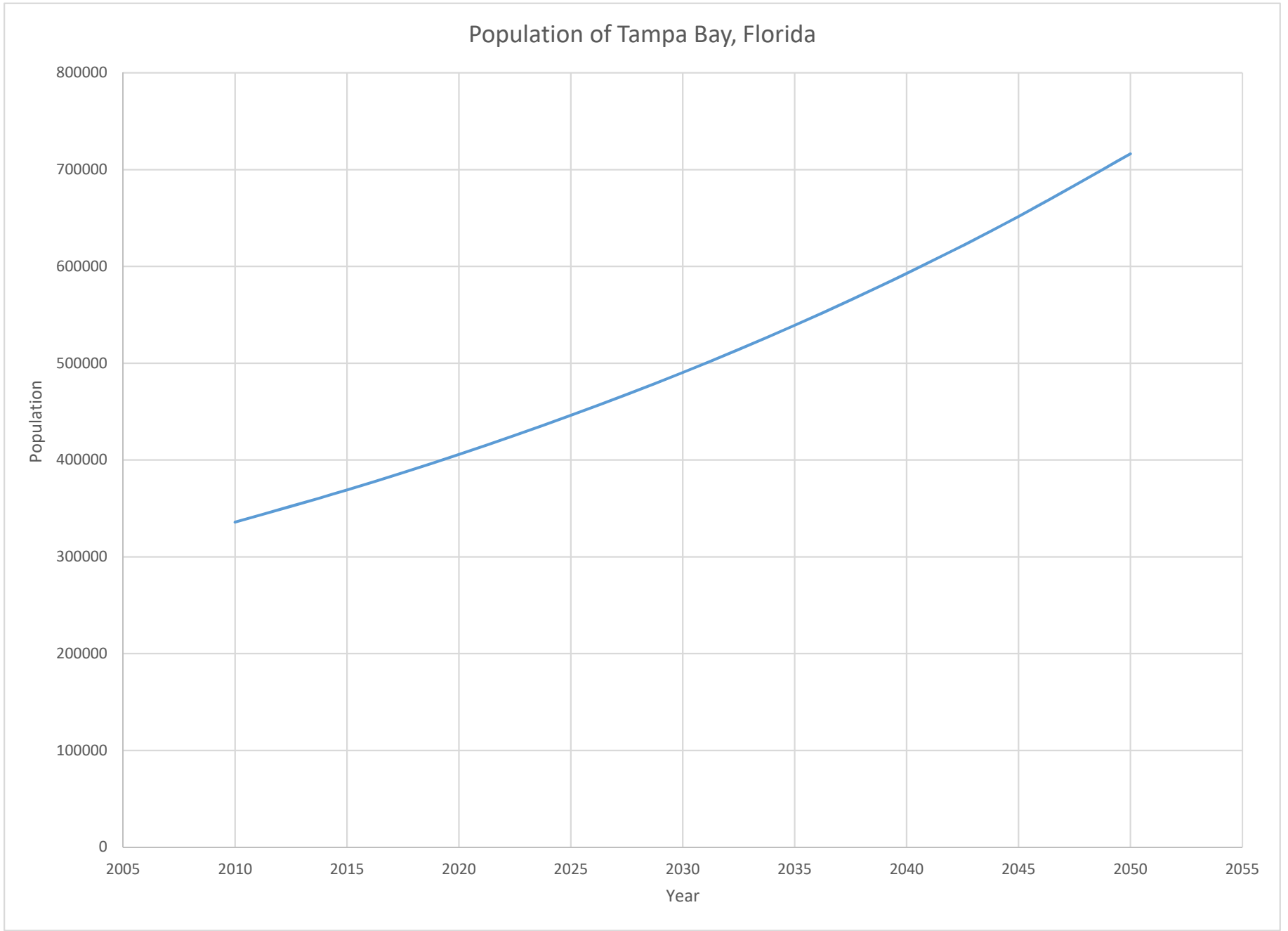
The following Excel-based spreadsheet and plot were created for an ENGR 115 course at Humboldt State University by student, Ethan Reibsome. The documents show the population growth for the city of Tampa Bay, Florida along with an estimated carrying capacity. This spreadsheet shows skills in Excel, converting files to PDF and other skills as well.

Ethan Reibsome
ENGR 115
Friday 2pm to 5pm
9/9/2016

Initial Population	335715
Growth Rate	0.018947
Starting Year	2010
Time Increment	5

Time (Actual Year)	Time (Model Year)	Model Population
2010	0	335715
2015	5	369074
2020	10	405748
2025	15	446066
2030	20	490391
2035	25	539120
2040	30	592691
2045	35	651585
2050	40	716331


Population of Tampa Bay, Florida
800000
700000
600000
500000
400000
300000
200000
100000
0
Population
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
Year

Ethan Reibsome
ENGR 115
Friday 2pm to 5pm
42622

Initial Population	335715
Growth Rate	0.018947
Starting Year	2010
Time Increment	5

Time (Actual Year)	Time (Model Year)
=B9	0
=A14+$B$10	=B14+$B$10
=A15+$B$10	=B15+$B$10
=A16+$B$10	=B16+$B$10
=A17+$B$10	=B17+$B$10
=A18+$B$10	=B18+$B$10
=A19+$B$10	=B19+$B$10
=A20+$B$10	=B20+$B$10
=A21+$B$10	=B21+$B$10

Model Population
=$B$7*EXP($B$8*B14)
=$B$7*EXP($B$8*B15)
=$B$7*EXP($B$8*B16)
=$B$7*EXP($B$8*B17)
=$B$7*EXP($B$8*B18)
=$B$7*EXP($B$8*B19)
=$B$7*EXP($B$8*B20)
=$B$7*EXP($B$8*B21)
=$B$7*EXP($B$8*B22)

Ethan Reibsome
ENGR 115
Friday 2pm to 5pm
9/9/2016

Questions

1) From my orginal model, which is limited to counting by 5 years, the double time for Tampa Bay, Florida is approximately, 2045. From my calculations, it was the year 2,046.583. The approximation from my model and my calculations are extremely close and only about a year and a half apart. If I were to extend my model to show each years population, I could find that the double time would be located somewhere in the year 2046, which matches with my calculation.

Calculations for Q1	
Initial Population	335715
Growth Rate	0.018947
Doubling Time	36.58348
Population	671430
Pt/Po	2

2) The carrying capacity I suggested for my location is 50,000 people. The growth rate I suggest for this carrying capacity is 0.00790. From the year 2010, and with the growth rate suggested, the population will come just under the suggested carrying capacity in the year 2060. I did this by extending my model and "playing around" with the numbers of rate.

Calculations for Q2	
Initial Population	335715
Growth Rate	0.0079
Initial Year	2010
Year 2059	494409
Year 2060	498330
Year 2061	502282

3) Exponential growth does seem reasonable to use for human population, but only up until a certain point. As do all populations, such as animals, and cells, a certain carrying capacity will be met. This carrying capacity will be determined by a number of factors, such as disease, amount of space, and resources. As the carrying capacity is soon to be met, the slope of the exponential curve, begins to flatten, inwhich an unpredictable population decline or stall in growth begins.