Data Visualization

Stacey Stearns
UConn Extension
“Humans process visual scenes about 60,000 times faster than they do text, and people only read about 28% of the text on web pages.”
- Canva
Telling a Story with Data Visualization
Telling a Story with Data Visualization

Design: Kara Bonsack
Telling a Story with Data Visualization

In 2018, UConn 4-H began collecting annual statewide data about the impact of our programs on 4-H youth participants ages 7-19. During this pilot year our team learned a great deal and we anticipate learning more as we develop these efforts. Below is a synthesis of the 2018 findings. Together, we will work to collectively ensure that we are providing the best possible programs to youth engaged in UConn 4-H.

Career and College Readiness*

Key Findings:

96% of respondents stated that 4-H has helped them identify things they are good at.

76% reported that 4-H has helped them explore future career options.

What is UConn Extension doing as a result?

In the coming years, our 4-H team will continue to support programs that help youth identify their strengths and determine what career options are available to them. We will encourage youth participants to visit college campuses and reflect on their future career goals.

What can you do to help?

- Bring your 4-H members to a College campus! UConn Extension encourages members to visit a college or university.
- View the annual College fair with an eye out for these opportunities.
- Provide feedback to youth when they are in a risk that may encourage them to explore a specific career opportunity.

Science and Engineering

Key Findings:

82% stated that at 4-H, they learned new things about science.

42% indicated that at 4-H, they learned new things about engineering.

What is UConn Extension doing as a result?

Youth may not realize that they are participating in programs related to science, technology, engineering and math (STEM). Therefore, we plan to work with the UConn 4-H team and 4-H volunteers to better communicate the science and engineering focus of our 4-H programs.

What can you do to help?

- Pose questions to youth to help guide them in making explicit connections to science and engineering programming at camp activities.
- Make explicit statements about how science and engineering are components of science and engineering during club activities.

*Not all questions were only answered by 4-12th graders

Design: Sean Flynn
Examples of Data Visualization

17,334
youth in UConn 4-H programs

3,784
active UConn 4-H volunteers

1,458
4-H

574
Master Gardeners

876
school gardens & food justice projects

Volunteers
Volunteers fuel Extension programs allowing us to reach every town in the state with no fewer than 11 programs in each town, and in some towns over 22 programs. Many of our programs utilize volunteers, including 4-H, Master Gardeners, and school garden projects.
Examples of Data Visualization

4-H YOUTH

18,326 participating youth.

3,981 active volunteers.

(1 clover = 1,000 people)
Examples of Data Visualization

by the Hours

- 9,414 hours of intensive invasive plant training sessions
- 2,304 hours of instruction by the CLEAR Extension educators in the UConn Climate Corps class
- 1,527 hours of instruction in our CLIR Lifelong Learning program
- 1,101 hours of training in Ornamental and Turf short courses
- 350 hours of instruction by Master Gardener volunteers

Design: Kara Bonsack
Examples of Data Visualization

“I learned about portion size, how to defrost meats and seafood, check the products’ labels and that we should exercise for at least 30 minutes every day and that children should exercise 1 hour a day. I also learned how to check the amount of sugar in drinks.”
• EFNEP participant

“Thanks again for an amazing workshop! There really are very few workshops that both provide you with immediately usable units for the class AND teach you things you didn’t know... yours did both! It was extremely enriching!”
• CLEAR Teacher Professional Learning Workshop attendee

“I was pushed beyond my comfort level by joining PEP and allowing myself to be vulnerable among a group of strangers who quickly became friends and teammates.”
• PEP participant

Design: Kara Bonsack
Examples of Data Visualization

Citizens Engaged

15,461 Participants in Food programs
20,745 Participants in Health programs
40,046 Participants in Sustainability programs

\[ \text{\LARGE 4} = 1,000 \]

16,362 youth participated in 4-H programs
Examples of Data Visualization

**Rain Garden States**
The rain garden app guides homeowners and landscapers through determining the size and placement of the garden, selecting appropriate plants, and includes tools for determining soil type, and managing multiple rain garden projects.

20 U.S. states using the rain garden app

**Training**
Local land use commissioners and tree wardens make decisions that can affect citizens for generations. Our programs have provided advanced training to over 6,000 local officials to provide tools to make better decisions.

1,500 land use decision makers
4,500 tree wardens

Design: Kara Bonsack
Help! I’m not a designer.

- Neither am I….meet Canva.com
Start with Design Thinking

- Empathy
- Experimentation
- Expansive thinking

Photo: PxPhere.com
How to Communicate Your Data

• Develop a style and stay consistent
• Tailored for any situation
• Create a plan
• Easy to understand
• Persuasive
• Creative
• Ask a question
Data Visualization 101: Start with a Goal

• What is the purpose of your design?
• What is one key takeaway?
• Who is going to see this design?
• In what context?
• In what medium?
Your Project

- Pick the dimensions
- Use existing templates
- Customize
- Balance
- Use negative space
Best Management Practices

- Fonts
- Shapes, icons & illustrations
- Color palettes
- Limit text
- Organize your content
- Keep it simple
- Get inspired
- Ask for feedback
Fonts

- Two fonts
- Don’t settle
- Contrast and complement
- Adjust the weight of one font
- Font size, style and placement lead the viewer
- Confused? Canva has a guide to font pairing.
Examples of Data Visualization

**SUSTAINABILITY**

- **29,269** unique users to the Connecticut Environmental Conditions Online (CT ECO) mapping website.
- **438** plants analyzed at the Plant Diagnostics Lab.
- **2,494** soil samples analyzed from **186** Connecticut towns and **21** U.S. states.

"The Climate Corps courses are the central reason why I chose to pursue urban planning. The lectures and guest speakers enticed me to research the job more on my own. I might never have realized this career path was an option without your help."

- Amanda, Climate Corps Student

Design: Kara Bonsack
Shapes, Icons, Illustrations

- Transparent shapes
- Use free stock choices
- Upload your own

Design: Canva
Color Palettes

- 3-4 colors maximum
- Pick one color that will convey the idea or emotion
- Match your font color to your design
- Use the color contrast analyzer to make sure your colors are accessible (webaim.org)
- Good news on green – it’s trending
Basic Chart Example

![Bar Chart: Youth Involvement in 4-H](chart.png)

- **Charts**
- **Local Fairs**
- **Projects at Home**
- **Community Service**

Legend:
Infographic Example
EXERCISE REGULARLY

Yes
No
Sometimes

As a general goal, youth should aim for at least 60 minutes of physical activity daily.

DRINK LOTS OF WATER

Yes 54.5%
Sometimes 27.3%
No 18.2%

Aim for 8-10 glasses of fluid per day

YOUTH EATING FRUIT

Yes 46.2%
Sometimes 23.1%
No 30.8%
By 2035, energy consumption will increase by 35% which will increase water consumption by 85% increasing pressure on finite water resources.

Source: IEA, 2012
Example

25% INCREASE IN COLLEGE APPLICANTS FROM 2018 TO 2019

4-H.org
Example

25%
INCREASE IN COLLEGE APPLICANTS
FROM 2018 TO 2019

4-H.org
Social Media Post Example

GROW WITH 4-H

68% of youth learn about eating healthy in 4-H

4-H.org
Poster Example

look forward to a BRIGHTER FUTURE

EXPLORE CAREER OPTIONS WITH 4-H

77% of 4-H youth explored future career options through 4-H

JOIN US AT 4-H.ORG
Social Media Post Example

62% OF 4-H YOUTH VOLUNTEER

Youth contribute to their peers, families and communities
Organize Your Content

THE STAGES OF RESEARCH
Miss Jones Science Class

- **Problem**: Identify a problem and form a thesis statement.
- **Read**: Review literature related to your topic.
- **Hypthesize**: Come up with an educated guess based on your research.
- **Research**: Read resources to support your hypothesis.
- **Conclusion**: Interpret the results and write your conclusion.
Consistency Matters

- Keep it simple
- Get inspired
- Ask for feedback
Resources

• A Step by Step Guide to Design from Scratch (Canva)
• 5 Tips from Canva Designers on Creating Better Looking Designs
• Color Trends in 2020 (Canva)
• The Ultimate Guide to Font Pairing (Canva)
• Design Thinking in Three Steps (Think With Google)
• How to Design Infographics (Canva)
Design School

Graphic Design Basics

17,562 students

Activity

Practice some font pairing principles in this activity.

Start activity
Design Time

• Pull out your data, and work on your own design at Canva.com
Questions?

Stacey Stearns
Program Specialist, UConn Extension
860-486-9228
Stacey.Stearns@uconn.edu