Alexis Clemente
ENGR 115
Thursday 2pm Lab
9/8/2016

Initial Population	161007
Growth Rate	0.0495
Start Year	2013
Increment	5

Time (actual year)	Time (model year)	Model Population
2013	0	161007
2018	5	206221
2023	10	264132
2028	15	338305
2033	20	433308
2038	25	554989
2043	30	710840
2048	35	910458
2053	40	1166132
2058	45	1493605
2063	50	1913038

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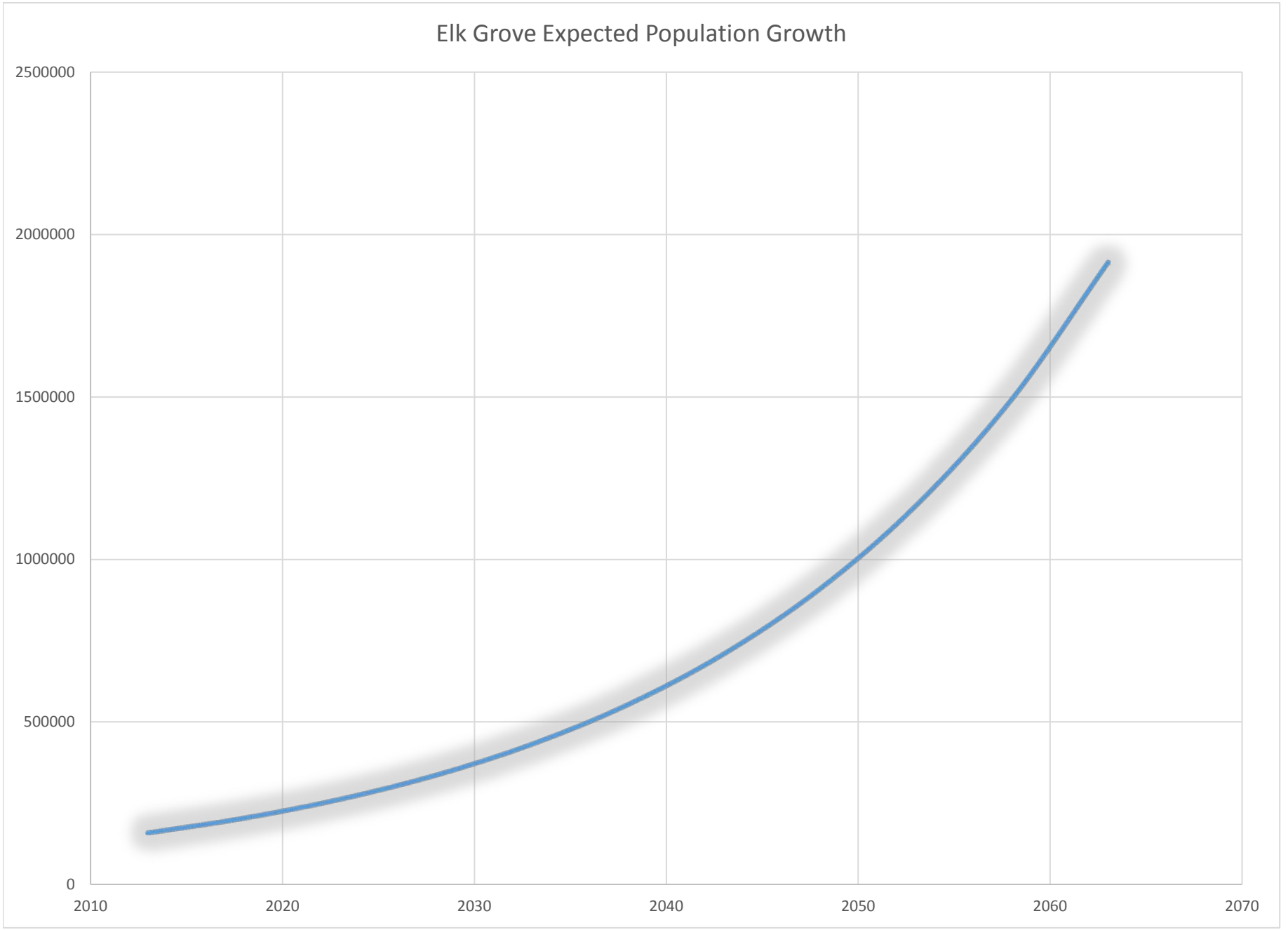
42621

Initial Population	161007
Growth Rate	0.0495
Start Year	2013
Increment	5

Time (actual year)	Time (model year)
=B8	0
=A12+B9	=B12+$B$9
=A13+B9	=B13+$B$9
=A14+B9	=B14+$B$9
=A15+B9	=B15+$B$9
=A16+$B$9	=B16+$B$9
=A17+$B$9	=B17+$B$9
=A18+$B$9	=B18+$B$9
=A19+$B$9	=B19+$B$9
=A20+$B$9	=B20+$B$9
=A21+$B$9	=B21+$B$9

Model Population
=B6
=$B$6*EXP($B$7*B13)
=$B$6*EXP($B$7*B14)
=$B$6*EXP($B$7*B15)
=$B$6*EXP($B$7*B16)
=$B$6*EXP($B$7*B17)
=$B$6*EXP($B$7*B18)
=$B$6*EXP($B$7*B19)
=$B$6*EXP($B$7*B20)
=$B$6*EXP($B$7*B21)
=$B$6*EXP($B$7*B22)


Elk Grove Expected Population Growth
2500000
2000000
1500000
1000000
500000
0
2010
2020
2030
2040
2050
2060
2070

1. Use your model to determine the doubling time (rounded to the nearest year) at the growth rate you calculated above. You may need to increase the number of years Excel calculates to determine this on your model page. Check your model prediction with the hand calculation you did at the beginning of lab. State the doubling time from your hand calculation and the double time provided by your model. Does the doubling time from your model match the doubling time from your hand calculation?

By hand, I calculated that the population would double in 14 years. In my model, the population was just below double the original amount in 14 years. The original population doubled would equal 322,014 but my model shows that in 14 years the population is at 321,967 which is just below the doubling amount. I would say my calculation was pretty accurate.

2. What growth rate would you recommend for your chosen place? Justify your recommendation as much as possible using the information you have on your chosen area and simulations you run using your spreadsheet model. One way to start could be by suggesting a carrying capacity for your place and adjusting the growth rate so that the capacity is not exceeded over a 50-year period. Be sure to include this carrying capacity value in your justification.

Elk Grove should have a carrying capacity of 1,000,000 people. In order to avoid exceeding this capacity in 50 years, the growth rate would have to be .0365 people per year or less.

3. Does an exponential growth model seem like a reasonable model for human population growth? Why or why not?

Yes, exponential growth models seem reasonable for human population growth because they show the change in growth rate and how quickly the population is increasing or decreasing. Since the human population is constantly growing, exponential growth models are perfect for showing the changing slope of growth.