

Interactive Data Visualization - Final Project

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James Boyle, Do Yeun Kim, and Son Ngo
Collaborators: Erik Nelson and Clare Bates Congdon

Background

- Nelson and Congdon. “Measuring the Relative Importance of Different Agricultural Inputs to Global and Regional Crop Yield Growth Since 1975.” (Working paper).
 - Investigate effects of climate change on crop yields over time.
 - Climate change effects on crop yield eclipsed by other developments (technology, crop mix change).
 - Help make informed decisions for sustainable growth.

Data Specifications

- Dataset spans 1975 - 2002, 104 countries
- Data attributes: crop yield measurements, area of farm land, share of crop types (8), temperature, precipitation, fertilizer, etc.
- Rich dataset allowed us to consider many options
 - Cross-sectional time-series data

Data Sample

id	year	tropical	million kcals / ha	ha	rice	wheat	sugar	grains	oil	fruits	roots	other	davg	navg	pavg	irr	fert
3	1975	0	4.3548	510000	0.784	31.37	0	32.2486	17.51	2.7446	3.0387	12.3113	24.59	11.84	32.75	0.6488	122.525
3	1976	0	5.2607	548550	0.7292	34.6368	0	28.5298	16.6803	2.698	2.8256	13.9003	22.7469	10.5780	61.0666	0.6199	131.2551
3	1977	0	5.355	559400	0.7151	35.7526	0	27.3507	16.446	2.7887	2.771	14.1759	24.7246	11.6055	43.1682	0.62567	140.6865
3	1978	0	5.4360	559500	0.7149	35.7462	0	27.1671	16.1752	2.9491	2.7703	14.4772	23.8163	10.7064	62.4498	0.6381	178.5523
3	1979	0	5.5114	570700	0.7009	34.5190	0	28.8768	15.5598	2.996	2.716	14.6311	24.5038	11.7412	55.1133	0.6413	171.8942

Questions

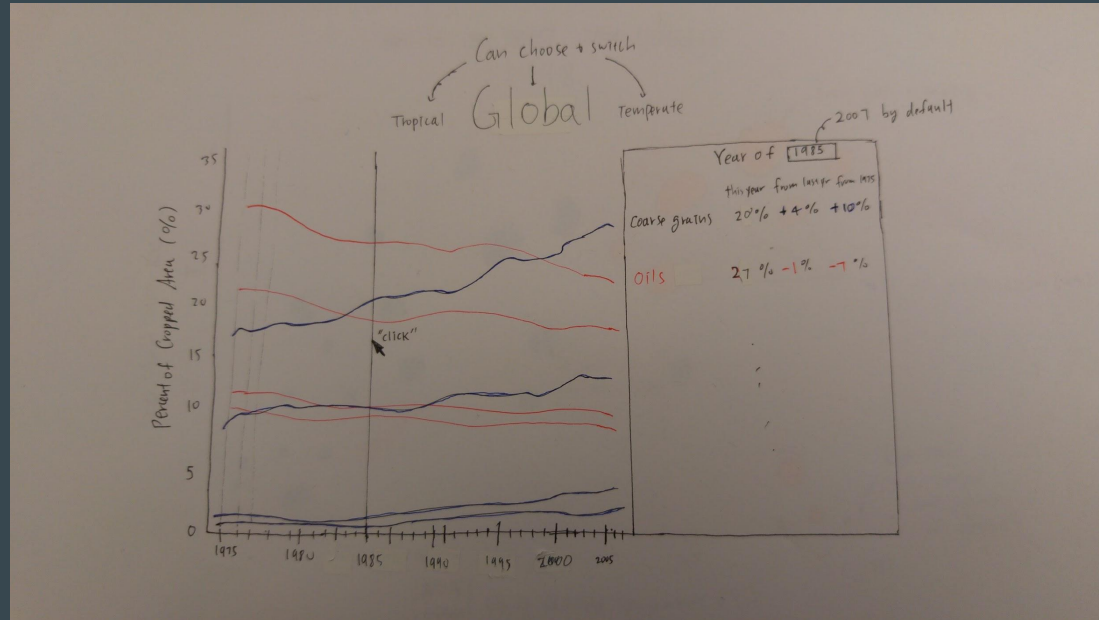
- "How does crop yield change over time with respect to daytime and nighttime temperature?"
 - "Does precipitation factor into the relationship?"
⇒ **Visualization choice: scatterplot with animation**
- "How did a country's crop yield change in relationship with other countries across the globe?"
 - "How does that relationship change over time?"
⇒ **Visualization choice: choropleth map**

New Concepts & Challenges

- Slider
- Animation
- Map & Paths
- Data compatibility
- Design principles (color scheme, interface layout, etc.)
- Version control :)

Future Work

- Interactive Line Graph to investigate questions regarding crop types
 - Graph overlay



Future Work (cont.)

- Enhance the current visualizations to be more effective
 - Better layout
 - More intuitive
- Fix bugs that still exist in the program.
 - E.g. scatter slider

References

- Nelson and Congdon. “Measuring the Relative Importance of Different Agricultural Inputs to Global and Regional Crop Yield Growth Since 1975.” (Working paper). <http://digitalcommons.bowdoin.edu/econpapers/12>
- D3 custom-slider: <http://bl.ocks.org/shancarter/5979700>
- Murray, Chapter 12, D3 Map
- Reference codes from Project 1
- StackOverflow, Google, etc.

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