Courseware   Course Info   Discussion   Syllabus   Download R and RStudio   R Tutorials   Readings   Contact Us

Progress   Office Hours   Community

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 |

Help

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
	R-squared = 0.996

Use the data from the TABLE of Models to answer the following quesitons.

(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.)*

0.43

0.43

Help

Show Answer   *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.)*

0.46

0.46

Show Answer   *You have used 1 of 1 submissions*

(1 point possible)

2c. Predict the number of cases of flu on **Day 14** (when "Day" is equal to 14), using the exponential model. *(Round to zero decimal places.)*

15324

03/10/2015 01:59 PM

15324

Answer: 15325

| Hide Answer | *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 zero decimal places.)*

3034

3034

| Show Answer | *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.)*

-10946

$$-10946$$

Help

Show Answer   *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 zero decimal places.)*

1345

1345

Show Answer   *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 logistic   model suggests that the number of new flu cases will
 begin slowing down   . Based on this model, we would expect the maximum number of flu cases in the 2009
season to be: 3,273   . However, neither model   does a perfect job of predicting future cases by Day
14. We will need to observe how the data changes after day 9   to determine how the model needs to be adjusted.

Show Answer   *You have used 1 of 1 submissions*

Help

edX

EdX offers interactive online classes and MOOCs from the world's best universities. Online courses from MITx, HarvardX, BerkeleyX, UTx and many other universities. Topics include biology, business, chemistry, computer science, economics, finance, electronics, engineering, food and nutrition, history, humanities, law, literature, math, medicine, music, philosophy, physics, science, statistics and more. EdX is a non-profit online initiative created by founding partners Harvard and MIT.

About edX

About

News

Contact

FAQ

edX Blog

Donate to edX

Jobs at edX

Follow Us

Twitter

Facebook

Meetup

LinkedIn

Google+