**R and RStudio Introduction**  BIOL 309

Name: Fall 2023

Follow this link to see some R graph examples: <https://r-graph-gallery.com/index.html>

1. What is one type of graph you can make in R, and what is it used for?
2. Look up the packages beepr and dismo. What are these packages used for?
3. Paste one graph that you made during class (I’ll show you how):

Follow this link to see the IUCN RedList: <https://www.iucnredlist.org/search>

1. Pick a species that is threatened/endangered/critically endangered and write a few sentences about the threats it faces.
2. What is one thing biologists use a species distribution map for?

> demo()

Demos in package ‘base’:

error.catching More examples on catching and handling errors

is.things Explore some properties of R objects and is.FOO() functions.

Not for newbies!

recursion Using recursion for adaptive integration

scoping An illustration of lexical scoping.

Demos in package ‘graphics’:

Hershey Tables of the characters in the Hershey vector fonts

Japanese Tables of the Japanese characters in the Hershey vector

fonts

graphics A show of some of R's graphics capabilities

image The image-like graphics builtins of R

persp Extended persp() examples

plotmath Examples of the use of mathematics annotation

Demos in package ‘grDevices’:

colors A show of R's predefined colors()

hclColors Exploration of hcl() space

Demos in package ‘stats’:

glm.vr Some glm() examples from V&R with several predictors

lm.glm Some linear and generalized linear modelling examples from

`An Introduction to Statistical Modelling' by Annette Dobson

nlm Nonlinear least-squares using nlm()

smooth `Visualize' steps in Tukey's smoothers

Use ‘demo(package = .packages(all.available = TRUE))’

to list the demos in all \*available\* packages.

data()

Data sets in package ‘AICcmodavg’:

beetle Flour Beetle Data

bullfrog Bullfrog Occupancy and Common Reed Invasion

calcium Blood Calcium Concentration in Birds

cement Heat Expended Following Hardening of Portland Cement

dry.frog Frog Dehydration Experiment on Three Substrate Types

fat Fat Data and Body Measurements

gpa GPA Data and Standardized Test Scores

iron Iron Content in Food

lizards Habitat Preference of Lizards

min.trap Anuran Larvae Counts in Minnow Traps Across Pond Type

newt Newt Capture-mark-recapture Data

pine Strength of Pine Wood Based on the Density Adjusted for

Resin Content

salamander Salamander Capture-mark-recapture Data

tortoise Gopher Tortoise Distance Sampling Data

turkey Turkey Weight Gain

Data sets in package ‘Amelia’:

africa Economic and Political Indictors in 6 African States

freetrade Trade Policy and Democracy in 9 Asian States

Data sets in package ‘carData’:

AMSsurvey American Math Society Survey Data

Adler Experimenter Expectations

Angell Moral Integration of American Cities

Anscombe U. S. State Public-School Expenditures

Arrests Arrests for Marijuana Possession

BEPS British Election Panel Study

Baumann Methods of Teaching Reading Comprehension

Bfox Canadian Women's Labour-Force Participation

Blackmore Exercise Histories of Eating-Disordered and Control Subjects

Burt Fraudulent Data on IQs of Twins Raised Apart

CES11 2011 Canadian National Election Study, With Attitude Toward

Abortion

CanPop Canadian Population Data

Chile Voting Intentions in the 1988 Chilean Plebiscite

Chirot The 1907 Romanian Peasant Rebellion

Cowles Cowles and Davis's Data on Volunteering

Davis Self-Reports of Height and Weight

DavisThin Davis's Data on Drive for Thinness

Depredations Minnesota Wolf Depredation Data

Duncan Duncan's Occupational Prestige Data

Ericksen The 1980 U.S. Census Undercount

Florida Florida County Voting

Freedman Crowding and Crime in U. S. Metropolitan Areas

Friendly Format Effects on Recall

GSSvocab Data from the General Social Survey (GSS) from the National

Opinion Research Center of the University of Chicago.

Ginzberg Data on Depression

Greene Refugee Appeals

Guyer Anonymity and Cooperation

Hartnagel Canadian Crime-Rates Time Series

Highway1 Highway Accidents

KosteckiDillon Treatment of Migraine Headaches

Leinhardt Data on Infant-Mortality

LoBD Cancer drug data use to provide an example of the use of the

skew power distributions.

Mandel Contrived Collinear Data

Migration Canadian Interprovincial Migration Data

Moore Status, Authoritarianism, and Conformity

MplsDemo Minneapolis Demographic Data 2015, by Neighborhood

MplsStops Minneapolis Police Department 2017 Stop Data

Mroz U.S. Women's Labor-Force Participation

OBrienKaiser O'Brien and Kaiser's Repeated-Measures Data

OBrienKaiserLong O'Brien and Kaiser's Repeated-Measures Data in "Long" Format

Ornstein Interlocking Directorates Among Major Canadian Firms

Pottery Chemical Composition of Pottery

Prestige Prestige of Canadian Occupations

Quartet Four Regression Datasets

Robey Fertility and Contraception

Rossi Rossi et al.'s Criminal Recidivism Data

SLID Survey of Labour and Income Dynamics

Sahlins Agricultural Production in Mazulu Village

Salaries Salaries for Professors

Soils Soil Compositions of Physical and Chemical Characteristics

States Education and Related Statistics for the U.S. States

TitanicSurvival Survival of Passengers on the Titanic

Transact Transaction data

UN National Statistics from the United Nations, Mostly From

2009-2011

UN98 United Nations Social Indicators Data 1998]

USPop Population of the United States

Vocab Vocabulary and Education

WVS World Values Surveys

WeightLoss Weight Loss Data

Wells Well Switching in Bangladesh

Womenlf Canadian Women's Labour-Force Participation

Wong Post-Coma Recovery of IQ

Wool Wool data

Data sets in package ‘datasets’:

AirPassengers Monthly Airline Passenger Numbers 1949-1960

BJsales Sales Data with Leading Indicator

BJsales.lead (BJsales) Sales Data with Leading Indicator

BOD Biochemical Oxygen Demand

CO2 Carbon Dioxide Uptake in Grass Plants

ChickWeight Weight versus age of chicks on different diets

DNase Elisa assay of DNase

EuStockMarkets Daily Closing Prices of Major European Stock Indices,

1991-1998

Formaldehyde Determination of Formaldehyde

HairEyeColor Hair and Eye Color of Statistics Students

Harman23.cor Harman Example 2.3

Harman74.cor Harman Example 7.4

Indometh Pharmacokinetics of Indomethacin

InsectSprays Effectiveness of Insect Sprays

JohnsonJohnson Quarterly Earnings per Johnson & Johnson Share

LakeHuron Level of Lake Huron 1875-1972

LifeCycleSavings Intercountry Life-Cycle Savings Data

Loblolly Growth of Loblolly pine trees

Nile Flow of the River Nile

Orange Growth of Orange Trees

OrchardSprays Potency of Orchard Sprays

PlantGrowth Results from an Experiment on Plant Growth

Puromycin Reaction Velocity of an Enzymatic Reaction

Seatbelts Road Casualties in Great Britain 1969-84

Theoph Pharmacokinetics of Theophylline

Titanic Survival of passengers on the Titanic

ToothGrowth The Effect of Vitamin C on Tooth Growth in Guinea Pigs

UCBAdmissions Student Admissions at UC Berkeley

UKDriverDeaths Road Casualties in Great Britain 1969-84

UKgas UK Quarterly Gas Consumption

USAccDeaths Accidental Deaths in the US 1973-1978

USArrests Violent Crime Rates by US State

USJudgeRatings Lawyers' Ratings of State Judges in the US Superior Court

USPersonalExpenditure Personal Expenditure Data

UScitiesD Distances Between European Cities and Between US Cities

VADeaths Death Rates in Virginia (1940)

WWWusage Internet Usage per Minute

WorldPhones The World's Telephones

ability.cov Ability and Intelligence Tests

airmiles Passenger Miles on Commercial US Airlines, 1937-1960

airquality New York Air Quality Measurements

anscombe Anscombe's Quartet of 'Identical' Simple Linear Regressions

attenu The Joyner-Boore Attenuation Data

attitude The Chatterjee-Price Attitude Data

austres Quarterly Time Series of the Number of Australian Residents

beaver1 (beavers) Body Temperature Series of Two Beavers

beaver2 (beavers) Body Temperature Series of Two Beavers

cars Speed and Stopping Distances of Cars

chickwts Chicken Weights by Feed Type

co2 Mauna Loa Atmospheric CO2 Concentration

crimtab Student's 3000 Criminals Data

discoveries Yearly Numbers of Important Discoveries

esoph Smoking, Alcohol and (O)esophageal Cancer

euro Conversion Rates of Euro Currencies

euro.cross (euro) Conversion Rates of Euro Currencies

eurodist Distances Between European Cities and Between US Cities

faithful Old Faithful Geyser Data

fdeaths (UKLungDeaths) Monthly Deaths from Lung Diseases in the UK

freeny Freeny's Revenue Data

freeny.x (freeny) Freeny's Revenue Data

freeny.y (freeny) Freeny's Revenue Data

infert Infertility after Spontaneous and Induced Abortion

iris Edgar Anderson's Iris Data

iris3 Edgar Anderson's Iris Data

islands Areas of the World's Major Landmasses

ldeaths (UKLungDeaths) Monthly Deaths from Lung Diseases in the UK

lh Luteinizing Hormone in Blood Samples

longley Longley's Economic Regression Data

lynx Annual Canadian Lynx trappings 1821-1934

mdeaths (UKLungDeaths) Monthly Deaths from Lung Diseases in the UK

morley Michelson Speed of Light Data

mtcars Motor Trend Car Road Tests

nhtemp Average Yearly Temperatures in New Haven

nottem Average Monthly Temperatures at Nottingham, 1920-1939

npk Classical N, P, K Factorial Experiment

occupationalStatus Occupational Status of Fathers and their Sons

precip Annual Precipitation in US Cities

presidents Quarterly Approval Ratings of US Presidents

pressure Vapor Pressure of Mercury as a Function of Temperature

quakes Locations of Earthquakes off Fiji

randu Random Numbers from Congruential Generator RANDU

rivers Lengths of Major North American Rivers

rock Measurements on Petroleum Rock Samples

sleep Student's Sleep Data

stack.loss (stackloss) Brownlee's Stack Loss Plant Data

stack.x (stackloss) Brownlee's Stack Loss Plant Data

stackloss Brownlee's Stack Loss Plant Data

state.abb (state) US State Facts and Figures

state.area (state) US State Facts and Figures

state.center (state) US State Facts and Figures

state.division (state) US State Facts and Figures

state.name (state) US State Facts and Figures

state.region (state) US State Facts and Figures

state.x77 (state) US State Facts and Figures

sunspot.month Monthly Sunspot Data, from 1749 to "Present"

sunspot.year Yearly Sunspot Data, 1700-1988

sunspots Monthly Sunspot Numbers, 1749-1983

swiss Swiss Fertility and Socioeconomic Indicators (1888) Data

treering Yearly Treering Data, -6000-1979

trees Diameter, Height and Volume for Black Cherry Trees

uspop Populations Recorded by the US Census

volcano Topographic Information on Auckland's Maunga Whau Volcano

warpbreaks The Number of Breaks in Yarn during Weaving

women Average Heights and Weights for American Women

Data sets in package ‘dplyr’:

band\_instruments Band membership

band\_instruments2 Band membership

band\_members Band membership

starwars Starwars characters

storms Storm tracks data

Data sets in package ‘forcats’:

gss\_cat A sample of categorical variables from the General Social

survey

Data sets in package ‘ggplot2’:

diamonds Prices of over 50,000 round cut diamonds

economics US economic time series

economics\_long US economic time series

faithfuld 2d density estimate of Old Faithful data

luv\_colours 'colors()' in Luv space

midwest Midwest demographics

mpg Fuel economy data from 1999 to 2008 for 38 popular models of

cars

msleep An updated and expanded version of the mammals sleep dataset

presidential Terms of 12 presidents from Eisenhower to Trump

seals Vector field of seal movements

txhousing Housing sales in TX

Data sets in package ‘gt’:

countrypops Yearly populations of countries from 1960 to 2021

exibble A toy example tibble for testing with gt: exibble

gtcars Deluxe automobiles from the 2014-2017 period

metro The stations of the Paris Metro

pizzaplace A year of pizza sales from a pizza place

rx\_addv An ADDV-flavored clinical trial toy dataset

rx\_adsl An ADSL-flavored clinical trial toy dataset

sp500 Daily S&P 500 Index data from 1950 to 2015

sza Twice hourly solar zenith angles by month & latitude

towny Populations of all municipalities in Ontario from 1996 to

2021

Data sets in package ‘gtsummary’:

trial Results from a simulated study of two chemotherapy agents

Data sets in package ‘lubridate’:

lakers Lakers 2008-2009 basketball data set

Data sets in package ‘stringr’:

fruit Sample character vectors for practicing string manipulations

sentences Sample character vectors for practicing string manipulations

words Sample character vectors for practicing string manipulations

Data sets in package ‘tidyr’:

billboard Song rankings for Billboard top 100 in the year 2000

cms\_patient\_care Data from the Centers for Medicare & Medicaid Services

cms\_patient\_experience Data from the Centers for Medicare & Medicaid Services

construction Completed construction in the US in 2018

fish\_encounters Fish encounters

household Household data

population World Health Organization TB data

relig\_income Pew religion and income survey

smiths Some data about the Smith family

table1 Example tabular representations

table2 Example tabular representations

table3 Example tabular representations

table4a Example tabular representations

table4b Example tabular representations

table5 Example tabular representations

us\_rent\_income US rent and income data

who World Health Organization TB data

who2 World Health Organization TB data

world\_bank\_pop Population data from the world bank

Use ‘data(package = .packages(all.available = TRUE))’

to list the data sets in all \*available\* packages.