Learning to program graphics: A key to unlocking innovation

Alan Smith OBE
Head of Digital Content
Office for National Statistics
@theboysmithy
type pston = ^tston;
  tston = record
    next : pston;
    val : longint;
  end;

var
  a : array[1..100,1..100] of longint;
  d,pri : array[1..100] of longint;
  n : longint;
  prim,ultim : pston;

procedure AddToStiva(i: longint);
begin
  if (prim = nil) then
    begin
      new(prim);
      ultim := prim;
      prim^.next := nil;
    end
  else
    end
end;
type pstiva="tstiva;  
tstiva = record  
  next : pstiva;  
  val : longint;  
end;  

var  
ap : array[1..100,1..100] of longint;  
d.pi : array[1..100] of longint;  
n : longint;  
prim,ullim : pstiva;  

procedure AddToStiva(i:longint);  
begin  
  if (prim = nil) then  
  begin  
    new(prim);  
    ullim := prim;  
    prim := nil;  
    prim.next := prim;  
  end  
  else  
  begin  
    new(prim.next);  
    ullim := prim.next;  
    prim.next := nil;  
    prim := ullim;  
  end  
end;  

Stirling  

Costa Rica 1 Scotland 0  
11th June 1990
“…students are usually motivated if they can graphically visualize what they program”

Andreas Neumann
Fig 1. Draw two circles

Fig 2. Draw the rest of the damn Owl
focus on something about which you are truly passionate
Brighton and Portsmouth:
Nationwide League Division 1, 2002/2003 season:

This is a data-driven SVG document
1. Data is loaded into the browser
2. Javascript code takes the data and uses it
to cyclically control the height of the bars in the chart.
3. All SVG object attributes - height, width, colour, transparency,
   stroke, fill, radius, x/y position etc - can be controlled in this way
iteration
Brighton and Portsmouth:
Nationwide League Division 1, 2002/2003 season:

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Winchester

118,264 people in 2013

57,330 males
60,934 females

Oxford

154,773 people in 2013

77,679 males
77,094 females
Taking inspiration
How Y'all, Youse and You Guys Talk

What does the way you speak say about where you're from? Answer all the questions below to see your personal dialect map.

Your Map

See the pattern of your dialect in the map below. Three of the most similar cities are shown.
How Y'all, Youse and You Guys Talk

What does the way you speak say about where you're from?

Answer all the questions below to see your personal dialect map.

The New York Times' Most Popular Story of 2013 Was Not an Article

It was that dialect quiz.

ROBINSON MEYER | JAN 17 2014, 12:11 PM ET

The Year's Most Visited All Content - Multiplatform 2013

2013

NYTIMES.COM, MN.YTIMES.COM, NO

1

HOW 'YALL, YOUSE AND YOU GUYS TALK, by Josh Katz & Wilson Andrews (December 24). What does the way you speak say about where you're from? Answer the questions to see your personal dialect map.

2

BLASTS AT BOSTON MARATHON KILL 3 AND INJURE 180, by John Eligon & Michael Cooper (April 15). Two bombs exploded seconds apart near the finish line at the Boston Marathon on Monday, creating a bloody, chaotic scene more than four hours into the race.

3

2ND BOMBING SUSPECT CAUGHT AFTER FRENZIED HUNT PARALYZES BOSTON, by Katharine Q. Seelye, William K. Rashbaum & Michael Cooper (April 19). The teenage suspect in the Boston Marathon bombings, Dzhokhar A. Tsarnaev, was taken into custody in Watertown, Mass., after a search that left his brother dead and the Boston area virtually shut down.

4

MY MEDICAL CHOICE, by Angelina Jolie (May 14). Opening a conversation on women's health.

5

A PLEA FOR CAUTION FROM RUSSIA, by Vladimir V. Putin (September 14). It is dangerous for any country, including America, to see itself as exceptional, whatever its motivation.

6

THE SCIENTIFIC 7-MINUTE WORKOUT, by Gretchen Reynolds (May 9). In 12 exercises deploying only body weight, a chair and a wall, it fulfills the latest mandates for high-intensity effort, which essentially combines a long run and a visit to the weight room into about seven minutes of steady discomfort — all of it based on science.

7

SITE OF THE EXPLOSIONS AT THE BOSTON MARATHON - MAP, by The New York Times (April 15). Map showing the location of the bombings.

8

INVISIBLE CHILD, by Andrea Elliott (December 9). There are more than 22,000 homeless children in New York, the highest number since the Great Depression. This is one of their stories.

9

THE EXTRAORDINARY SCIENCE OF ADDICTIVE JUNK FOOD, by Michael Moss (February 20). Inside the hyperengineered, savagely marketed, addiction-creating battle for American "stomach share".

10

CARDINALS PICK BERGOGGIO, WHO WILL BE POPE FRANCIS, by Rachel Donadio (March 13). The Roman Catholic Church's Cardinals signaled that the faith's future lies in the Southern Hemisphere.

Published by the NYT Web Analytics Group on January 16, 2014.

The New York Times

How Y’all, Youse and You Guys Talk

What does the way you speak say about where you’re from?
Answer all the questions below to see your personal dialect map.

Your Map

See the pattern of your dialect in the map below. Three of the most similar cities are shown.
THINKING, FAST AND SLOW

DANIEL KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS
emotional innumeracy

For every 100 people in Britain, how many do you think are Muslim?
25% people think

Source: IPSOS MORI: Perils of Public Perception
1,075 adults between 16-75 June 2013
For every 100 girls under 16 in Britain, how many get pregnant each year?
15% people think reality

Source: IPSOS MORI: Perils of Public Perception
1,075 adults between 16-75 June 2013
Gamification

“the use of game thinking and game mechanics in non-game contexts to engage users”
Question 1 of 7 about St Michael:
For every 100 people, how many are aged under 16?
Use the slider below to make your guess then press 'submit' to see if you're right...

Your guess: 26
Gaza hospital hit in fatal Israeli attack

Last updated six minutes ago

At least four killed in attack on al-Asqa martyrs hospital as Obama adds to international pressure

1526 comments

- Obama and UN call for immediate ceasefire
- Special report: Scores die in Gaza attack
- How the game has changed since Egypt plan

Ukraine clashes resume after crash

Rebels say tanks are trying to break into eastern city as first international investigators reach Torez, where bodies from MH17 are stored

LATEST

- "Here is a summary of today's key developments on the MH17 disaster:" Four people have been killed in heavy clashes in Donetsk, the rebel stronghold,..."
- Latest developments
- UK to press European allies for tougher sanctions
- MH17: UN to vote on site access
- Don't veto UN action, Russia warned
- Sky News apologises over luggage incident

Take the test
How well do you know your local area?

Steven Gerrard Quits England

Cook vows to stay on as captain

Cricket: A miserable England batting collapse at Lord's saw India take a 95-run victory in the second Test

Day five report: Sharma blows England away

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250,000 views
People say the nicest things

**Jenni Willows** @JenniWillows · Jul 23
This is really rather good >> How well Longford in Trafford bit.ly/knowyour

**Laurence Drury** @LaurenceThinks · Jul 21
ONS is excellent, How well do you know your local area? Turns out knowledge is terrible. [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**lorihalford** @lorihalford · Jul 21
This is so good! MT @GNM_Press How well do you know your postcode? the ONS census quiz @Guardian & find out - bit.ly/1qWZgHK

**Harry Gwinnett** @harry_gwinnett · Jul 21
This is an amazing link (thanks Simon) You Must have a go

“@BlakeleyLegal: How well do you know where you live? [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**Richard George** @sarcasmcat · Jul 22
Fascinating @theguardian Census data quiz. I don’t know Haringey very well... bit.ly/1wyxQ8C

**Andre Filipe Pinto** @Andref_pinto · Jul 22
Brilliant ONS quiz: How well do you know your local area? 7 questions and you can find out. gu.com/p/4v572/tw via @guardian

**Jane Franklin** @janeyfranklin · Jul 23
If you like data and/or you like a quiz, you’ll enjoy this from ONS [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14... thanks @mattrhodes

**Marr Toomse-Smith** @MarToomseSmith · Jul 23
How well do you know your local area? Cool visual quiz by [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**Arbie Baguios** @arbiebaguios · Jul 25
Many charities jumping on the ‘online game’ bandwagon. Lots are poorly done. Take a hint from this good one by @ONS [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**Peter Stone-Thompson** @pwdst · Jul 22
Really impressed by this 'Know Your Area' quiz by @ONS data visualisation centre [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**Rob Macpherson** @RJ_Macpherson · Aug 4
How much do you know about your area? Great example of using data for gamification by @ONS [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**Clarite Research** @clariteresearch · Jul 25
Making research accessible. Excellent interactive local data quiz, from ONS. [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**LSA Geography** @LSAGeography · Jul 22
A brilliant quiz based on census data for your area [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**Mitch Mansfield** @Mitch_Mansfield · Jul 22
Excellent feature on the @guardian today. Do it, surprise yourself about your local area in the process: theguardian.com/news/data

**Tim Bale** @ProfTimBale · Jul 21
Fab census-based quiz. How well do you know there, so should have done better! [neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...]

**View conversation**
People feel guilty if they find data being fun

Prodo Digital @ProdoDigital · Jul 28
How well do you know your area? (A welcome distraction on a Monday afternoon!) bit.ly/1ruFm7t

Code Computerlove @computerlovers · Jul 25
Cool interactive content (and a nice Friday afternoon distraction) from @ONS: How well do you know your area? ow.ly/zxC0g

Pegasus Cambridge @PegasusCambs · Jul 21
Not that we’d ever condone playing online games in the office, but the @ONS’ new quiz has been keeping us, ahem, busy bit.ly/knowyourarea

Carla @carlasian · Jul 22
Best new procrastination tool: how well do you know your area? neighbourhood.statistics.gov.uk/HTMLDocs/dvc14… (via @LauraTheOB)

Wymondham Stuff @wymondhamstuff · Jul 22
If you’re looking for a distraction this morning, this is interesting. Pop your postcode in, answer the... fb.me/32WkOC9q6

Danielle Rose @_RosyD · Jul 22
Too addictive > Seven questions that will tell you how well you know your local area gu.com/p/4v572/tw via @guardian

Sally Hitchiner @SallyHitchiner · Jul 21
How well do you #knowyourarea? Lunchtime quiz that will actually tell you something useful? bit.ly/knowyourarea

Sian Whyte @Sian_Whyte · Jul 22
Lunchtime crossword alternative from @ONS via @GuardianData - I'm hooked, and trying to remember postcodes!

Charlie Payne @charliepayne · Jul 22
Tea-break community engagement: How well do you know your local area? Good tool to discuss perceptions. gu.com/p/4v572/tw @guardian
Genuine insights and revelations

Liz Ixer @LizIxer · Jul 21
The @ONS quiz - How Well Do You Know Your Area? - is a good starting point for discussion about the neighbourhood harringayonline.com/forum/topics/h..

Joe Dromey @Joe_Dromey · Aug 4
Challenge to fellow Cllrs @PaulJMas @BrePositive. How well do you know New Cross? Got 66%. Beat that! bit.ly/knowyourarea #getsbacktowork

Oh Comely magazine @ohcomelymag · Jul 24
Having fun with our misconceptions: neighbourhood.statistics.gov.uk/HTMLDocs/dvc14...

Kev MSc @KevPharmacist · Jul 21
Incredibly out on % muslim Q - actually answer 0% RT @drarcox: This is excellent. How well do you know your area? bit.ly/1u8Vjpa

Mitchell Jones @MitchellJones · Jul 21
This quiz on your local area is fascinating, no less for exactly how ill-educated we are about the muslim population. theguardian.com/news/datablog/..

Liz Ixer @LizIxer · Jul 21
I think there's been quite a few surprises for people (inc me) in terms of how they perceive the area and what the stats are telling them
This could be a really cool source of data…

https://twitter.com/search?f=realtime&q=How%20well%20do%20you%20%23knowyourarea&s=typd
Learning to program graphics:
A key to unlocking innovation

Alan Smith OBE
Head of Digital Content
Office for National Statistics
@theboysmithy