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ECO-634 Environmental Data Analysis – Lab

10/27/2021 – LATE

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**Lab 5: Uncertainty, Samples, and Populations**

**Q1:**

Exp\_fun = function (x, a, b)

{

return(a \* exp ( -b \* x ))

}

curve(

exp\_fun(x, 0.3, (1.15)), add = FALSE, from = 0, to = 50,

ann = FALSE, axes = TRUE, ylab = “f(x)”); box()

**Q2:**

Chart, histogram

Description automatically generated

**Q3:** When you change parameter “a” the line begins at a different height on the y axis.

**Q4:** When you change parameter “b” it causes a drastic curve in the line along the x axis.

**Q5:**

Chart, histogram

Description automatically generated

**Q6:** By changing parameter “a” you change the slope of the line. The red lines have a much more dramatic curve where the black lines are rounder, and softer.

**Q7:** Changing parameter “b” changes how high the peak of the curve is on the graph.

**Q8:** To figure out the values for my line I used locator(1) and tried to pick a location that visually looked balanced within the data. This gave me and x value of 503.032, and a Y value of 0.3993503.

**Q9:**

Chart, scatter chart, box and whisker chart

Description automatically generated

**Q10:** I used 0.97 for parameter “a” and 1/350 for parameter “b”. I choice both of these values by changing them around and seeing visually what curve fit the data points best.

**Q11:**

Chart

Description automatically generated

**Q12:** I chose 0.0087 for parameter “a” and 1/225 for parameter “b”. I used these values because they visually fit the data points best. My curve touches some data points but stays in the middle of them too.

**Q13:**

Chart

Description automatically generated

**Q14:**

Locator(15)

dat\_dispersal$resids\_ricker <- c(0.386, 0.386, 0.386, 0.386, 0.399,

0.399, 0.399, 0.399, 0.412, 0.425,

0.425, 0.412, 0.412, 0.412, 0.425)

dat\_dispersal$resids\_linear <- c( 0.672, 0.646, 0.606, 0.550, 0.489, 0.454, 0.393, 0.332,

0.241, 0.196, 0.150, 0.0850,

0.0496, 0.00408, 0.00331)

dat\_dispersal$resids\_exp <- c(0.728, 0.531, 0.399, 0.307,

0.241, 0.175, 0.135, 0.096,

0.0961, 0.069, 0.056, 0.0301,

0.0301, 0.0301, 0.043)

View(dat\_dispersal)

resid\_linear <- c(dat\_dispersal$disp.rate.ftb - dat\_dispersal$resids\_linear)

resid\_exp <- c(dat\_dispersal$disp.rate.ftb - dat\_dispersal$resids\_exp)

resid\_ricker <- c(dat\_dispersal$disp.rate.ftb - dat\_dispersal$resids\_ricker)

disp\_resids <- data.frame(dat\_dispersal$resids\_linear, dat\_dispersal$resids\_exp, dat\_dispersal$resids\_ricker)

require(here)

png(

filename = here("images", "lab\_05\_hist.png"))

par(mfrow = c(3, 1))

hist(resid\_linear, main = "Histogram of Linear Resids", xlab = "", col = "darkorange1", xlim = c(-0.5, 0.5))

hist(resid\_exp, main = "Histogram of Exponential Resids", xlab = "", col = "coral2", xlim = c(-0.5, 0.5))

hist(resid\_ricker, main = "Histogram of Ricker Resids", xlab = "", col = "darkgoldenrod2", xlim = c(-0.7, 0.3))

dev.off()

**Q15:**

Chart, box and whisker chart

Description automatically generated