

Information Design and Visualization

Information Design and Visualization FNAR-337

This course is an advanced studio that explores the relationship between visual design and the field of information visualization. It presents strategies for designing effective visual communications while seeking to articulate a vocabulary of data design. Course work will provide students with an introduction to structuring and presenting information with an emphasis on meaning, clear communication and visual aesthetics.

Data

individual pieces of information

raw bits of binary information

a set of values of qualitative or quantitative variables

Information

scientifically, a choice—a yes-or-no choice

In a broader sense, everything that informs our
world—writing, painting, music, money

The interdisciplinary study of
“the visual representation of large-scale collections
of non-numerical information, such as files and lines
of code in software systems”

Michael Friendly, Professor of Psychology, York University

Information graphics are
the visual representations of information,
data, or knowledge, used where complex
information needs to be explained quickly,
accurately, and clearly

Doug Newsom and Jim Haynes, *Public Relations Writing: Form and Style*

The purpose of visualization is insight, not pictures.

Ben Shneiderman (1999)

Today, visualization has the potential to become a mass medium. Engagement—grabbing and keeping the attention of a viewer—is the key to its broader success. The clearest, most precise graphic in the world communicates nothing if nobody looks at it.

How To Make Data Look Sexy (2011)
Fernanda Viegas and Martin Wattenberg

Infoporn

Information which serves no purpose other than
to hold the attention of its audience

Wikipedia

LISA'S COLD
+ timeline

3.17	3.18	3.19	3.20	3.21	3.22	3.23	3.24	3.25	3.26	
Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
sore throat										
fever						fever				
		runny nose								
	stuffy nose						stuffy nose			
				hacking cough						
				vomiting						
sneezing							sneezing			
						bloody nose				
						dizzy		dizzy	idizzy	
headache		headache						headache		

Measurement & Explanation

Data

Information

Evidence

History

Memory?

Size

Weight

Distance

Frequency

Appearance

Quantitative

Qualitative

Measurable

Immeasurable?

Hard Data

Anecdotal?

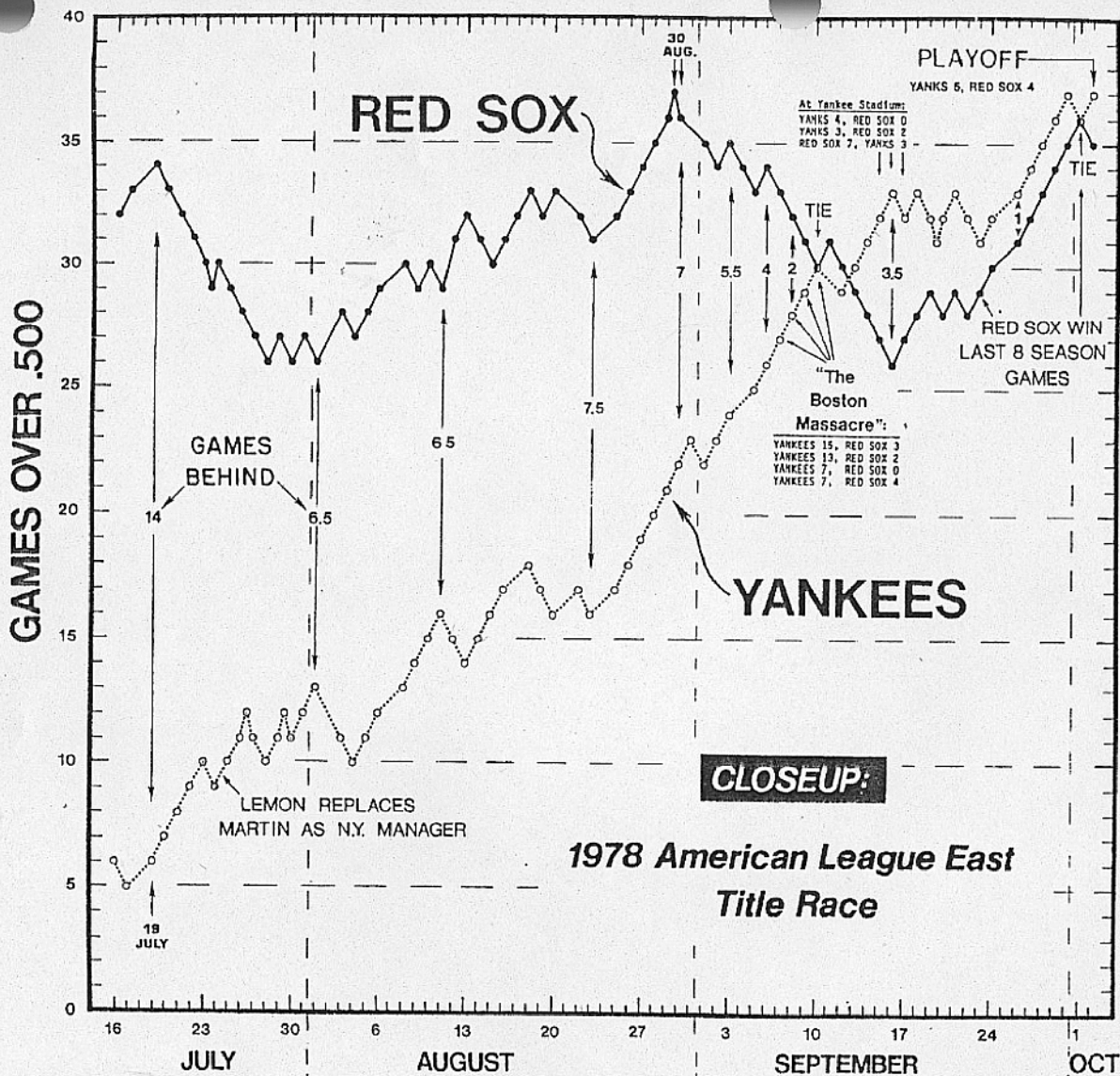
Fictional?

An aerial photograph of a city. In the foreground, there is a dense cluster of multi-story brick buildings with various rooflines, including flat roofs with HVAC units and dormer windows. A large river flows through the middle ground, with a multi-lane bridge crossing it. The bridge has several cars and a bus on it. In the background, more tall brick buildings are visible, some with many windows. The sky is overcast and grey. The text "364.4 Smoots + 1 ear" is overlaid in white on the river and bridge area.

364.4 Smoots + 1 ear

FRANCIS



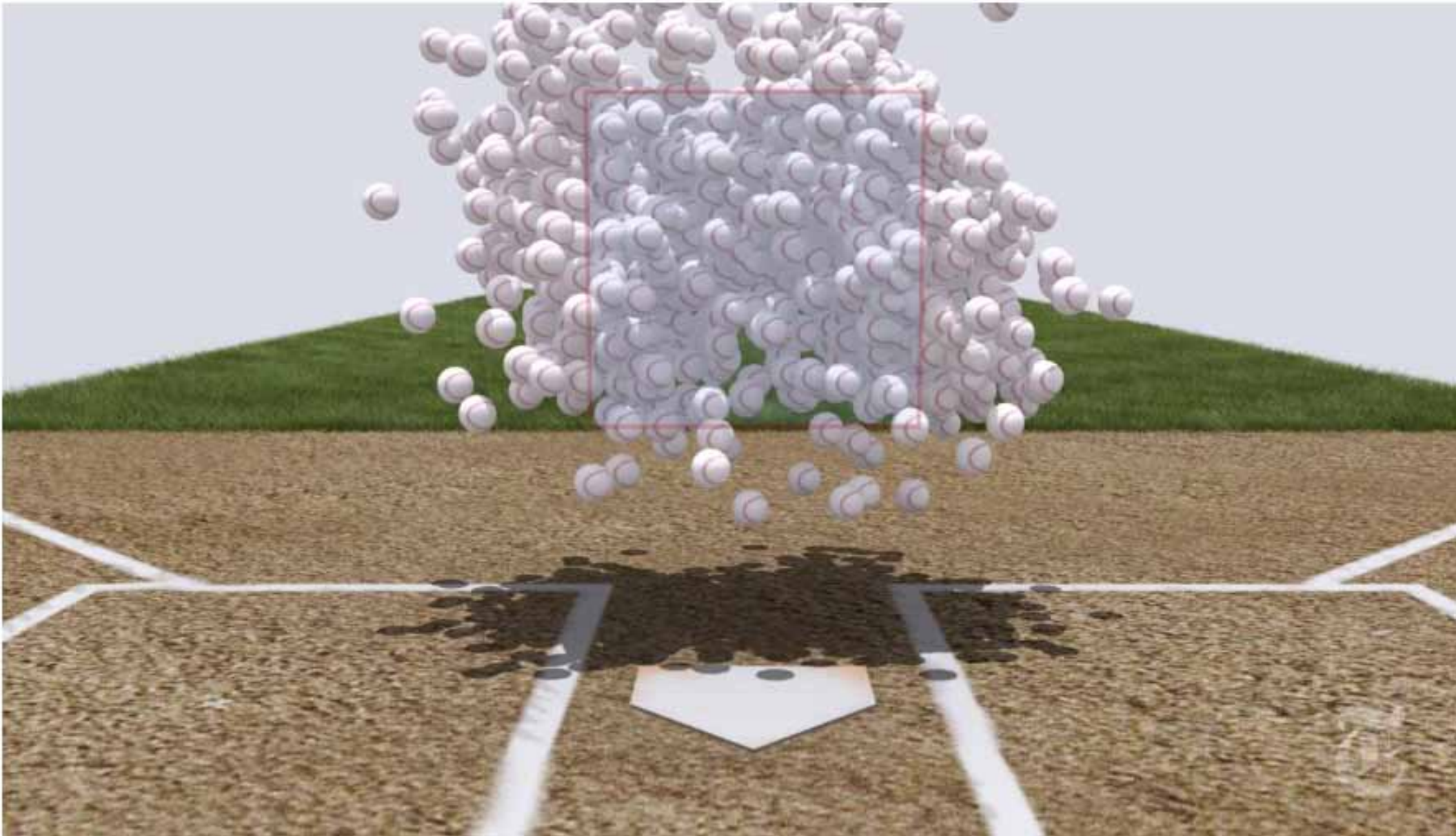


FENWAY FIASCO. In 1978, the Boston Red Sox and New York Yankees, probably the two best teams in the majors that year, staged one of the great dramas of the century. Fourteen games ahead of the Yankees on July 19th, the Red Sox suddenly lost half of their lead with a bad road trip at the end of July, matched Yankee wins through August, then lost the other half of the lead in early September, completing what was, numerically, the worst fold in modern major league history. The collapse of the injury-riddled Bosox in September was climaxed by a four-game slaughter by the Yankees at Fenway Park called *The Boston Massacre*. Later that month, Boston removed part of the stigma of its disintegration by recovering remarkably, rallying from 3½ games behind to tie New York on the closing day. In the October 2 playoff game at Fenway Park, Bucky Dent's three-run homer over The Wall put the Yanks ahead in the seventh inning and another homer by Reggie Jackson gave them their winning run in a 5-4 thriller.

Mariano Rivera | King of the Closers

A motion graphic explaining how Mariano Rivera dominates hitters with his signature cutter.

The graphic received the **Peter Sullivan Award** for Best in Show at the [Malofiej19](#) information graphics competition.



Carte Figurative des pertes successives en hommes de l'Armée Française dans la Campagne de Russie 1812-1813.

Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite Paris, le 20 Novembre 1869.

Les nombres d'hommes présents sont représentés par les laques des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en lettres des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de M. de Chiers, de Fézensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre.

Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davout qui avaient été détachés sur Minsk et Mabilow et qui rejoignent les Orécha et Witebsk, arrivent toujours unis avec l'armée.

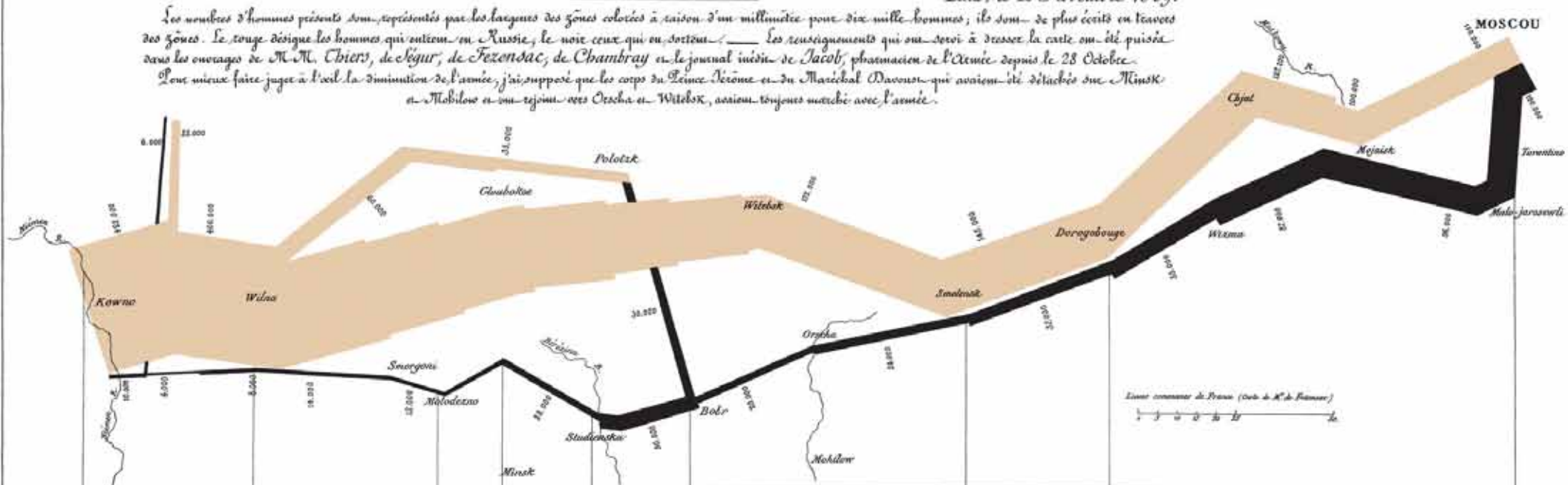


TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.



Les Cosaques passent au galop le Niémen gelé.

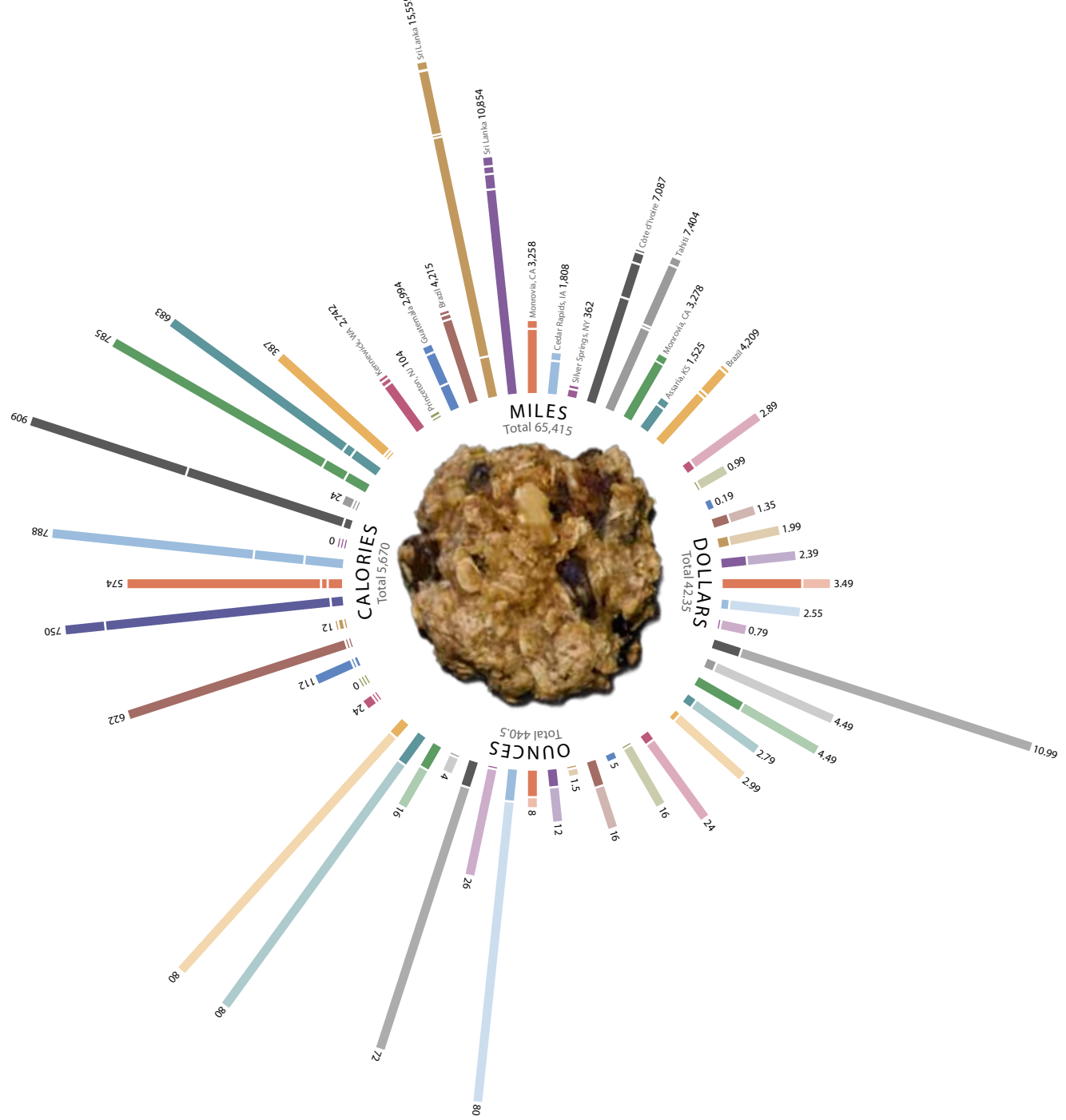
- Mott's **APPLESAUCE** The Fresh Grocer
- Arm and Hammer **BAKING SODA** Shop Rite
- Chiquita **BANANA** Trader Joe's
- Domino **BROWN SUGAR** The Fresh Grocer
- Trader Joe's **CINNAMON** Trader Joe's
- Whole Foods **SHREDDED COCONUT** Whole Foods
- Trader Joe's **DRIED CHERRIES** Trader Joe's
- Quaker **OLD-FASHIONED OATS** The Fresh Grocer
- Morton's **SALT** The Fresh Grocer
- Nestlé **CHOCOLATE CHIPS** BJ's Wholesale Club
- Trader Joe's **VANILLA EXTRACT** Trader Joe's
- Trader Joe's **WALNUTS** Trader Joe's
- King Arthur **FLOUR** Shop Rite
- Domino **WHITE SUGAR** Shop Rite

OAT EVERYTHING COOKIES

From the World to My Kitchen to Your Mouth
Alyssa Rosenzweig

For even the simplest of recipes, considerable amounts of resources are spent to bring all the ingredients together into one, delicious item. This project was an attempt to determine how each ingredient in my Oat Everything Cookies made it from the world to my kitchen in Philadelphia to your mouth.

Sources ranged from USDA reports and grower's associations (like the American Sugar Alliance) to sea freight patterns to personal contact with local grocery managers, distributors and individual company representatives



Break it down to build it back up.

Kirk Varnedoe

Observation / Inquiry / Interpretation / Visualization

3 2 1

tips for *happiness*

a collection of 321 tips to be *happy*. everyone is in search of it. everyone is in desperate need of it. click here if you're feeling lucky!

NOUNS

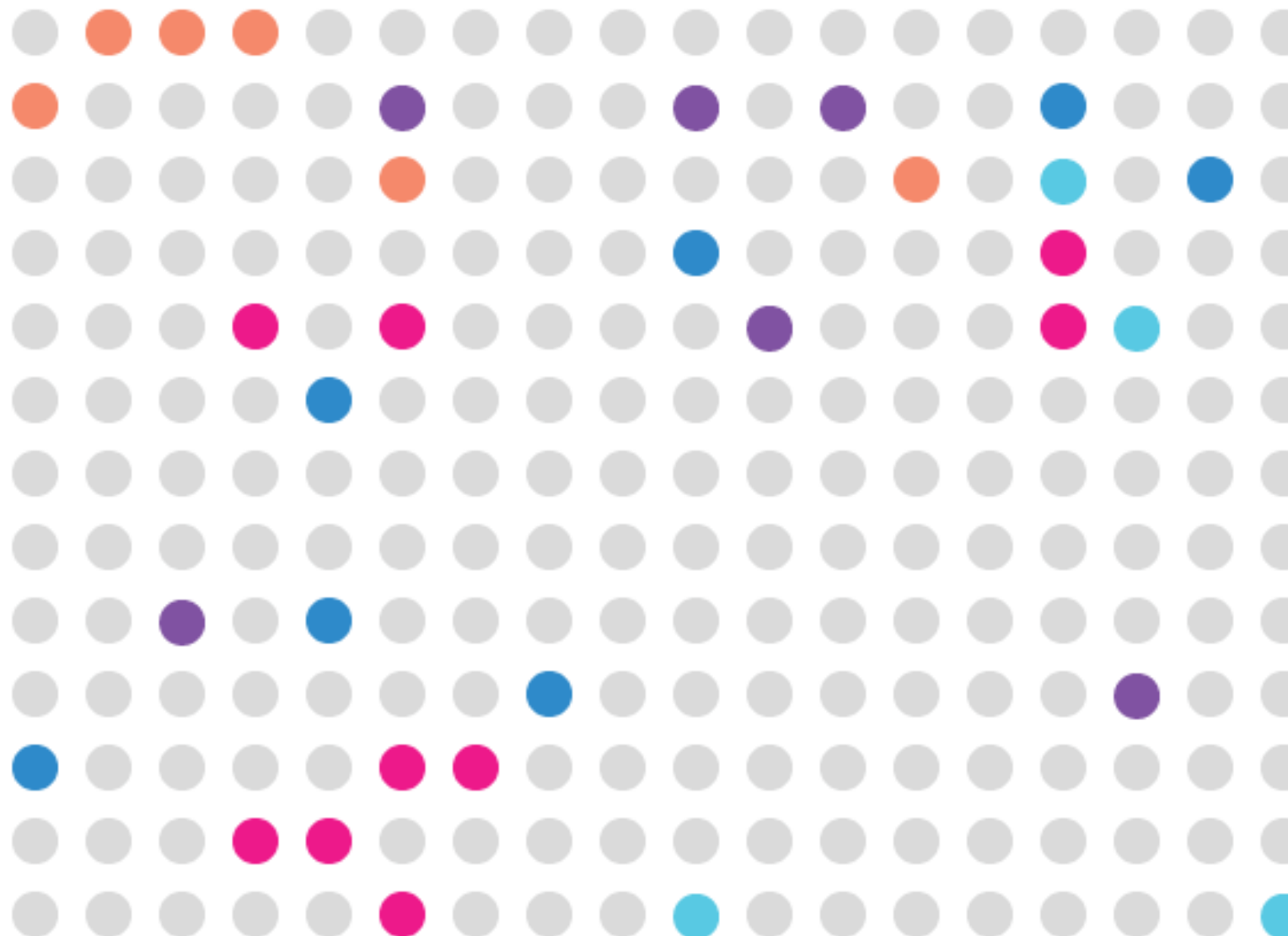
Energy
Friends
Happy[11]
Live
Love
People
Stretch
Things
Time
Will
Yourself

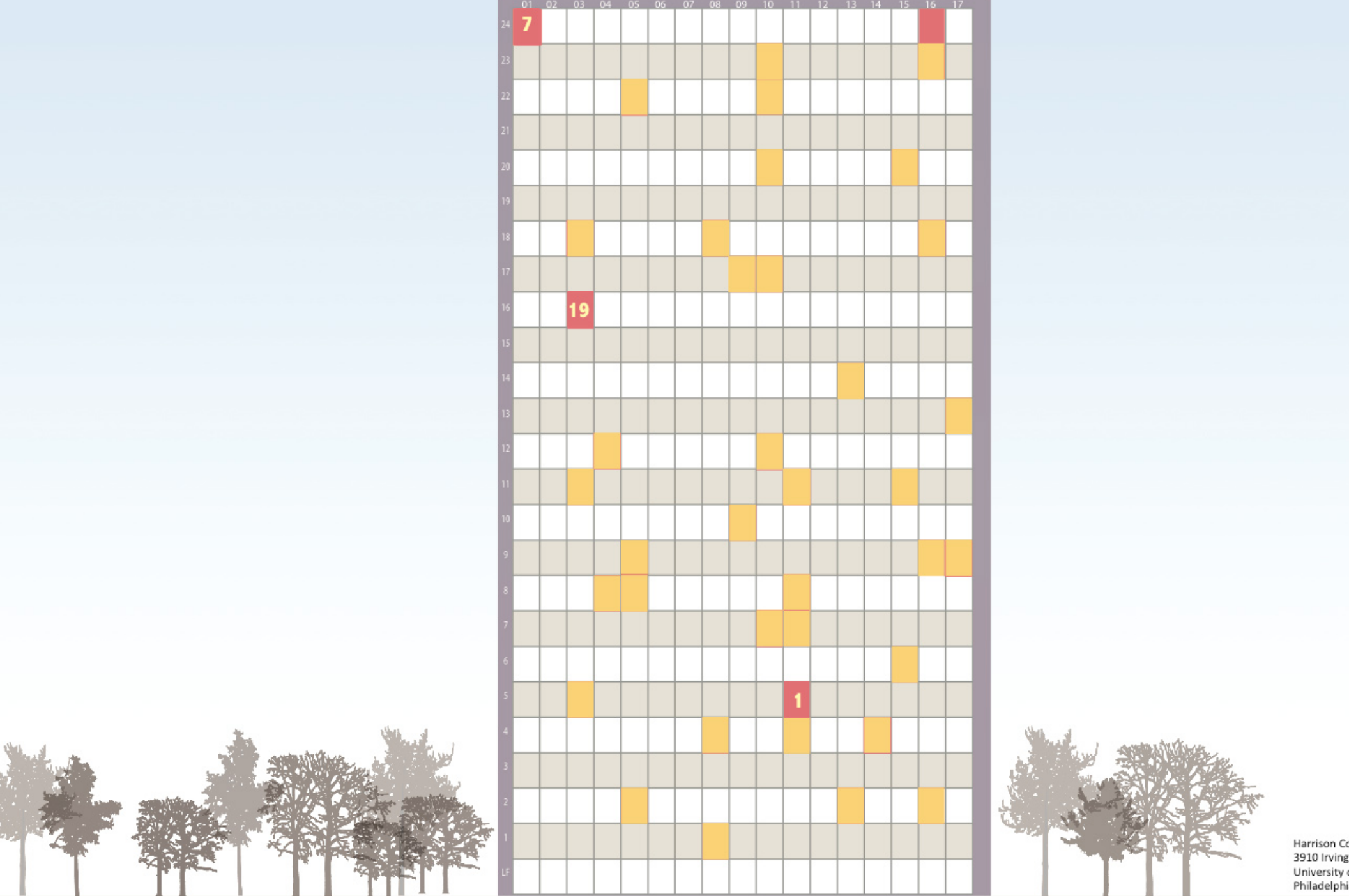
VERBS

Be[17]
Develop
Do
Dont[10]
Find
Get[6]
Give
Have
Let
Make
Take[8]

SOURCES

Academics
Artists
Blogs
Books
Celebrities
Entrepreneurs
Media
Medicine
Psychology
Religion
Research

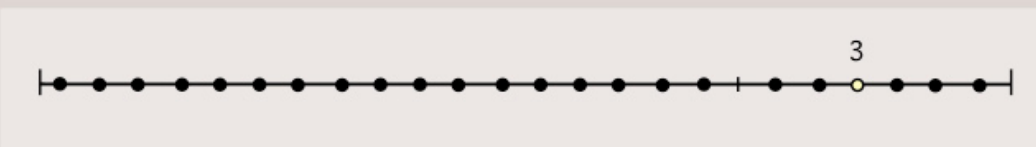




Harrison Co
3910 Irving
University of
Philadelph

Harrison Key Crisis

Built in 1970
Total Rooms: 354
Total Residents: 797

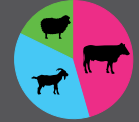


Legend

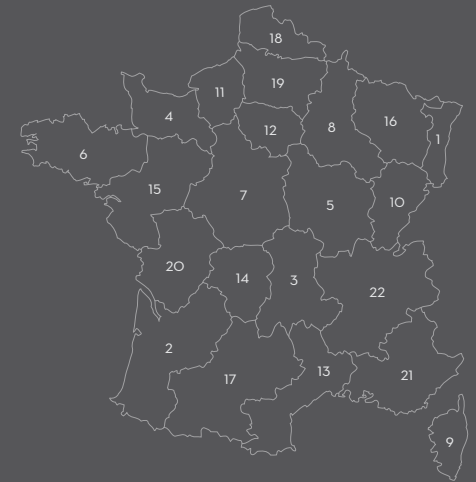
- Key Returned
- Key Signed Out for 'x' number of days

FROMAGES FRANÇAIS

For the cheese lovers of the world! Here is a selection of France's most famous cheeses displayed by region, type of milk, texture, aging, and inclusion in the Appellation d'origine contrôlée (AOC). Enjoy!



The cheeses that contain a white border belong to the list of Appellation d'origine contrôlée (AOC), or "controlled term of origin," which certifies that their production follows a series of standards, according to the laws of the government bureau Institut National des Appellations d'Origine (INAO). The INAO ensures that all AOC products are produced in a consistent manner and in designated geographical areas.



H
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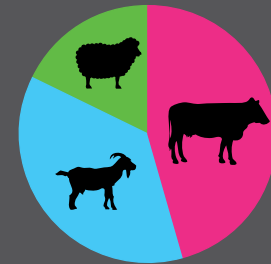
N/A



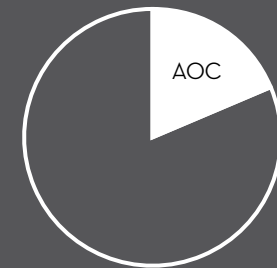
Maturity
(minimum # of days)

FRANÇAIS

For the cheese lovers of the world! Here is a selection of France's most famous cheeses displayed by region, type of milk, texture, aging, and inclusion in the Appellation d'origine contrôlée (AOC). Enjoy!



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- Tomme Fraiche
- Mouils
- Tomme de Brebis
- Ardi-Gasna
- Pe Descarous
- Tomme Brulee
- Tommette Laisou
- Tomme des Bauges
- Tomme Crayeuse
- Tomme de Ceroné
- Tomme de Savoie
- Tomme Marc de Raisin
- Tommette de Savoie
- Tommette de Yenne

18 Nord-Pas-de-Calais

21 Provence

15 Loire (Pays de la)

16 Lorraine

19 Picardie

20 Poitou-Charentes

- Curé Nantais
- Munster (Munster-Géromé)
- Aveyronnais
- Boulelette d'Avesnes
- Rollot (Coeur de)
- Bondon à la Fleur de Sel
- Mascare
- Bleu du Vercors-Sassenage
- Machecoulais
- Bleu des Causses
- Cap Gris Nez
- Banon
- Bleu du Val d'Aillons
- Galette du Paludier
- Bouyssou
- Carré de Roncq
- Chabichou du Poitou
- Cavet Feuille
- Galette Lyonnaise
- Pont d'Yeu
- Crèmeux de Saint Parthem
- Coeur d'Arras
- Chèvre à la Rose
- Reblochon (de Savoie)
- Ecir de l'Aubrac
- Rollot (Coeur de)
- Chevre Figue
- Rogeret
- Anneau Du Vic-Bilh
- Coeur de Thiérache
- Galette des Templiers
- Romans Part Dieu
- Bouton d'Oc
- Dauphin
- Lorentym
- Saint Felicien
- Bouygnette
- Marolles
- Lou Pevre
- St Marcellin
- Cabecou
- Pave d'Aremberg
- Lou Sarriette
- St Romans
- Champion
- Sablé du Boulonnais
- Taupiniere
- Olivia Provence
- Tarentais
- Couronne des 3 Seigneurs
- Vieux Lille
- Olivia Tapenade
- Ardéchois
- Gasconnades
- Petit Provençal
- Banon
- Liersois
- Romarin
- Chevrotin des Aravis
- Massadel
- Rouleau de Provence
- Picodon (de la Drôme/l'Ardèche)
- Pisè du Lot
- Roves des Garrigues
- Rigotte de Condrieu



Idol Worship/Divya Prabhakar

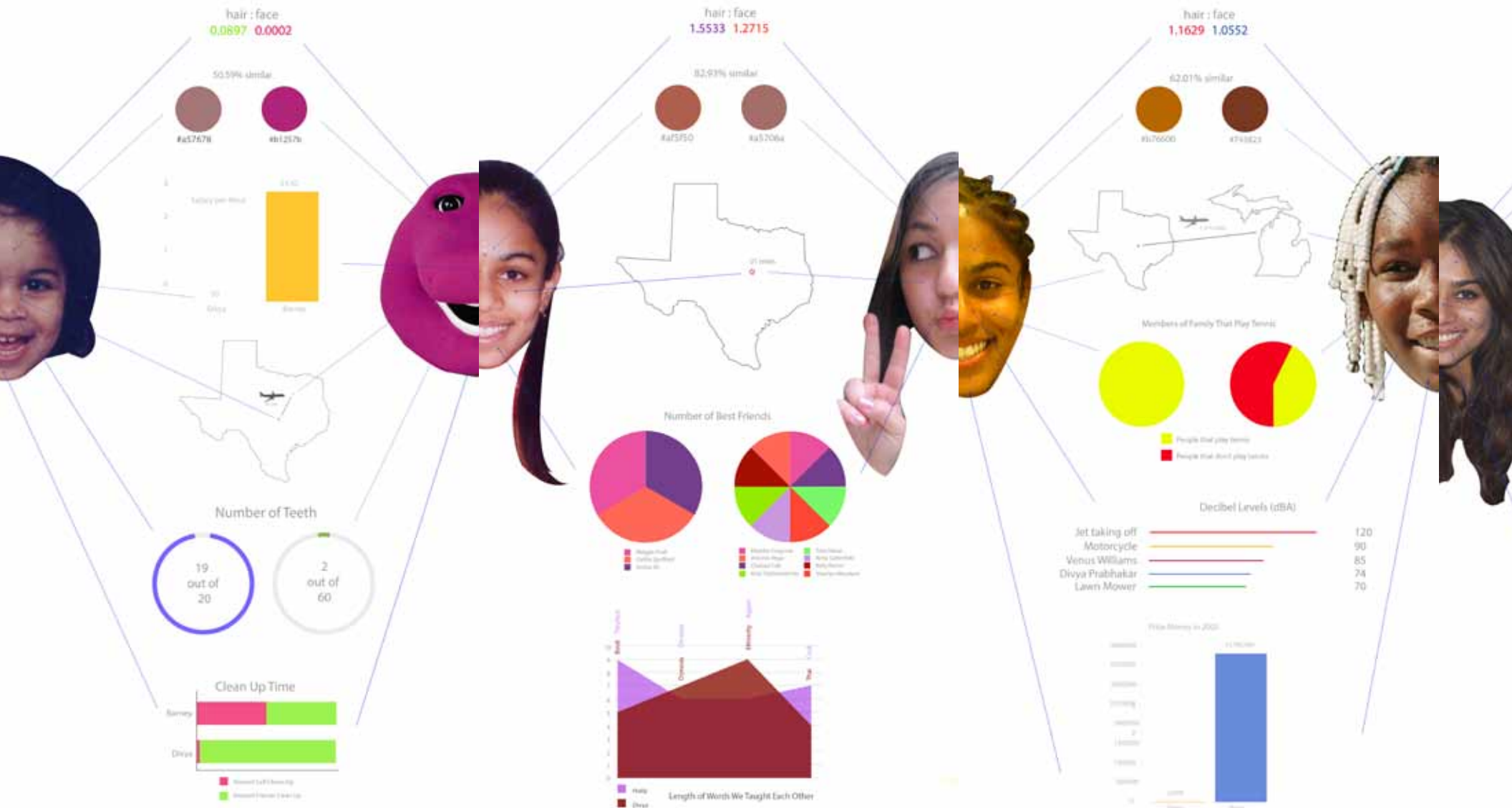
Comparative: Skin tones

Location

Number of best friends

Hair length to face length ratio

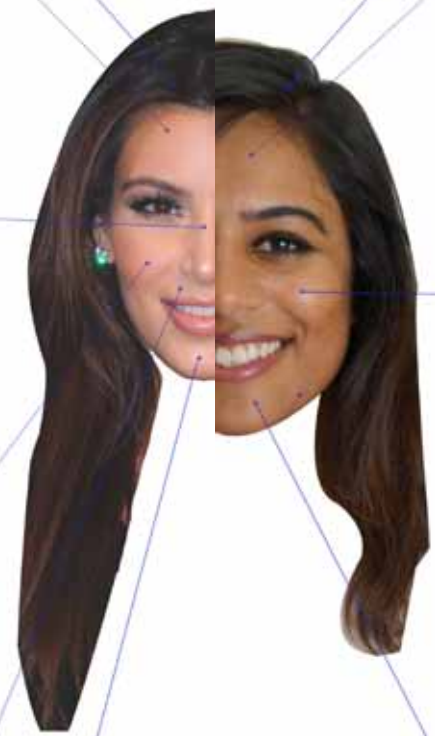
Salary per year



hair : face
2.478 2.6177



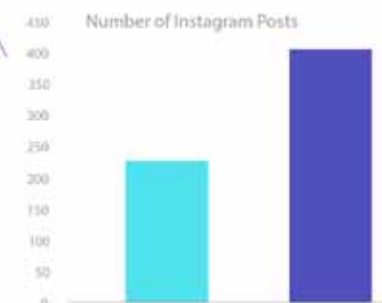
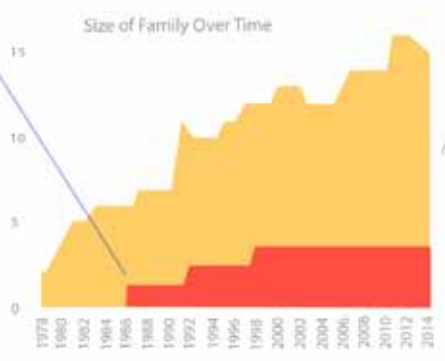
hair : face
1.4210 1.4199



Number of Secret Albums

You'll know when you need to know.

1



Number of Sex Tapes Between Us



- Kim Kardashian
- Divya Prabhakar

Why I Was Reading



Type of Book



BRYNN SHEPHERD

"An Open Book?"

Total Pages Read

44770

Average Date of Publication

1985

Earliest Date of Publication

1611

THE TEMPEST
BY WILLIAM SHAKESPEARE

Average Number of Pages Per Book

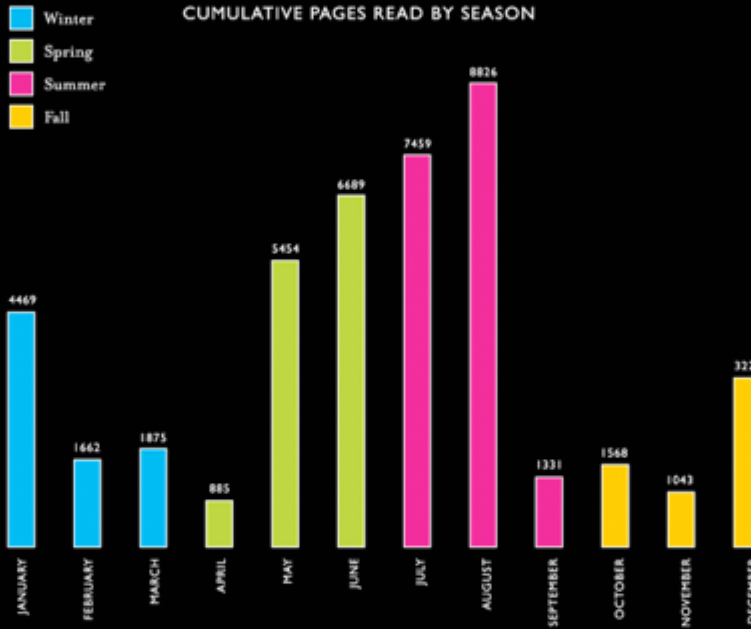
366.97

Greatest Number of Pages in Any Book

1344

THE POWER BROKER
BY ROBERT A. CARO

CUMULATIVE PAGES READ BY SEASON

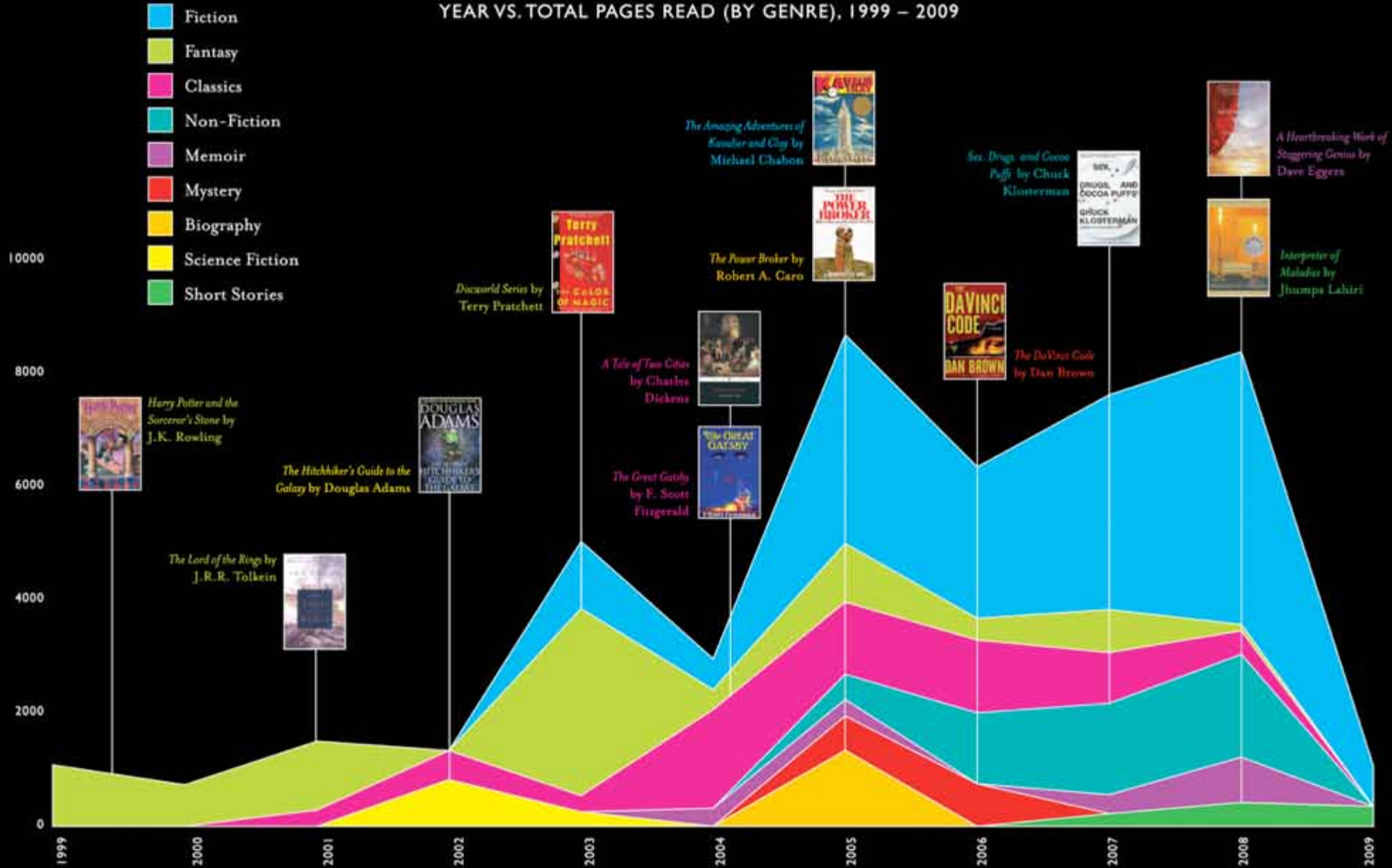


YEAR VS. TOTAL PAGES READ (BY GENRE), 1999 – 2009

- Fiction
- Fantasy
- Classics
- Non-Fiction
- Memoir
- Mystery
- Biography
- Science Fiction



YEAR VS. TOTAL PAGES READ (BY GENRE), 1999 – 2009



All information compiled and analyzed using www.goodreads.com and Google Spreadsheets.

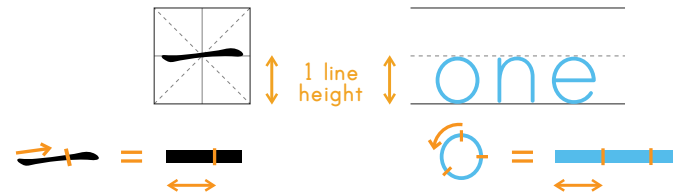


68 Tees

A brief autobiography based on Dan Knowlton's t-shirts acquired from 2005 to 2012.
View the collection online at: <http://danknowlton.com/info-vis/shirts>

a measure of comparison

CHINESE & ENGLISH



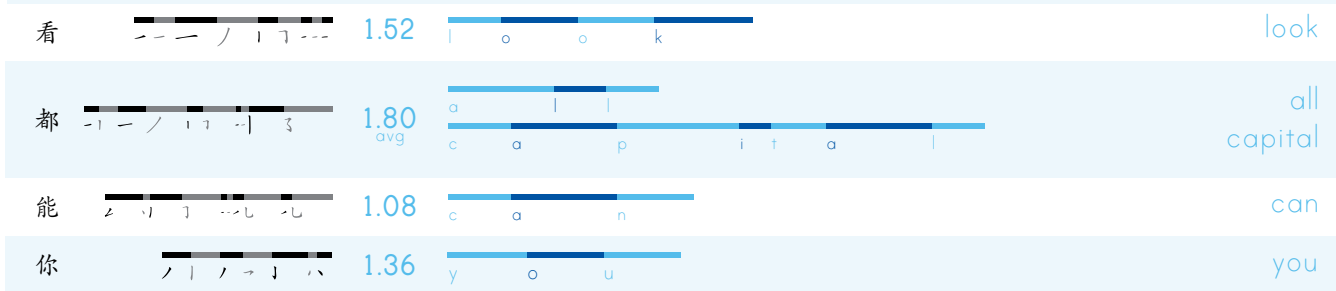
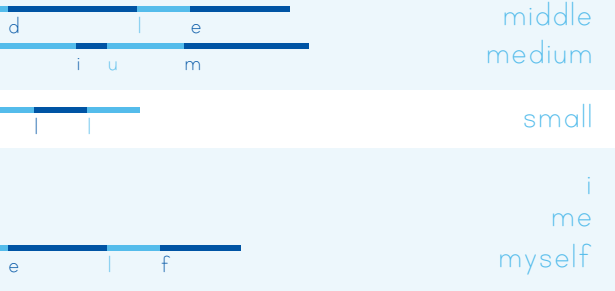
chinese	length by stroke	ratio $\frac{\text{english}}{\text{chinese}}$	length by letter	english
很		1.39		very
大		2.70		big
中		3.31 avg		in middle medium
小		5.19		small
我		1.26 avg		i me myself

4 chars
饥不择食



4 chars
入乡随俗





4 chars
入乡随俗



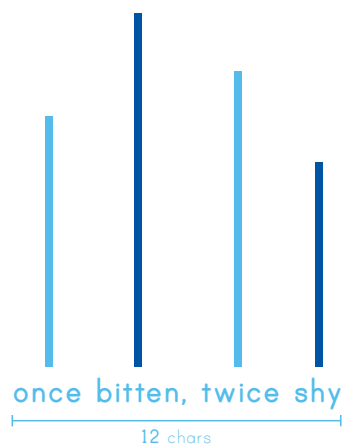
入乡随俗

when in ro

direct translation:

enter a homeland,
follow its customs

10 chars
一朝被蛇咬,十年怕井绳



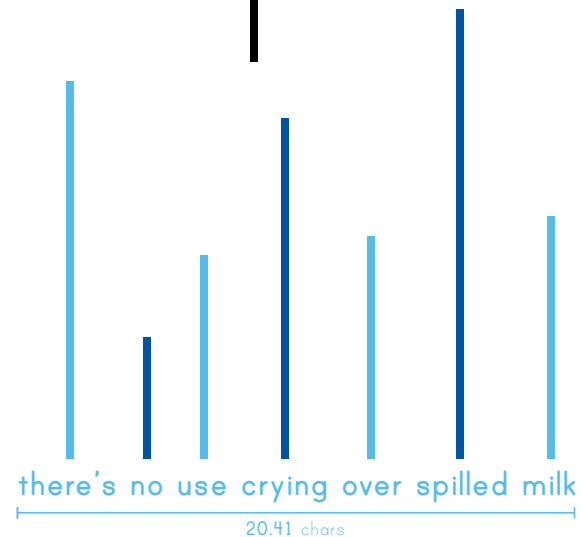
一朝被蛇咬,十年怕一

once bitten, twice shy

direct translation:

bitten by a snake one morning,
afraid of well ropes for ten years

4 chars
覆水难收

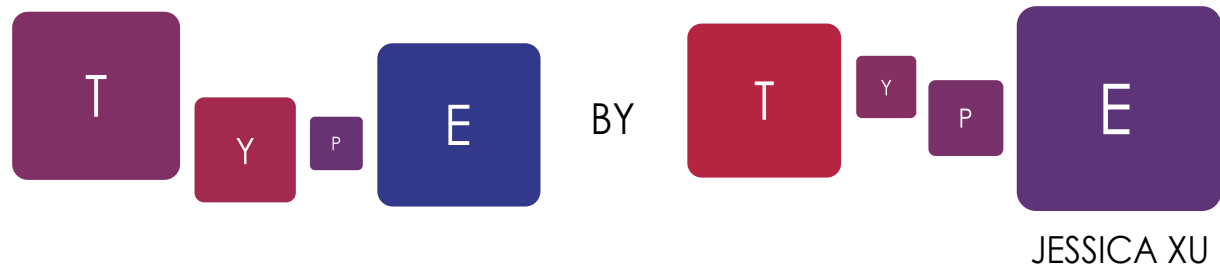


覆水难收

there's no use

direct translation:

overturned water is hard to collect



A visualization of differences in keyboard usage across genders and personality types. All characters from the top 100 words correlated with each type are counted and represented according to their frequency of usage.

Created by Jessica Xu for the **World Well-Being Project** and **Information Visualization and Design** at the University of Pennsylvania

FEMALE

<3 so much sooooo so happy yummy my hair yay! i miss with her

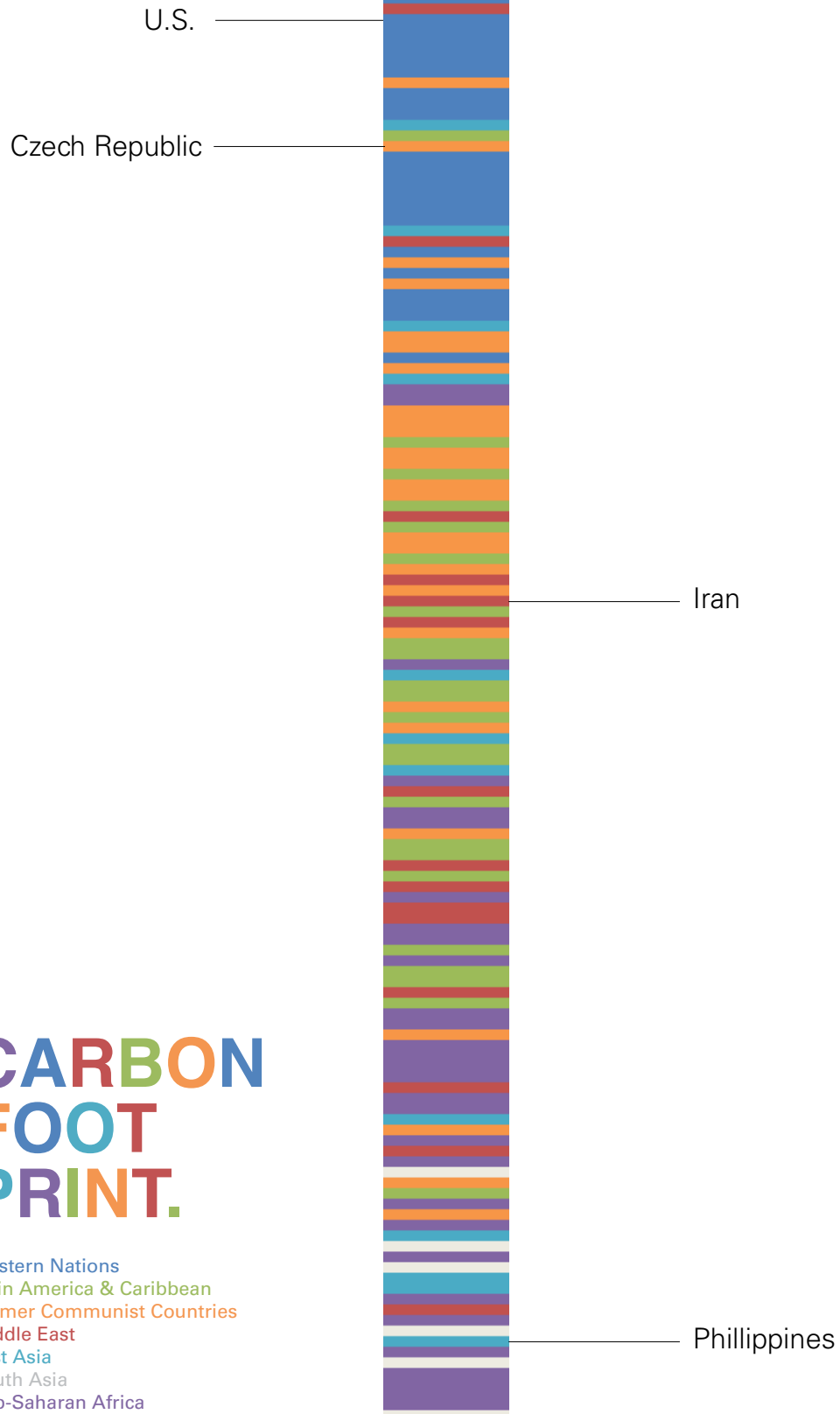
626 characters
& selected words



**A HAPPY
LIFE
SHOULD NOT
EQUAL
AN UNHAPPY
PLANET.**

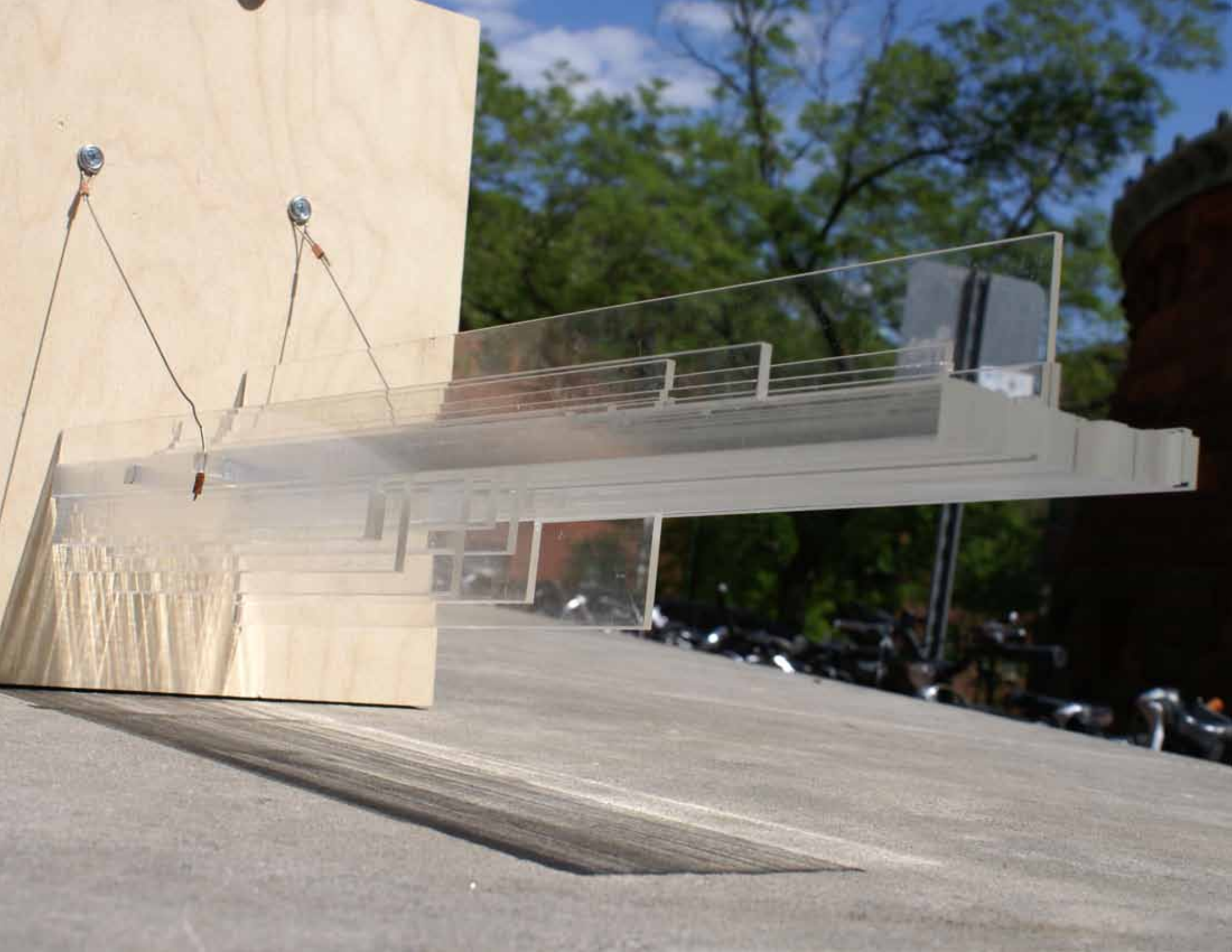
CARBON FOOT PRINT.

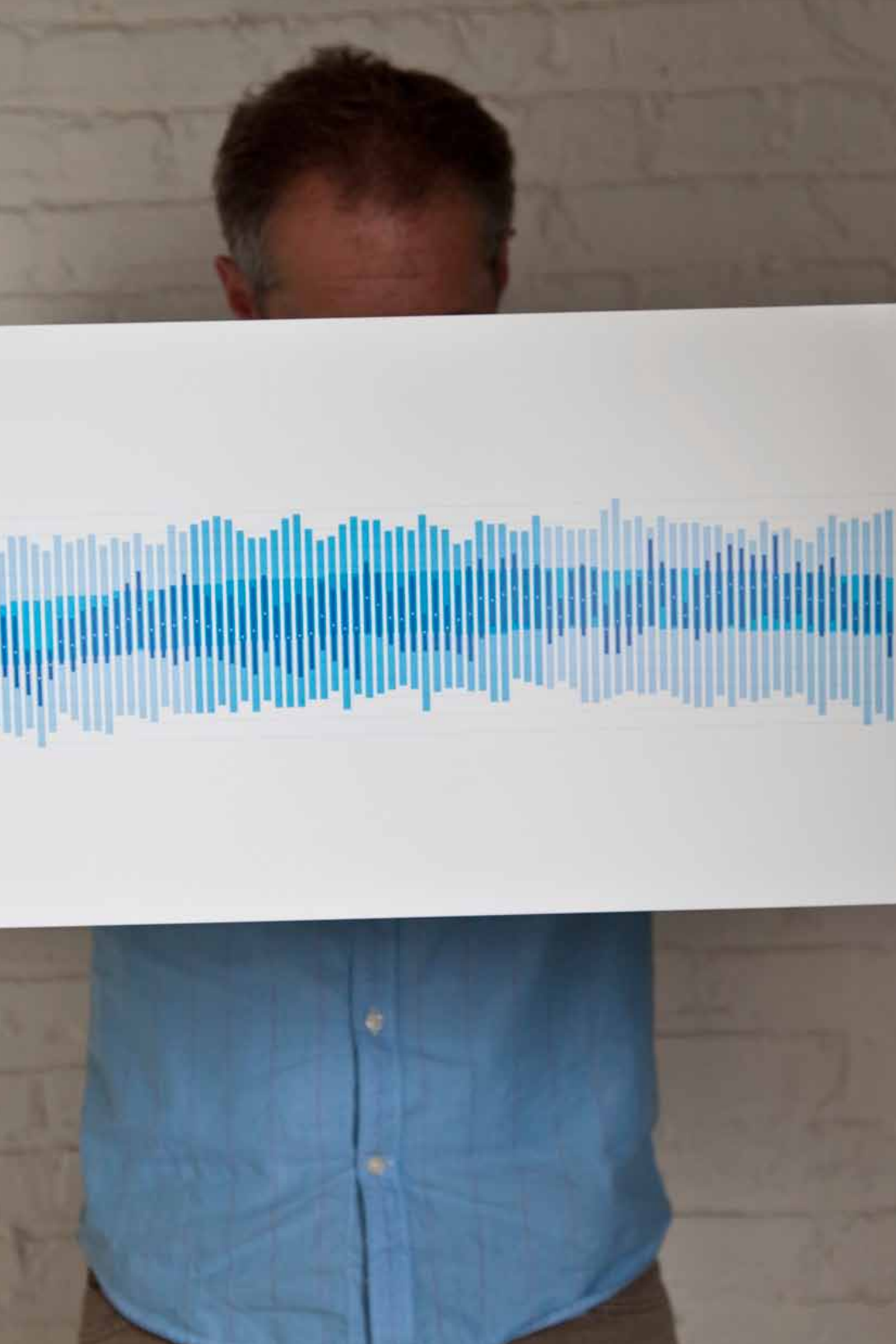
Western Nations
Latin America & Caribbean
Former Communist Countries
Middle East
East Asia
South Asia
Sub-Saharan Africa







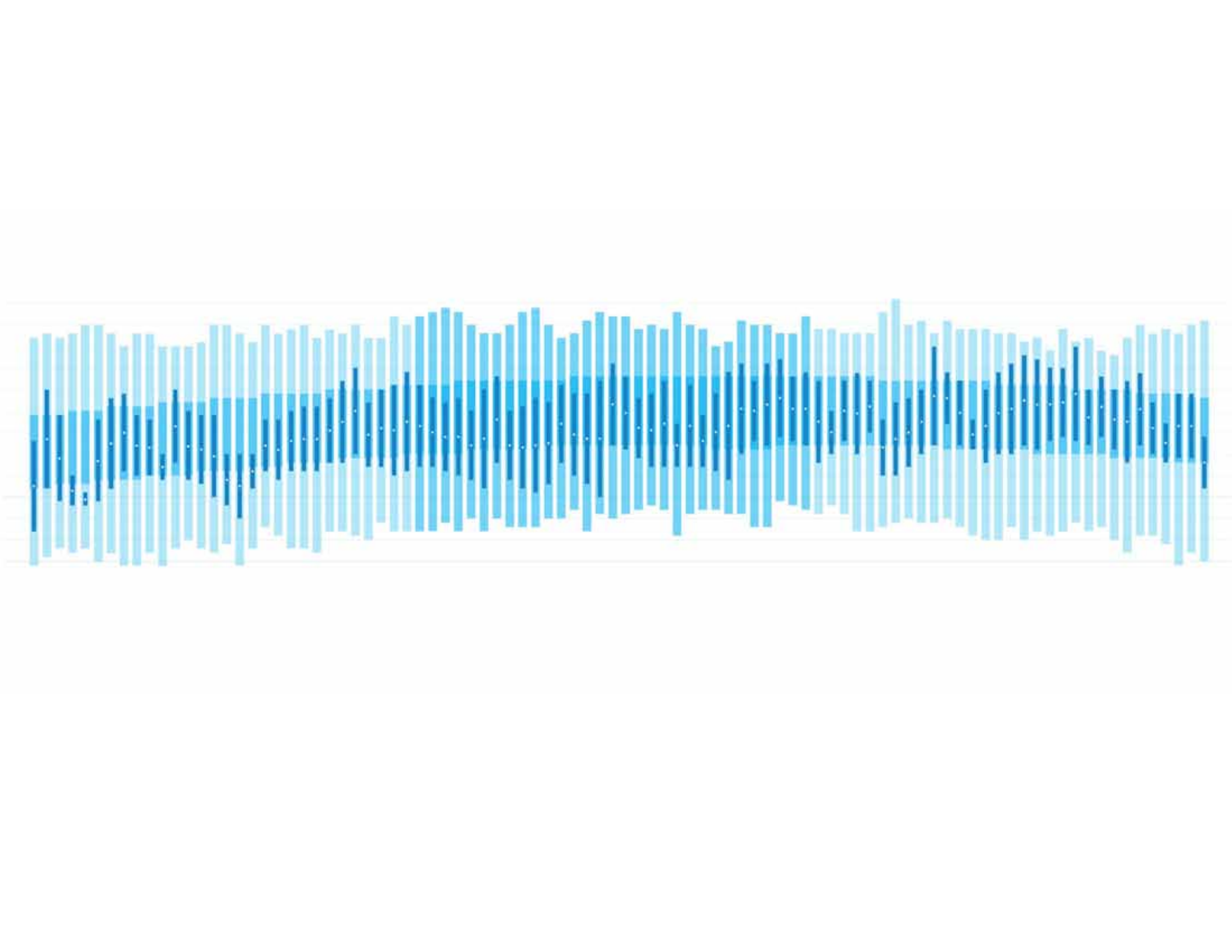




- Actual (and average)
- Normal
- Record

This visualization maps the daily high and low July, and August, against the normal and record for each day. Temperature data was recorded by Service for Philadelphia, PA Latitude: 39 52 www.weather.gov/

Jun 2009						Jul 2009	
Day	MaxT	MinT	Records	Norms	Day	MaxT	MinT
1	73	52	97	44	77	60	1
2	85	62	98	46	77	60	2
3	79	59	97	48	77	61	3
4	65	57	98	47	78	61	4
5	61	57	100	48	78	61	5
6	78	59	100	45	78	62	6
7	83	62	98	47	79	62	7
8	84	66	95	44	79	62	8
9	79	65	98	44	79	62	9
10	78	65	98	47	79	63	10
11	70	64	95	44	80	63	11
12	85	68	95	48	80	63	12
13	80	64	95	50	80	63	13
14	79	63	96	48	80	64	14
15	79	60	100	47	81	64	15



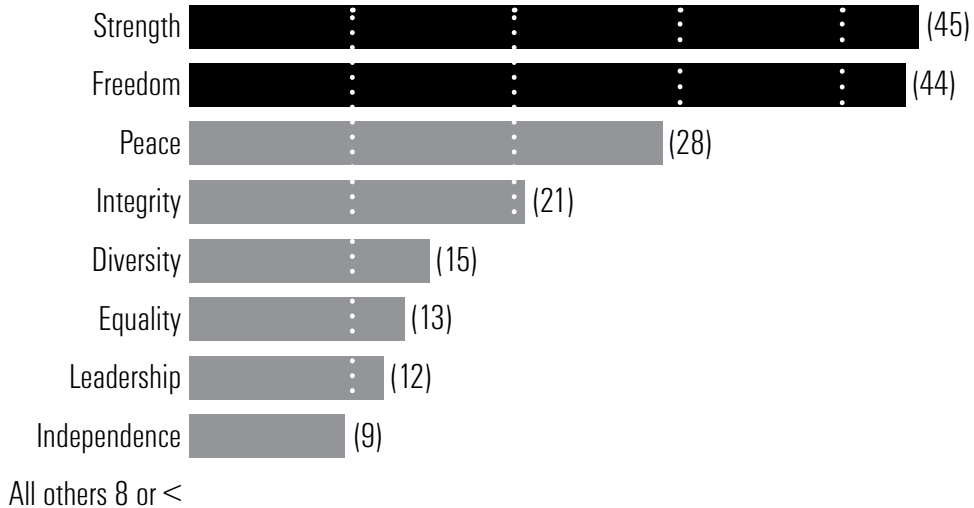


Survey Results: Virtues + Values

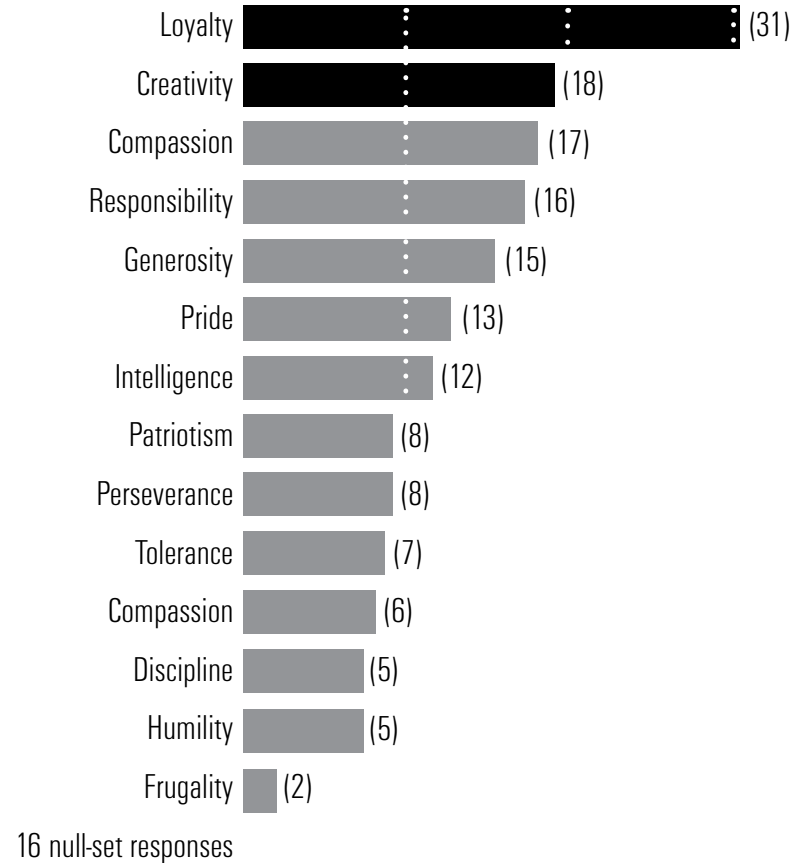
Middle School Students

June 20, 2011

Your Country's Virtues



Your Citizens' Values



THE GREAT NORTH EAST

Stretching from Washington to Boston, the Northeast Corridor is home to 1 in 5 US Residents, and constitutes 85% of daily commuter rail traffic. Each year, 50 million travelers use the Northeast Corridor's complex rail network to travel within the region, and by 2035, ridership is expected to increase by 40%. **The high concentration of rail in the Northeast US makes living car-free a feasible reality.**

This map serves to identify the major commuter and light rail networks serving each city, as well as their connections to major airports, local rapid transit, and adjacent urban rail networks.

STATISTICS

16
Operating Services

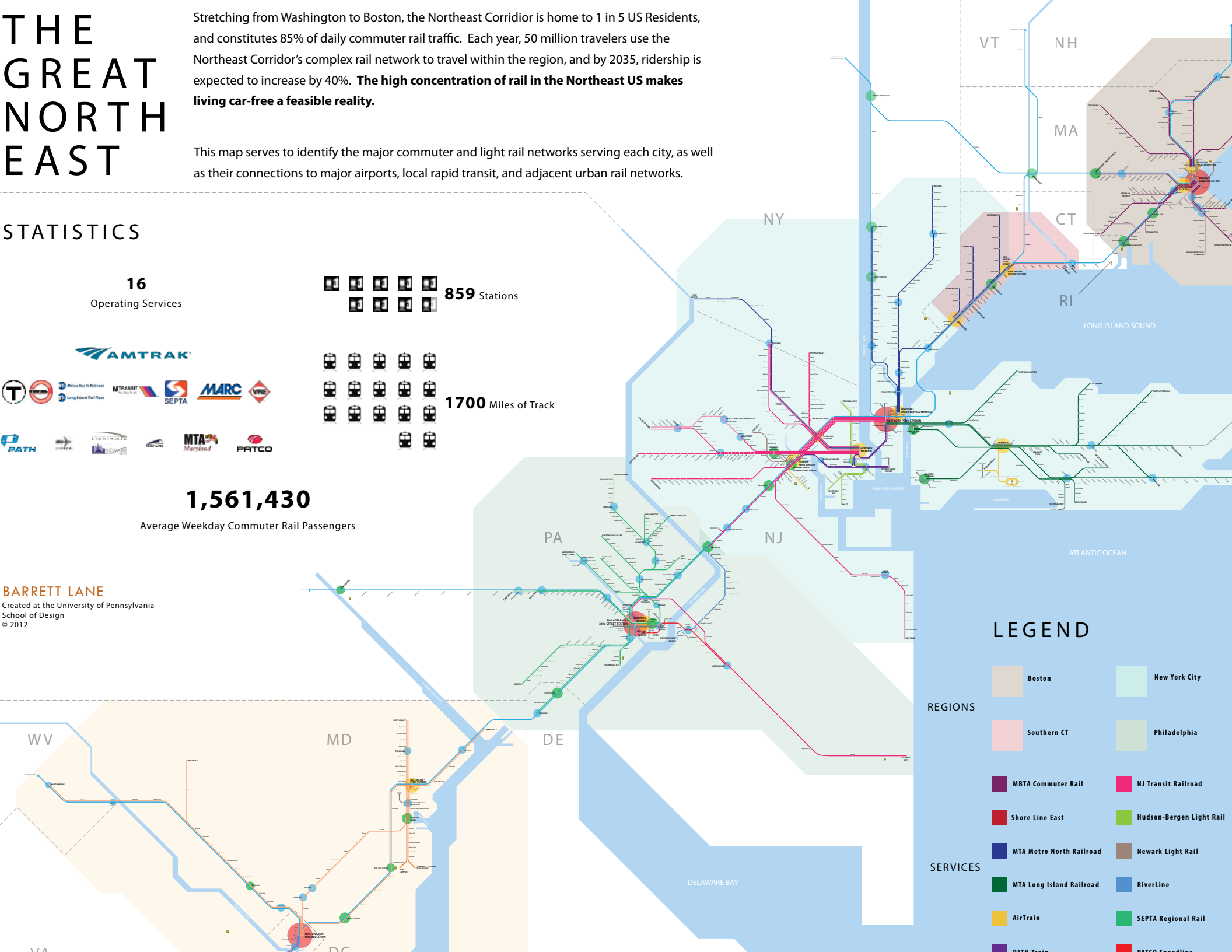


859 Stations

1700 Miles of Track

1,561,430
Average Weekday Commuter Rail Passengers

BARRETT LANE
Created at the University of Pennsylvania
School of Design
© 2012



LEGEND

Boston	New York City
Southern CT	Philadelphia
SERVICES	
MBTA Commuter Rail	NJ Transit Railroad
Shore Line East	Hudson-Bergen Light Rail
MTA Metro North Railroad	Newark Light Rail
MTA Long Island Railroad	RiverLine
AirTrain	SEPTA Regional Rail
PATH Train	PATCO Speedline

PATTERNS OF A PENN UNDERGRADUATE: relationships between grades and course attributes

BY VICTORIA SCHWANDA



COURSE SC

LEGENDS

COURSE SCHEDULE

START TIME

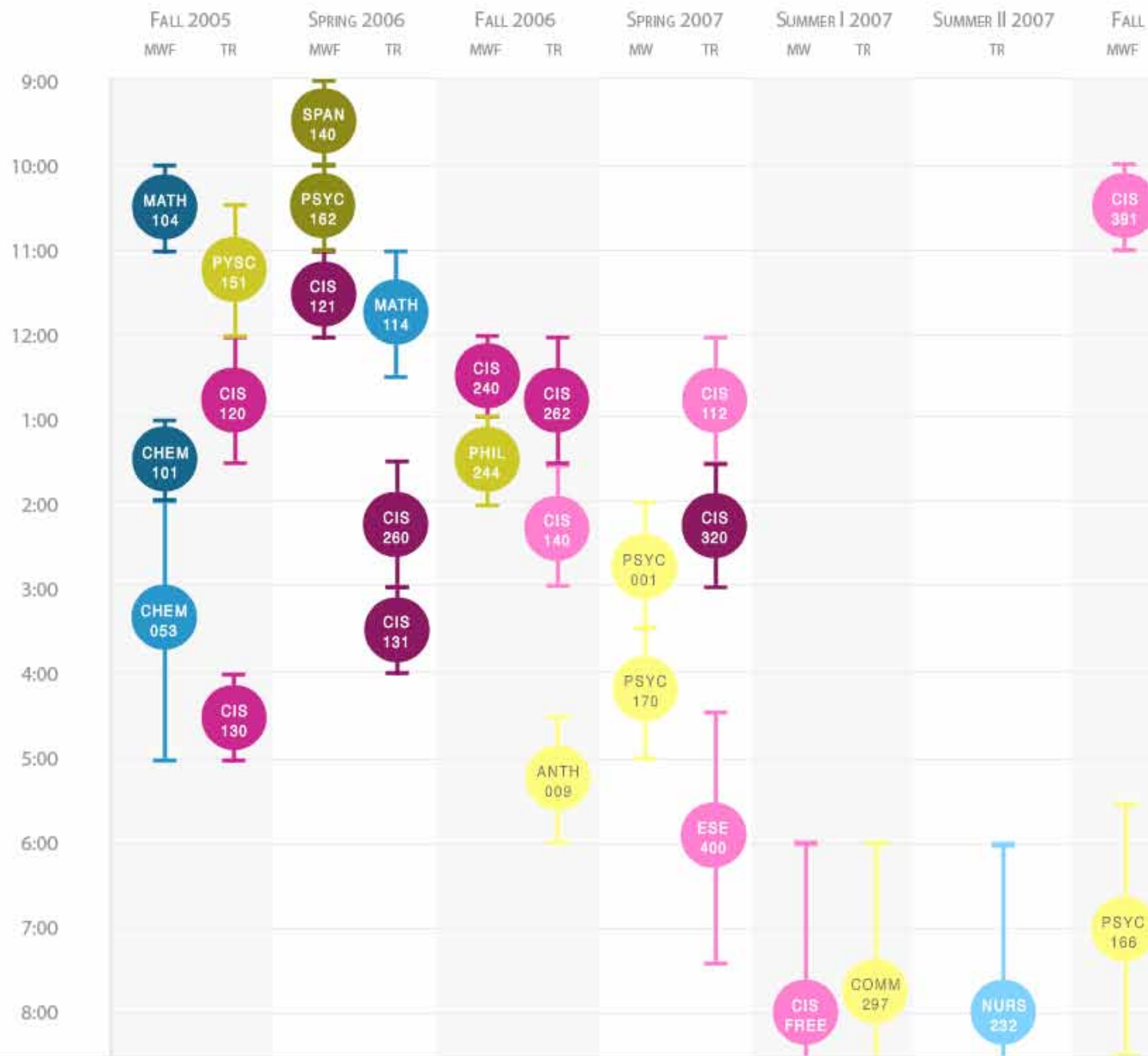
END TIME

COURSE CODE

COLOR DEPICTS COURSE SUBJECT & GRADE

COURSE SUBJECT & GRADE

A	B	C
ENGINEERING		
MATH/NATURAL SCIENCE		





Information Design and Visualization

datadesign.wordpress.com