



CODAP for Data Science

Summary

Short Description: This document explains how to utilize CODAP to analyze scientific data.

Language: English

Suitable for age: 10-18 years

Key words: Analyzing Data, Data Visualization, Data Literacy, Summarizing and Communicating Numbers

Format: .doc



1. CODAP (Common Online Data Analysis Platform) is an easy-to-use data analysis tool. It can be used to summarize, visualize, and interpret data. The main aim is very well expressed at their homepage: “Your students can load their own data into an easy-to-use web-based data analysis tool to create their own datasets, share visualizations, and discover data-driven insights. In the process, they will learn to understand the world through its data.”

<https://codap.concord.org/for-educators/>



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For Educators: Teaching with CODAP

[CODAP](#) (Common Online Data Analysis Platform) is an easy-to-use data analysis environment designed for grades 5 through 14. CODAP can be used across the curriculum to help students summarize, visualize, and interpret data, advancing their skills to use data as evidence to support a claim.

Your students can load their own data into an easy-to-use web-based data analysis tool to create their own datasets, share visualizations, and discover data-driven insights. In the process, they will learn to understand the world through its data.

2. The provided Guides & Tutorials are a very fine starting point. For this follow the link

<https://codap.concord.org/for-educators/>

to Part 1: <https://codap.concord.org/app/static/dg/en/cert/#shared=18324>

to Part 2: <https://codap.concord.org/app/static/dg/en/cert/#shared=97226>

Guides & Tutorials

The Getting Started With CODAP Tutorials showcase the basic ways to interact with data in CODAP. Use them to learn the key interactive features and get a feel for what CODAP can do.

- [Getting Started in CODAP, Part 1](#)
- [Getting Started in CODAP, Part 2](#)



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1.02 Getting started with CODAP

Welcome to CODAP

Figure out how to accomplish each of these basic CODAP tasks:

- Make a scatterplot of height vs age. [Show me.](#)
- Drag a selection rectangle around a subset of the points. [Show me.](#)
- Hide the unselected cases. [Show me.](#)
- Deselect all cases, including the ones in the table. [Show me.](#)
- Rescale the graph. [Show me.](#)
- Add Sex as a legend to the scatterplot. [Show me.](#)

People from NHANES

Index	Sex	Age	Height (cm)	Birth	Education	BMI	Weight (kg)
1	Male	1		USA			10.8
2	Male	35	178.9	USA	HS incl...	28.12	90
3	Fe...	34	151	Mexico	Less th...	24.34	55.5
4	Male	64	156.3	Mexico	Less th...	36.72	89.7
5	Fe...	5	107.8	USA		16.01	18.6
6	Fe...	68	173	USA	More th...	36.52	109.3
7	Fe...	0		USA			6.5
8	Fe...	2	87.9	USA		15.92	12.3
9	Male	15	179.3	USA	Less th...	21.06	67.7
10	Fe...	24	165.1	USA	More th...	46.04	125.5
11	Fe...	70	151.9	Mexico	Less th...	28.82	66.5
12	Male	85	174.5	USA	More th...	19.44	59.2
13	Fe...	30	172.4	USA	More th...	26.51	78.8
14	Male	66	177.9	USA	More th...	26.13	82.7
15	Male	37	191.7	USA	Less th...	22.64	83.2
16	Male	20	184.1	Elsewh...	Less th...	20.18	68.4
17	Male	31	197.6	USA	More th...	22.97	89.7
18	Male	13	169.1	USA	Less th...	28.5	81.5
19	Male	12	162.6	USA	Less th...	20.5	54.2
20	Fe...	59	147.1	USA	More th...	38.73	83.8
21	Fe...	2	89.8	USA		16.62	15.4
22	Fe...	76	157.5	USA	Less th...	33.1	82.1
23	Male	20	182	USA	More th...	23.97	79.4

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1.02 Getting started with CODAP

Great scatterplot! Hopefully you have height on the vertical axis and age on the horizontal axis.

Figure out how to accomplish each of these basic CODAP tasks:

- Make a scatterplot of height vs age. [Show me.](#)
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- Hide the unselected cases. [Show me.](#)
- Deselect all cases, including the ones in the table. [Show me.](#)
- Rescale the graph. [Show me.](#)
- Add Sex as a legend to the scatterplot. [Show me.](#)

People from NHANES

Index	Sex	Age	Height (cm)	Birth	Education	BMI	Weight (kg)
1	Male	1		USA			10.8
2	Male	35	178.9	USA	HS incl...	28.12	90
3	Female	34	151	Mexico	Less th...	24.34	55.5
4	Male	64	156.3	Mexico	Less th...	36.72	89.7
5	Female	5	107.8	USA		16.01	18.6
6	Female	68	173	USA	More th...	36.52	109.3
7	Female	0		USA			6.5
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23	Male	20	182	USA	More th...	23.97	79.4

people

3. For your first visualization build a very easy dataset, such as height and weight of some people:

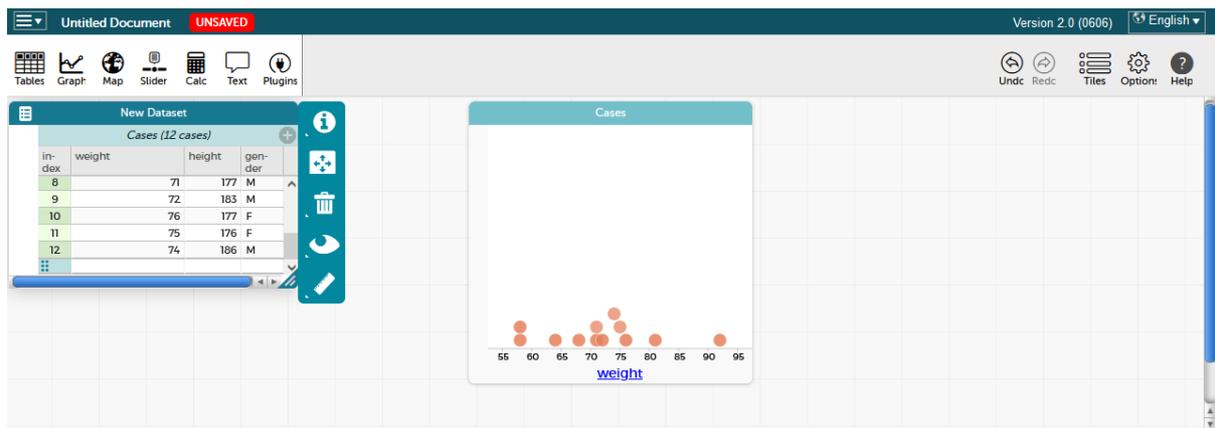
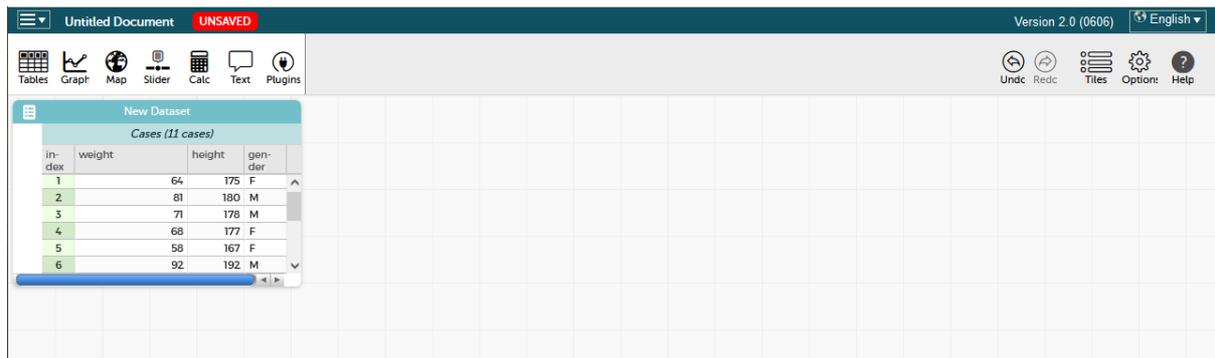
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New Dataset

- new from clipboard --
- new --
- dx: Create a new data set





4. If you like the application download the full CODAP Start-Up Guide from the website. It is an 18 page pdf document with concise descriptions and links to short videos.
<https://codap.concord.org/wp-content/uploads/codap-start-up-guide.pdf>

Want to use CODAP in your classroom? The [CODAP Start-Up Guide](#) (PDF) is a comprehensive introduction to CODAP's features and interactivity. Images and links to short videos support learning to get around in CODAP quickly and easily.



5. Check out the datasets provided by the CODAP website.

<https://concord-consortium.github.io/codap-data/>

Classroom Activities

- [Sample CODAP Datasets](#) come with data pre-loaded for you, along with a description of the dataset and suggestions for exploring. Choose from more than 50 datasets—from Earthquakes to trending YouTube videos, from Compound Interest to the Digits of Pi (infinity), and beyond! Search using keywords, or sort by categories: Math, Science, Social Studies, Language Arts, and Miscellaneous.

The screenshot shows the CODAP website interface. At the top, there is a search bar with the text "Search by keyword..." and a "Search" button. Below the search bar is a grid of six document thumbnails, each with an "Embeddable Link" button. The thumbnails are: Markov (a man speaking), Census 2020 (a map of the USA), BART Pressure (a train), Birthdays (candles on a cake), Fibonacci (a golden rectangle), and The Monty Hall Problem (a game show set). To the left of the grid is a sidebar with radio buttons for categories: Math, Science, Social Studies, Language Arts, and Miscellaneous.

There you will find some very fine scientific data such as data about the planets in our solar system:

The screenshot shows a CODAP document titled "Planets" with a table of planetary data and a corresponding image of the eight planets. The table is as follows:

Index	Name	Radius (km)	Orbit .lus (AU)	Day .h (days)	Mass (Earths)	Year .gth (yr)	Rings	Perihelion (AU)	Aphelion (AU)	Moons	Mag
1	Merc...	2439	0.3871	58.65	0.06	0.24	no	0.31	0.46	0	yes
2	Venus	6052	0.7233	243.01	0.82	0.62	no	0.73	0.72	0	no
3	Earth	6378	1	1	1	1	no	0.99	1.01	1	yes
4	Mars	3395	1.524	1.03	0.31	1.88	no	1.41	1.64	2	no
5	Jupit...	71498	5.2028	0.41	317.9	11.86	yes	5.03	5.37	61	yes
6	Saturn	60330	9.5388	0.43	94.29	29.46	yes	9.2	9.96	33	yes
7	Uran...	25559	19.1914	0.72	14.6	84.07	yes	18.64	19.75	26	yes
8	Nept...	24764	30.0611	0.67	17.1	164.82	yes	30.22	29.89	13	yes

Below the table is a grid of eight planet images labeled MERCURY, VENUS, EARTH, MARS, JUPITER, SATURN, URANUS, and NEPTUNE. The URL <http://eightplanets.org/planets.html> is visible at the bottom right of the image grid.