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Question 2

Records at the Center for Disease Control show that the total number of flu cases in Spring, 2009 looked like this:


Date	Day	Flu Cases
April 27	0	73
April 28	1	105
April 29	2	137
April 30	3	257
May 1	4	367
May 2	5	658
May 3	6	898
May 4	7	1,085
May 5	8	1,490
May 6	9	1,893

An initial examination of the data showed that both an exponential and a logistic growth model fit the data well:


Exponential Model	Logistic Growth Model
a = 76.64	C = 3,273.31
b = 1.46	a = 43.59
R-squared = 0.984	b = 1.57

Function Models

Readings


Reading Check due
Mar 15, 2016 at 18:00
UTC 

Lecture Videos

Comprehension Check
due Mar 15, 2016 at
18:00 UTC 

R Tutorial Videos


Pre-Lab

Pre-Lab due Mar 15,
2016 at 18:00 UTC 

Lab

Lab due Mar 15, 2016
at 18:00 UTC 

Problem Set

Problem Set due Mar
15, 2016 at 18:00 UTC 

R-squared = 0.996

Use the data from the **TABLE of Models** to answer the following questions.

(1/1 point)

2a. Looking at the raw data, what is the rate of change in flu cases from April 30 to May 1? (*Report as a proportion rounded to 2 decimal places.*)

✓ Answer: .43

0.43

You have used 1 of 1 submissions

(1/1 point)

2b. What is the growth rate for the flu, according to the exponential model? (*Report as a proportion rounded to 2 decimal places.*)

✓ Answer: .46

0.46

You have used 1 of 1 submissions

(1/1 point)

2c. Predict the number of cases of flu on **Day 14** (when "Day" is equal to 14), using the exponential model. (*Round to a whole number, without a comma*)

✓ Answer: 15325

15325

You have used 1 of 1 submissions

(1/1 point)

2d. Using the logistic model, predict the total number of flu cases on **Day 14**. (*Round to a whole number, without a comma.*)

✓ Answer: 3034

You have used 1 of 1 submissions

(1/1 point)

2e. The actual number of flu cases on Day 14 was 4,379. Find the residual of the exponential model prediction. *(Round to zero decimal places, without a comma.)*

✓ Answer: -10946

You have used 1 of 1 submissions

(1/1 point)

2f. What is the residual of the logistic model prediction for Day 14? *(Round to a whole number, without a comma.)*

✓ Answer: 1345

You have used 1 of 1 submissions

(5/5 points)

Based on the residuals of both models, what conclusion would you reach? Fill in the missing blanks.

The better fit statistic of the ✓ Answer: logistic model suggests that the number of new flu cases will

✓ Answer: begin slowing down .

Based on this model, we would expect the maximum number of flu cases in the 2009 season to be: ✓ Answer: 3,273 . However,

✓ Answer: neither model does a perfect job of predicting future cases by Day 14. We will need to observe how the data changes ✓ Answer: after day 9 to determine how the model needs to be adjusted.

You have used 1 of 1 submissions

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