


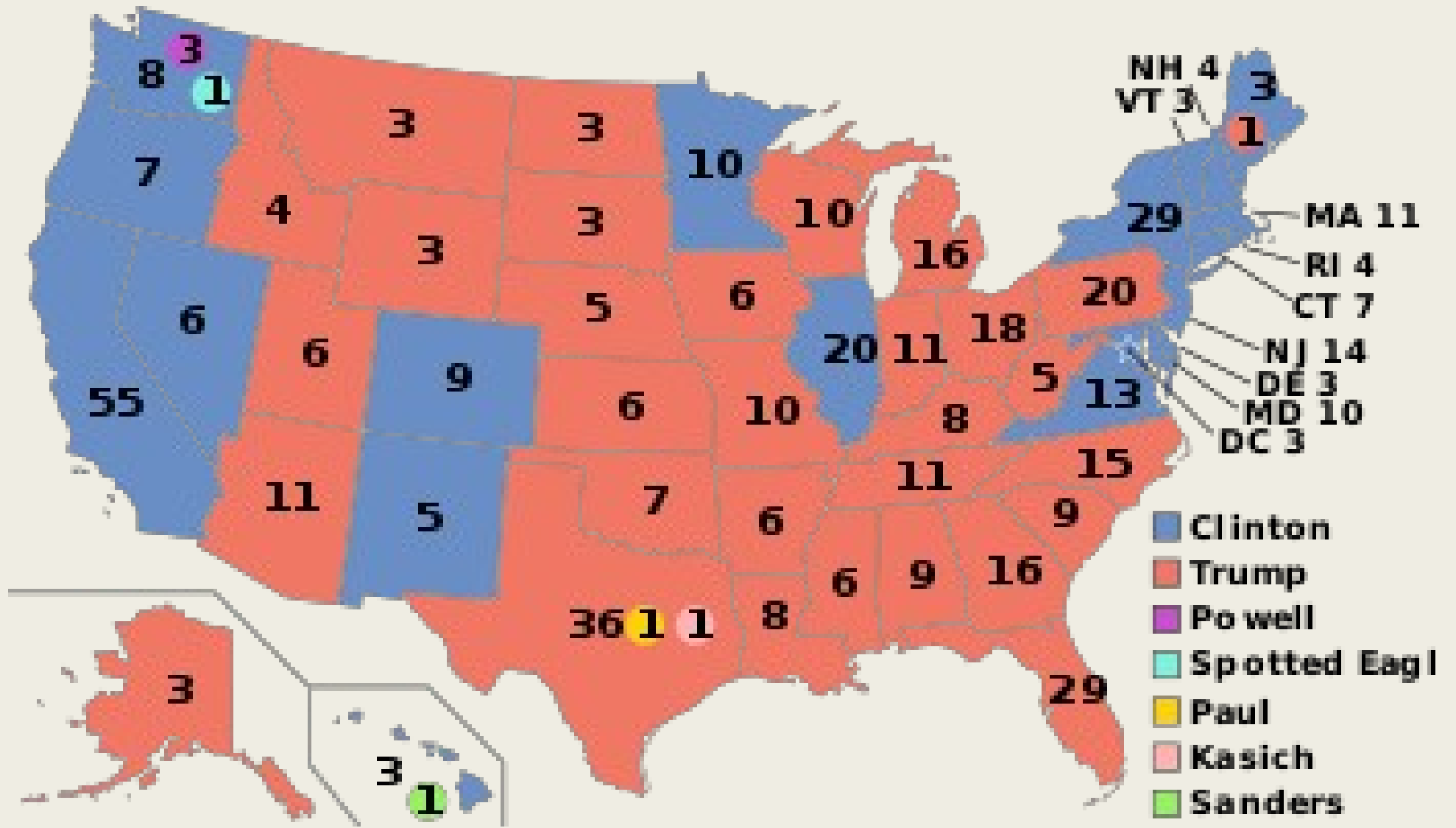
FREE APIS: THE NEXT GENERATION

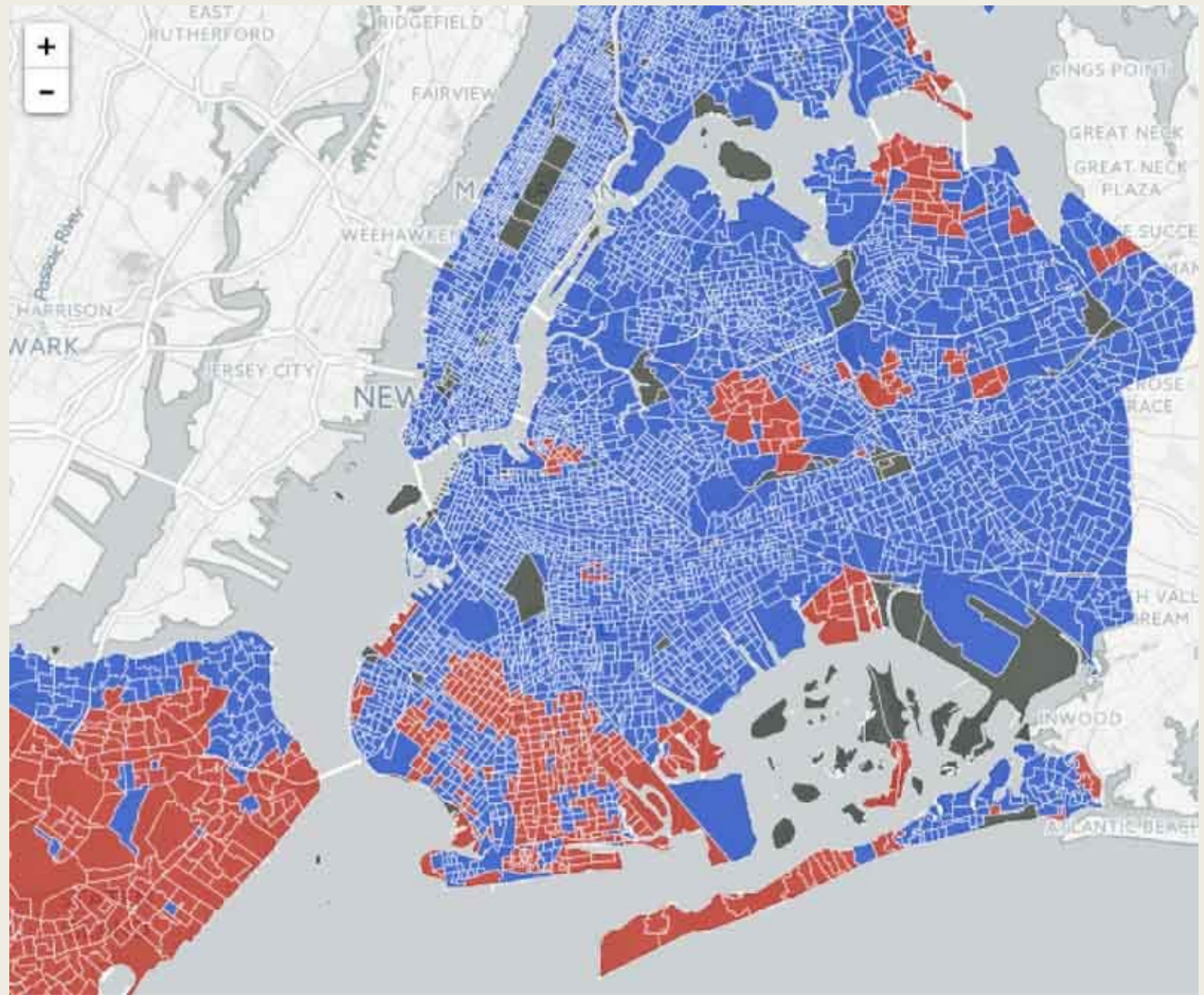
Shaun Carland
shauncarland.com
shauncarland@gmail.com



BIG WORD ALERT!



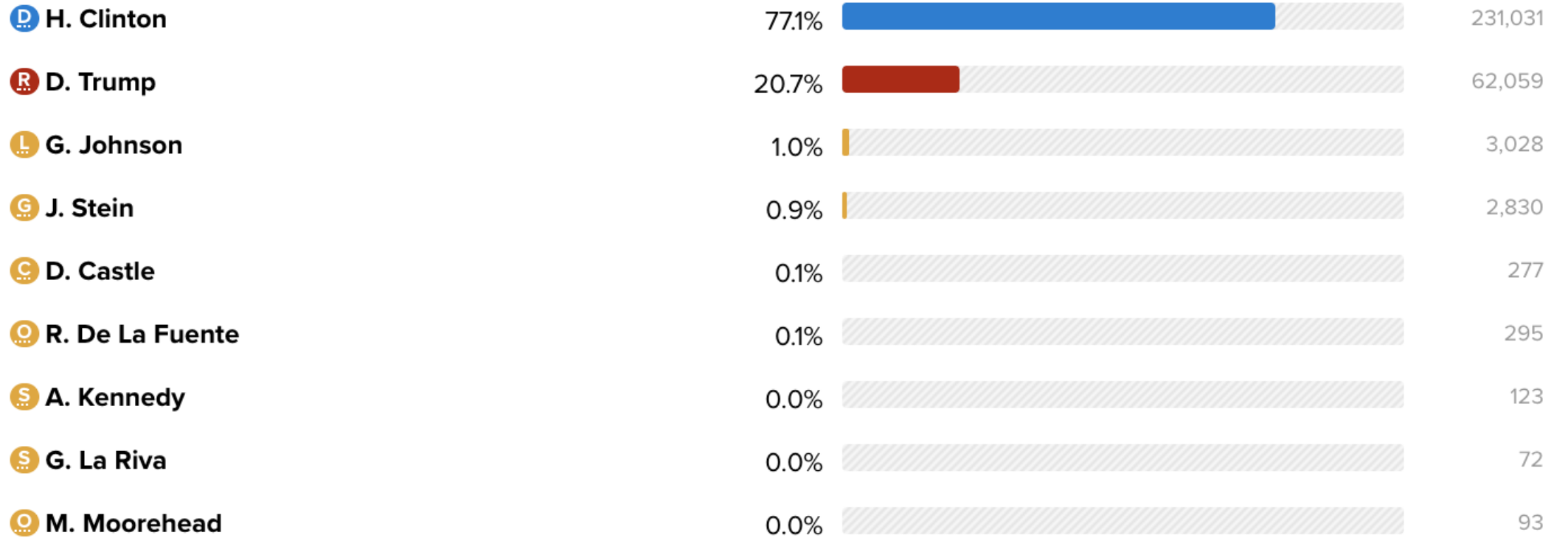









Essex County

97.6% Reporting



U.S. House, New Jersey District 11 General Election, 2016 [hide]

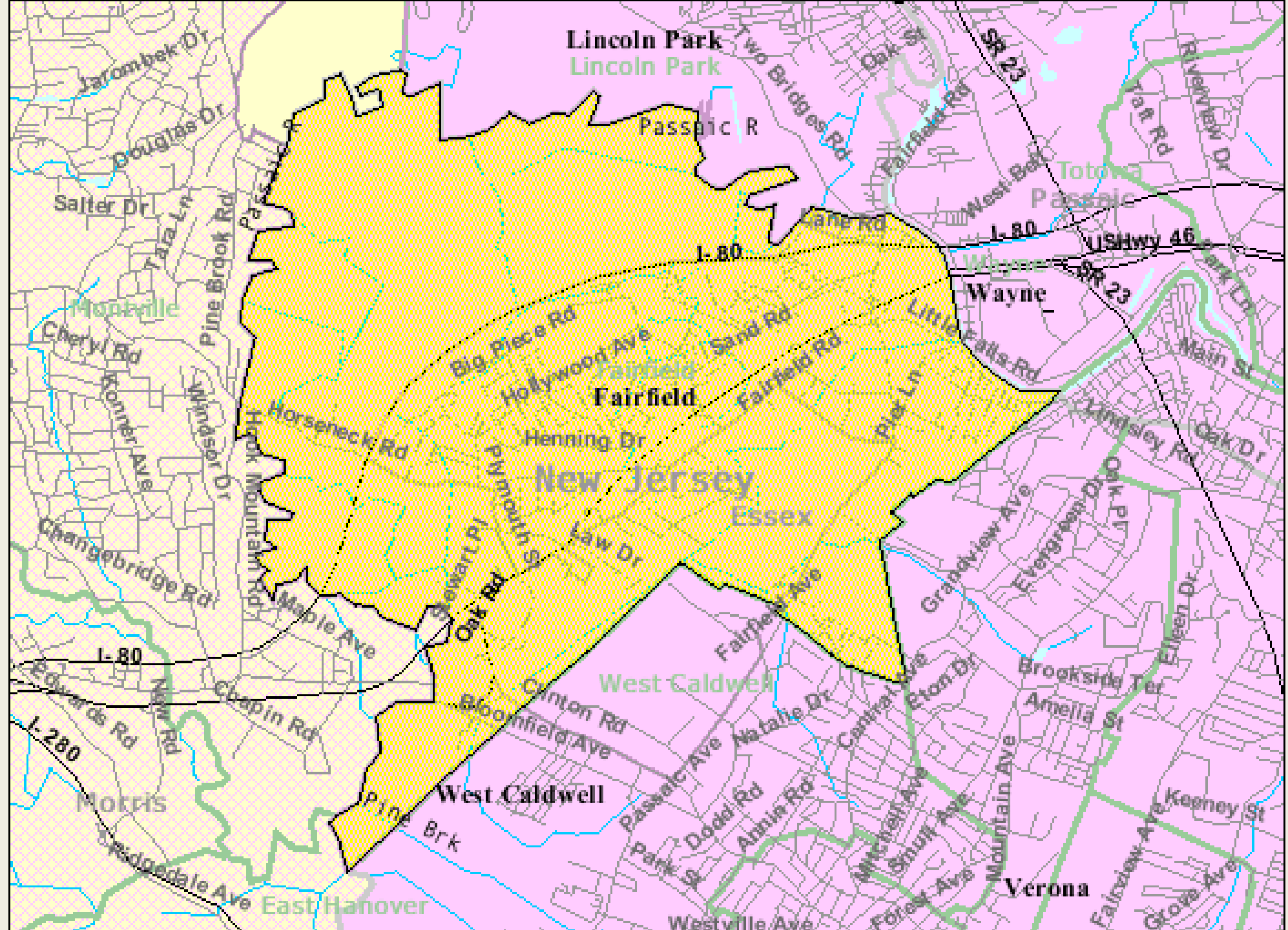
	Party	Candidate	Vote %	Votes
	Republican	✓ Rodney Frelinghuysen <i>Incumbent</i>	58%	194,299
	Democratic	Joseph Wenzel	38.9%	130,162
	Financial Independence	Thomas DePasquale	2.1%	7,056
	Libertarian	Jeff Hetrick	1%	3,475
Total Votes				334,992

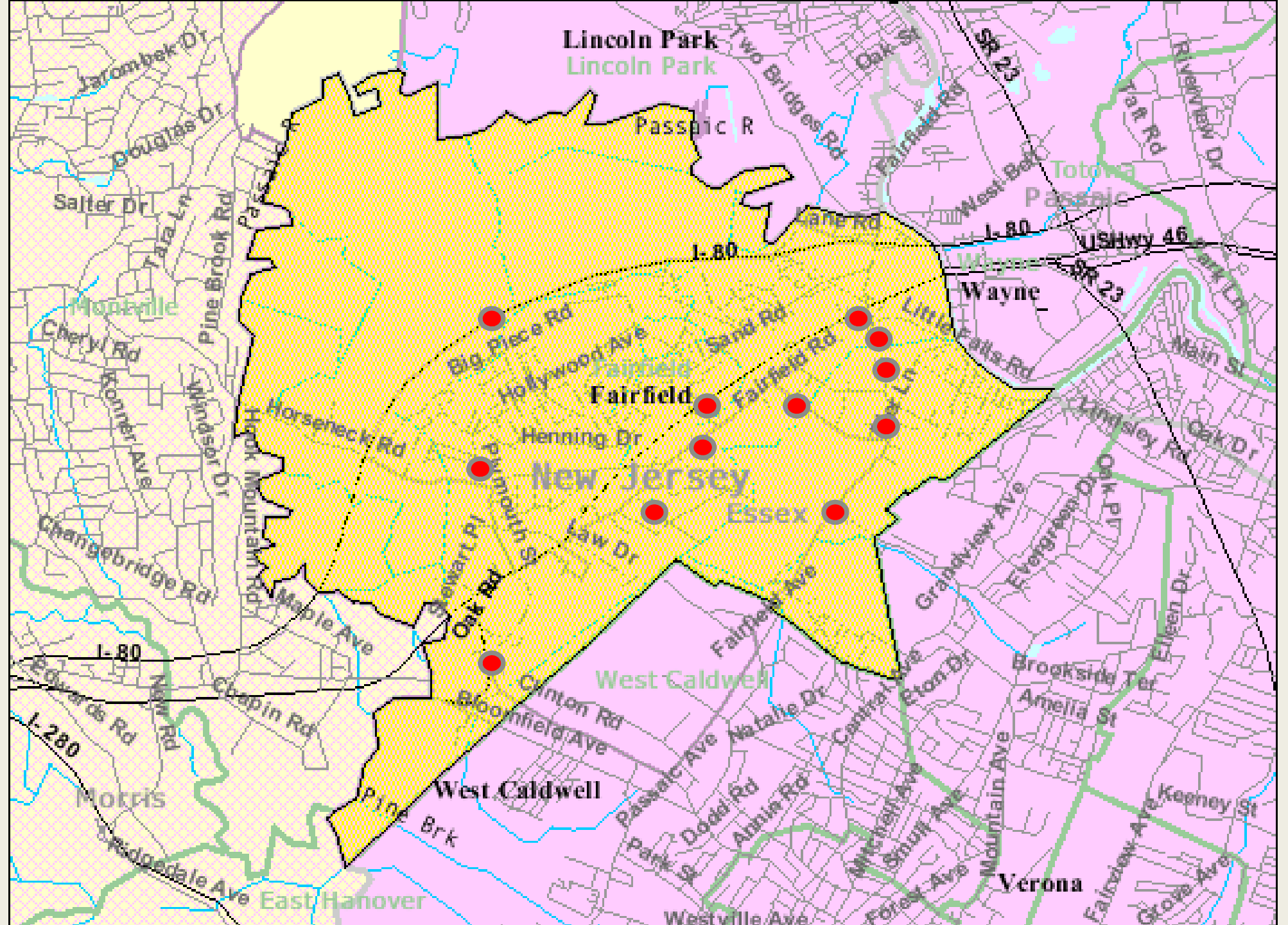
Source: [New Jersey Division of Elections](#) 

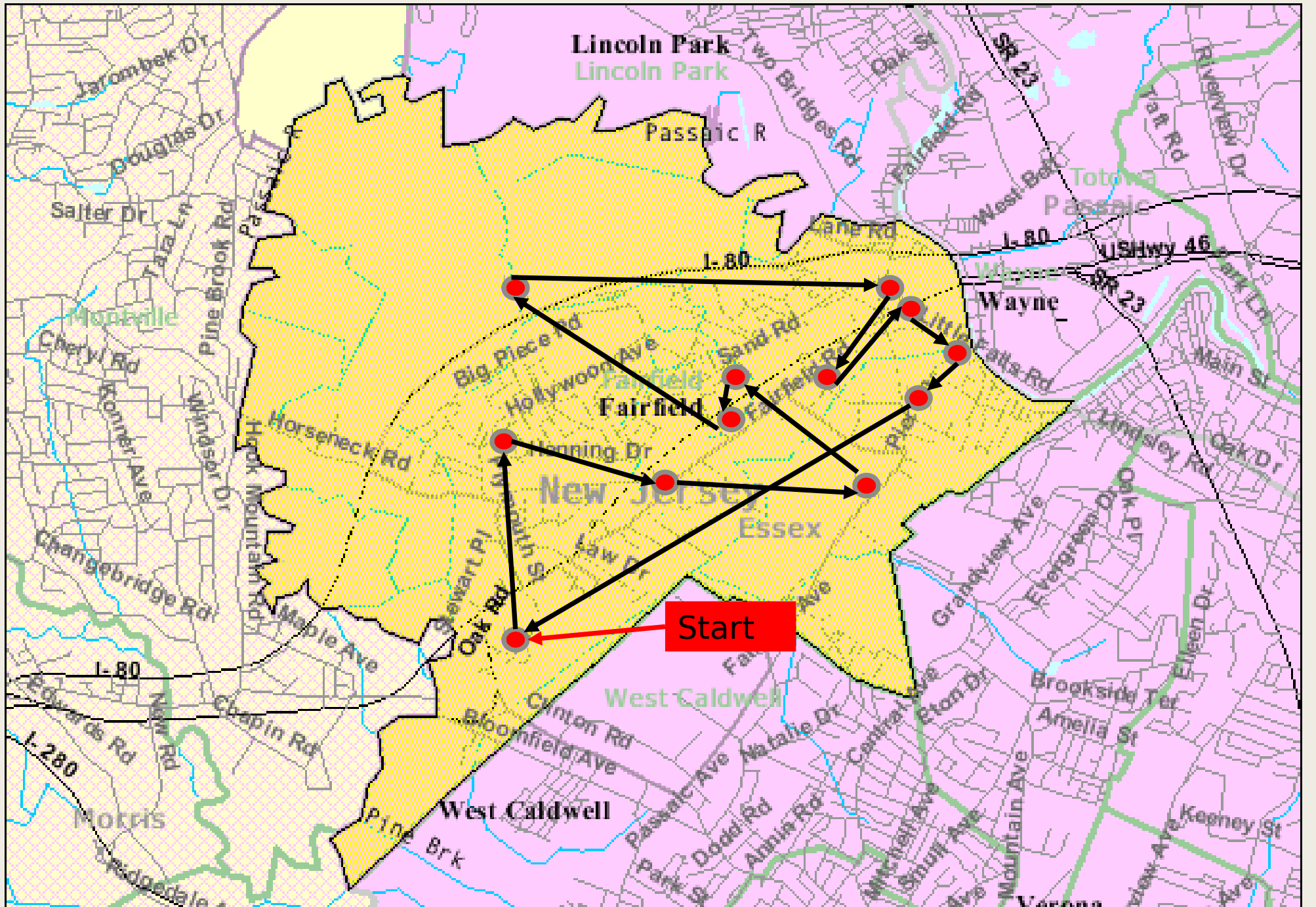


MIKIE
SHERRILL
★
U.S. CONGRESS

Pilot. Prosecutor.
Parent

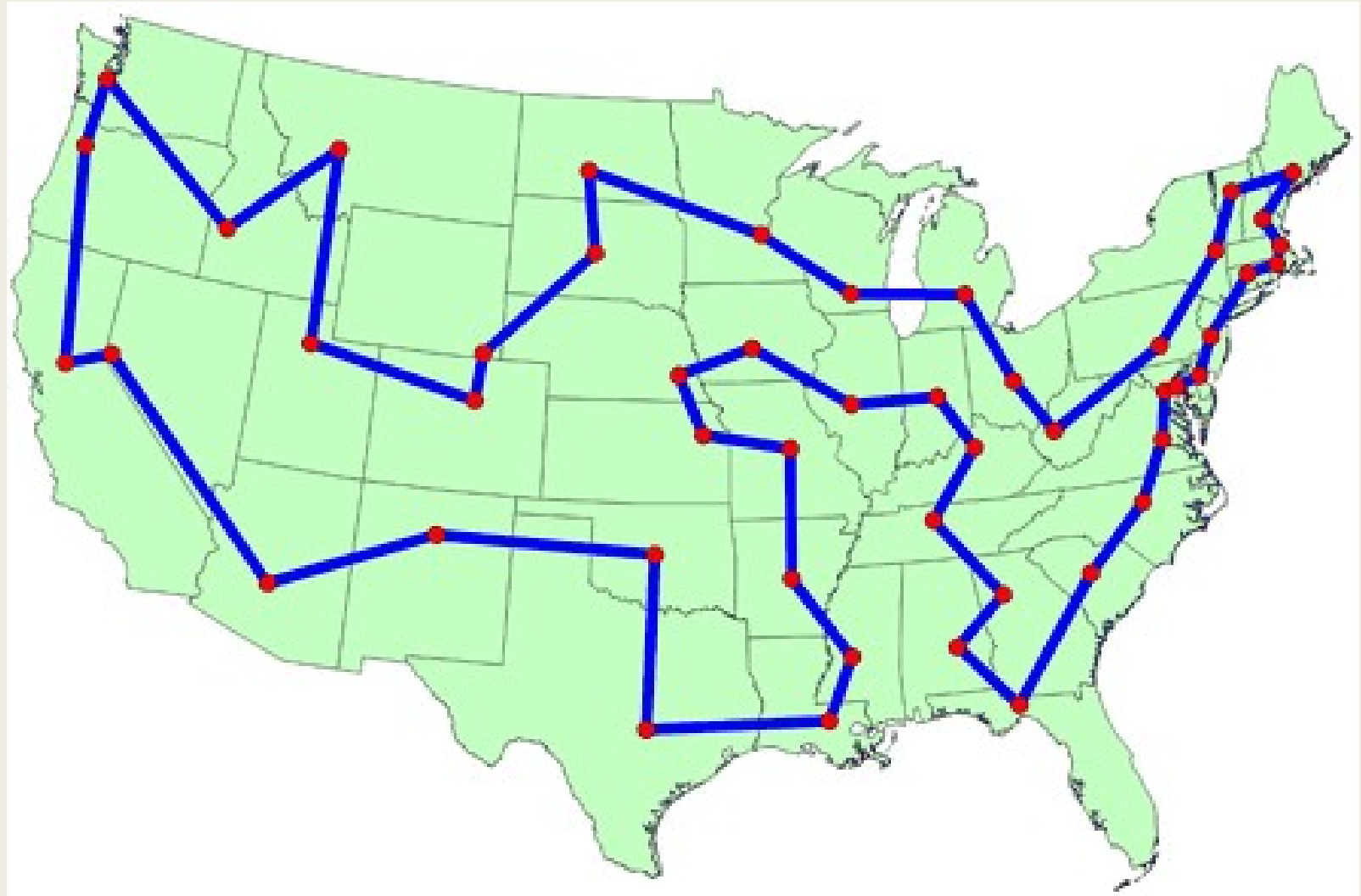


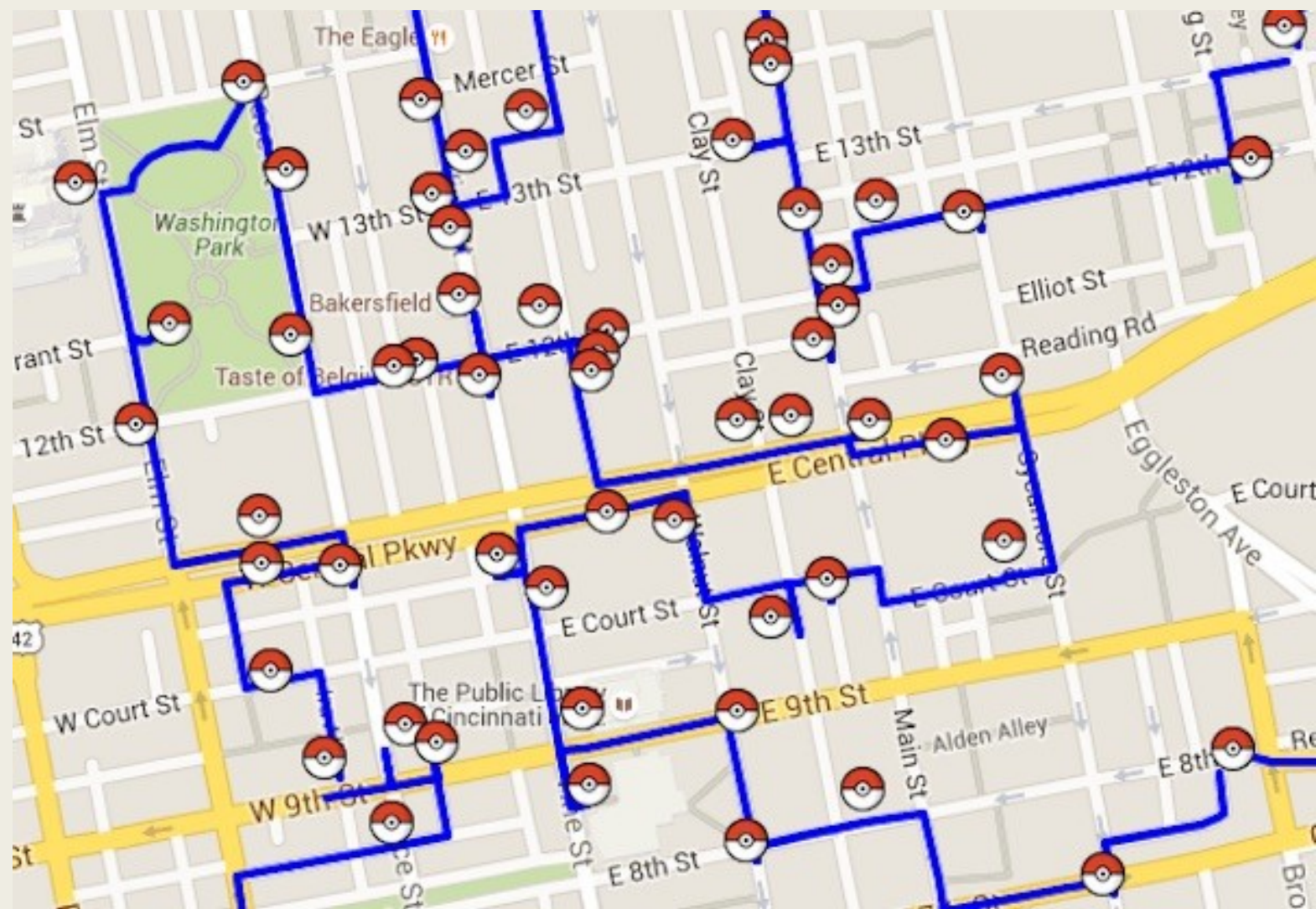


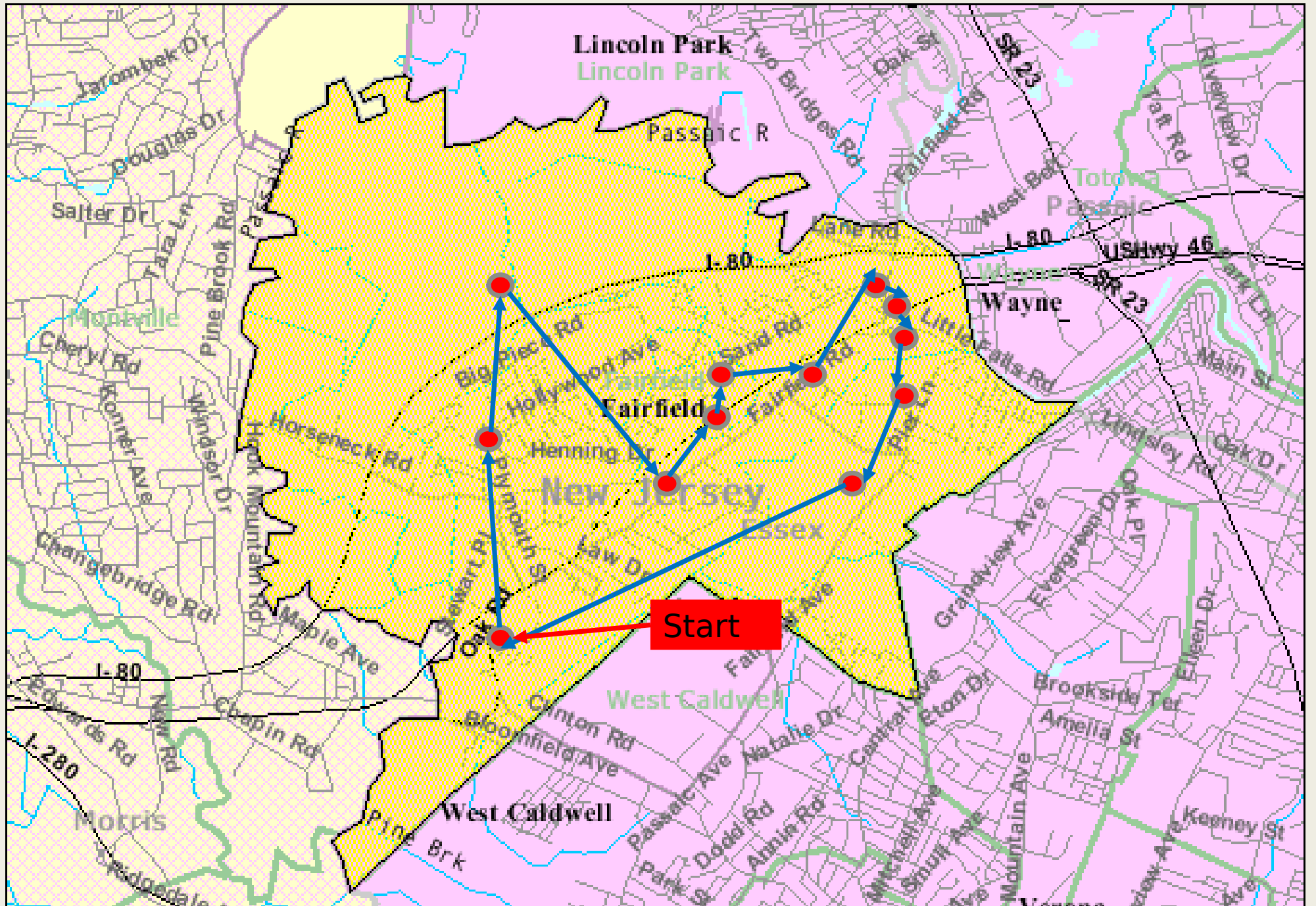


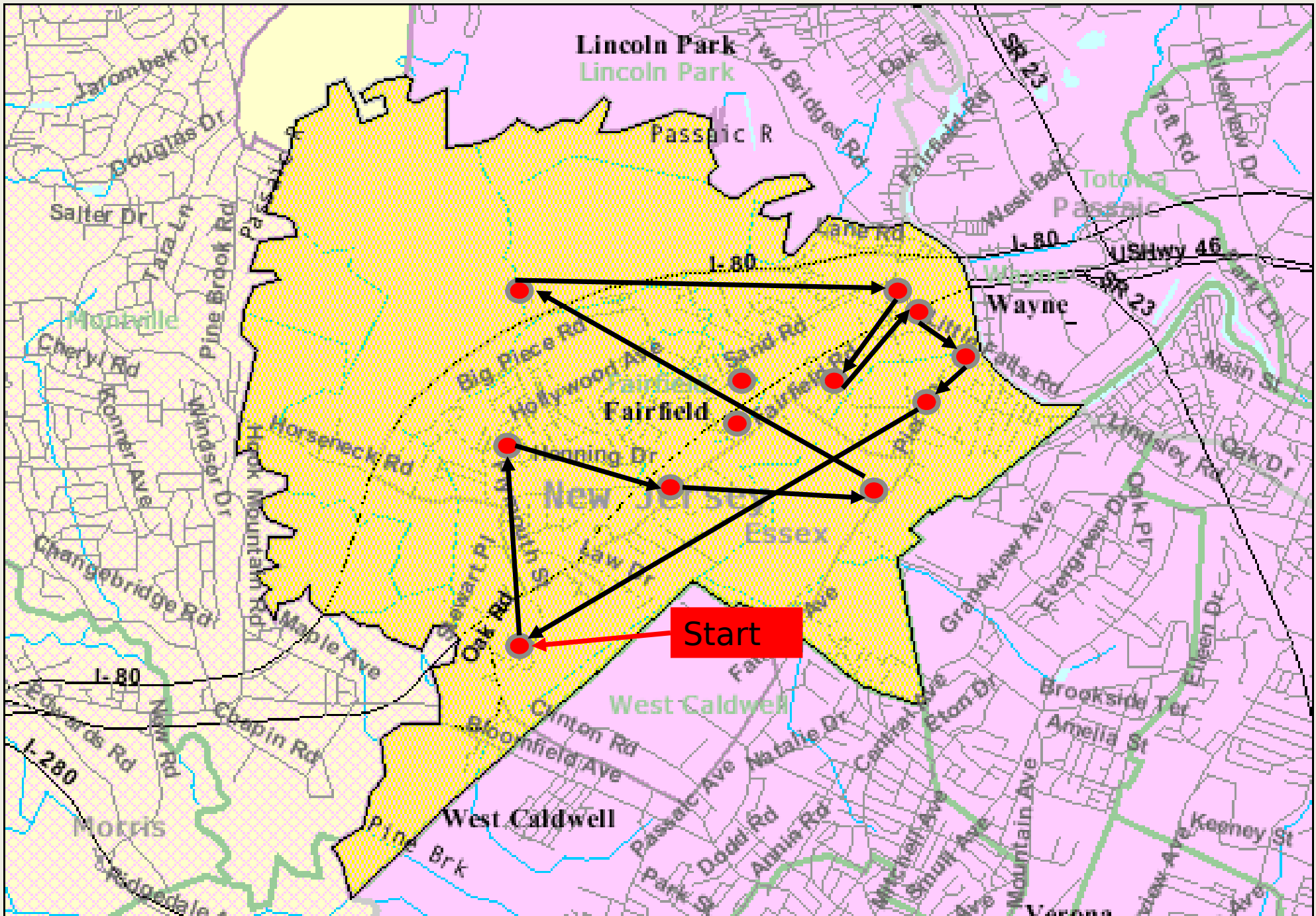
Traveling Salesperson Problem

- Given a list of points and the distances between each pair of points, what is the shortest possible route that visits each city and returns to the origin point?















20 (Canvassers) * 7 (Minutes a day saved) * 5 (Days a week we canvass) * 6 (weeks)

4200 Minutes










70 Hours

3 Extra Days of Canvassing

Alaska House of Representatives District 1 Results

	Candidate	%	Votes
	 Bart Lebon (R)	 49.9	2,663
	 Kathryn Dodge (D)	 49.8	2,662
	Write-in votes	 0.3	17

General election for U.S. House New Jersey District 11

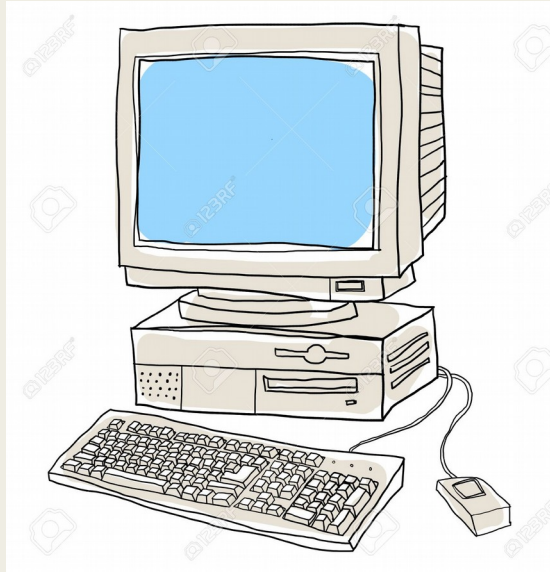
	Candidate	%	Votes
	 Mikie Sherrill (D)	 56.8	183,684
	 Jay Webber (R)	 42.1	136,322
	 Robert Crook	 0.7	2,182
	 Ryan Martinez (Libertarian)	 0.4	1,386

Goals of this Application

- Allow users to send in a list of addresses into my application.
- Allow them to choose a specific starting point.
- Return to the user the list of addresses sorted in the order for them to visit, to optimize time.



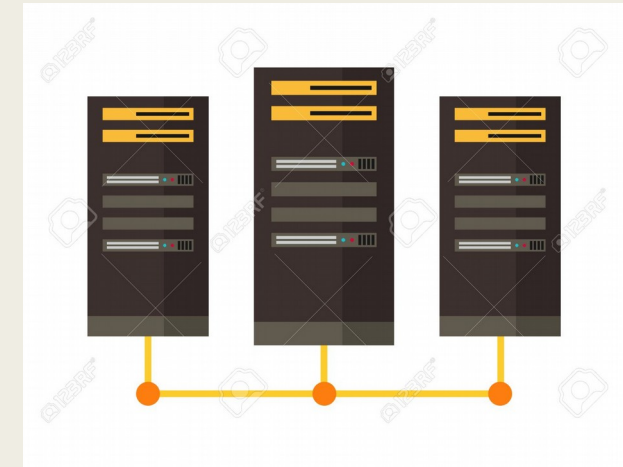
88 West Road
697 Ross Corner Road
93 Oak St
33 Apple Way



Calculate Distance
Between Each Pair
of Points

API

697 Ross Corner Road
33 Apple Way
93 Oak St
88 West Road

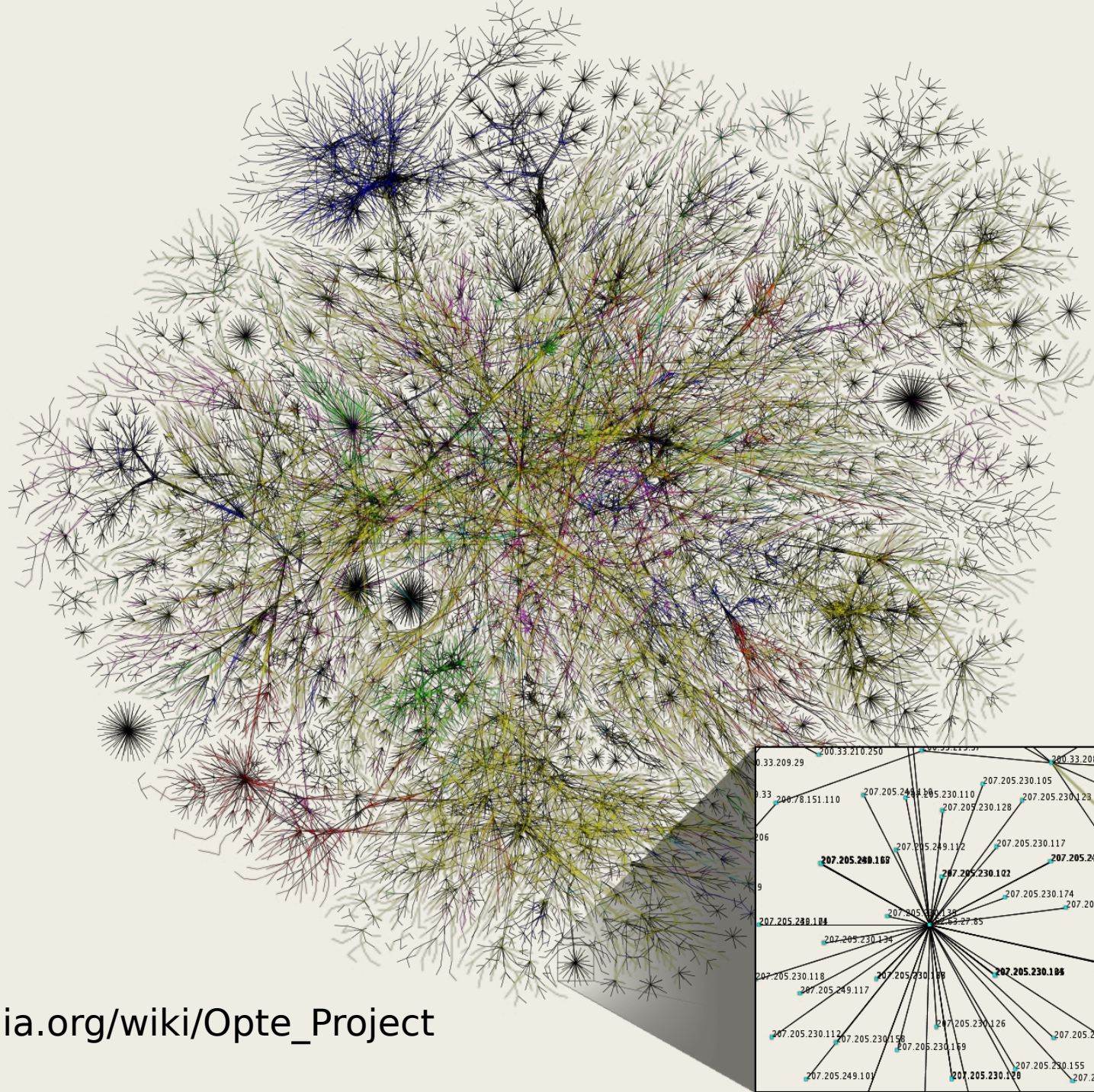


BIG WORD ALERT!

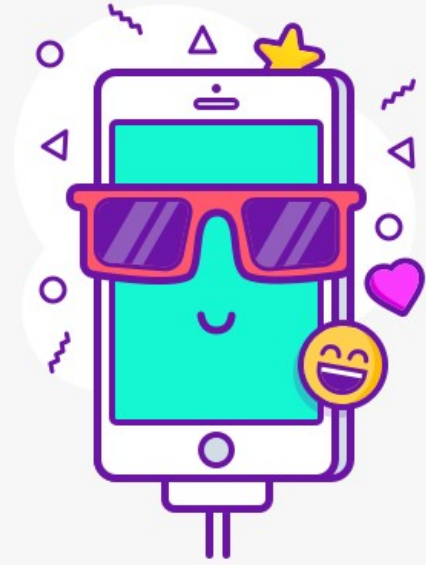


Application Programming Interface (API)

- A set of subroutine definitions, communication protocols and tools for building software.

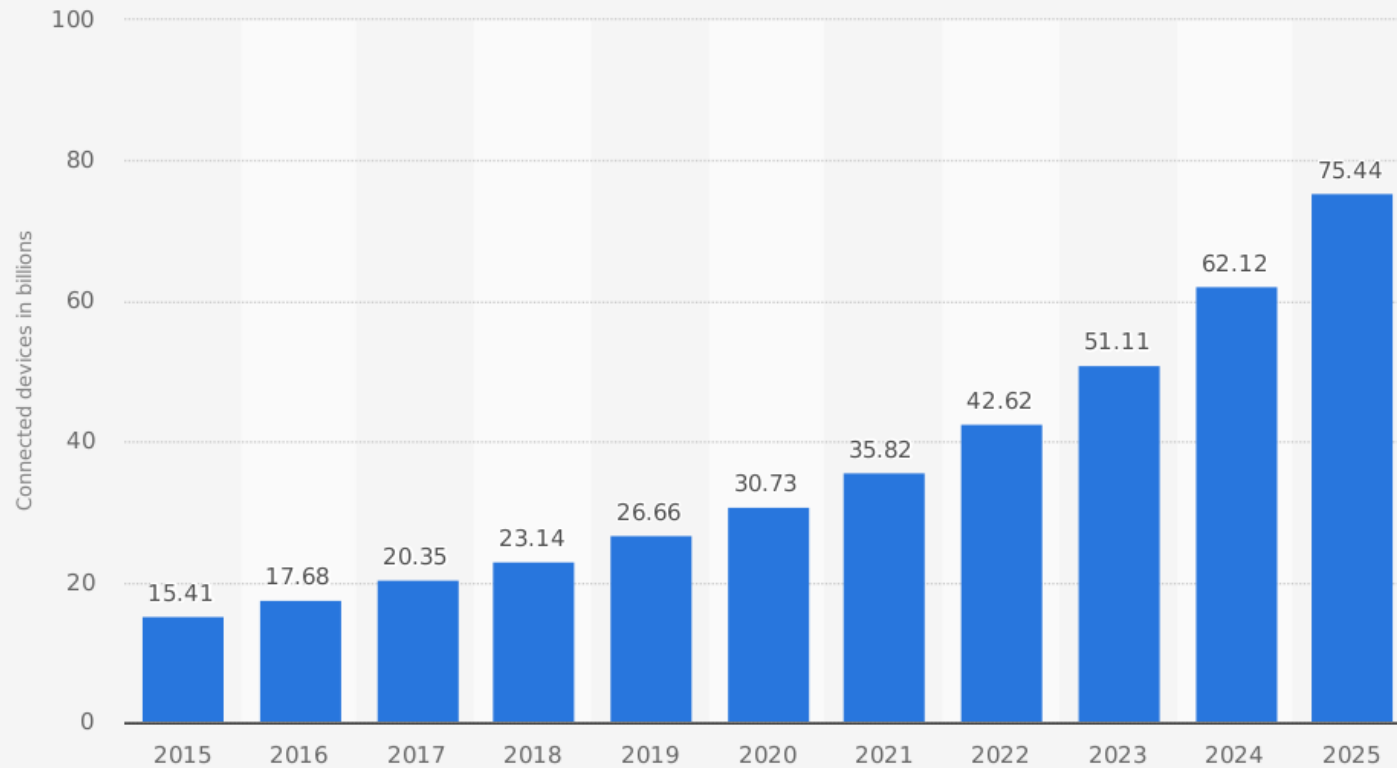


<https://en.wikipedia.org/wiki/Opentelemetry>



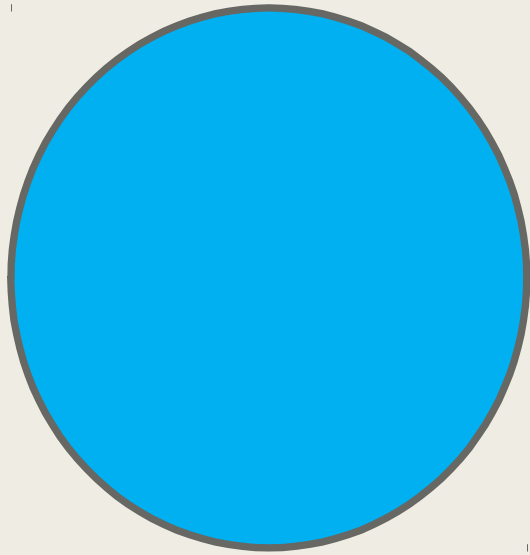


Internet of Things (IoT) connected devices installed base worldwide from 2015 to 2025 (in billions)

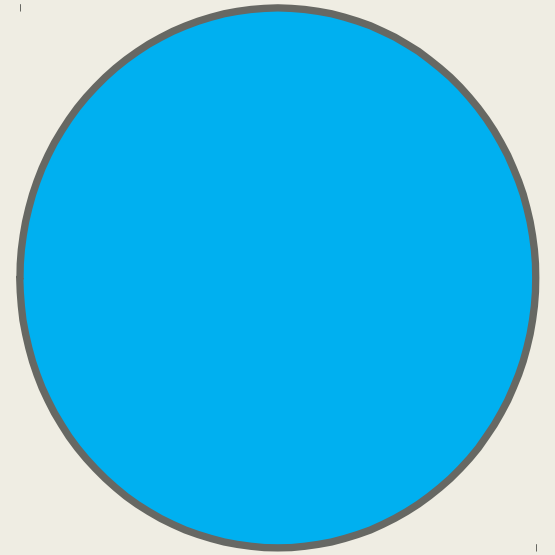
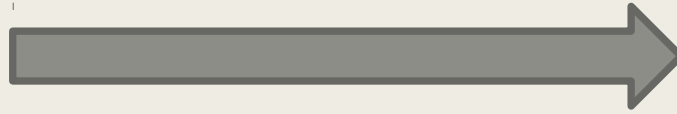


Source
IHS
© Statista 2018

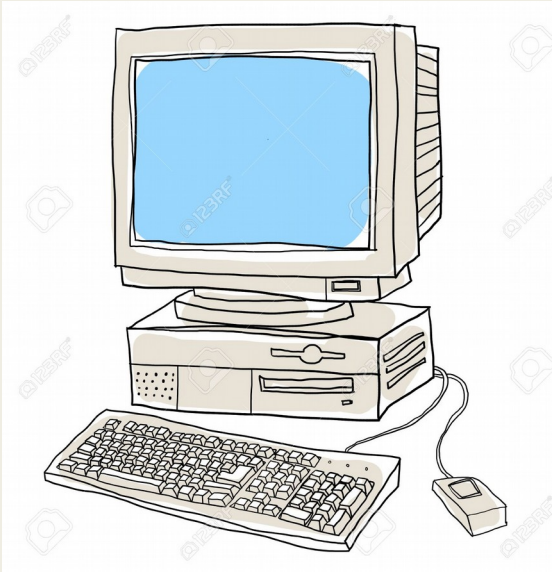
Additional Information:
Worldwide; IHS; 2015 to 2016



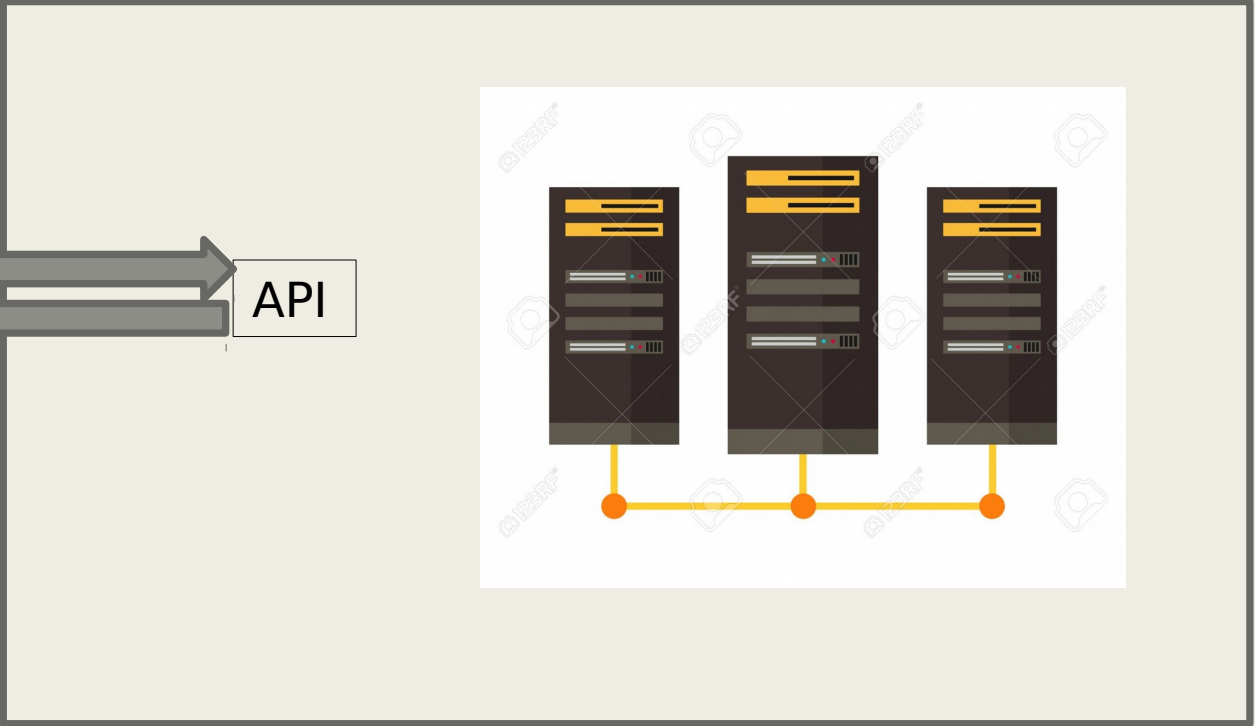
Point A



Point B



Client



Server



Client



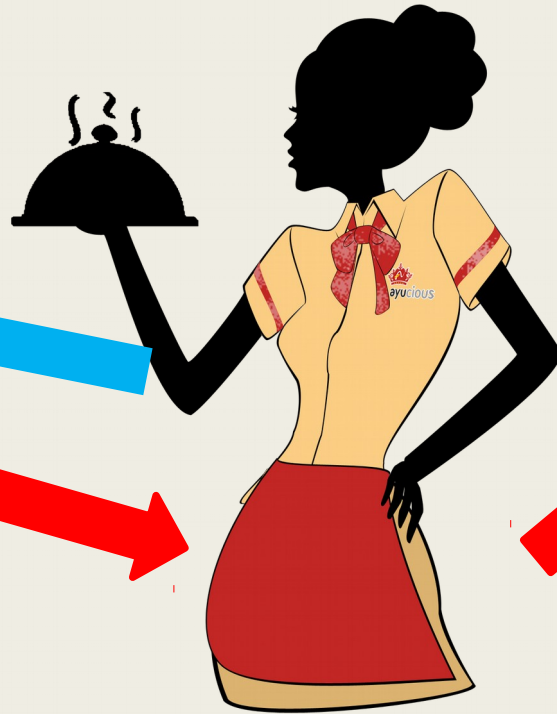
Server



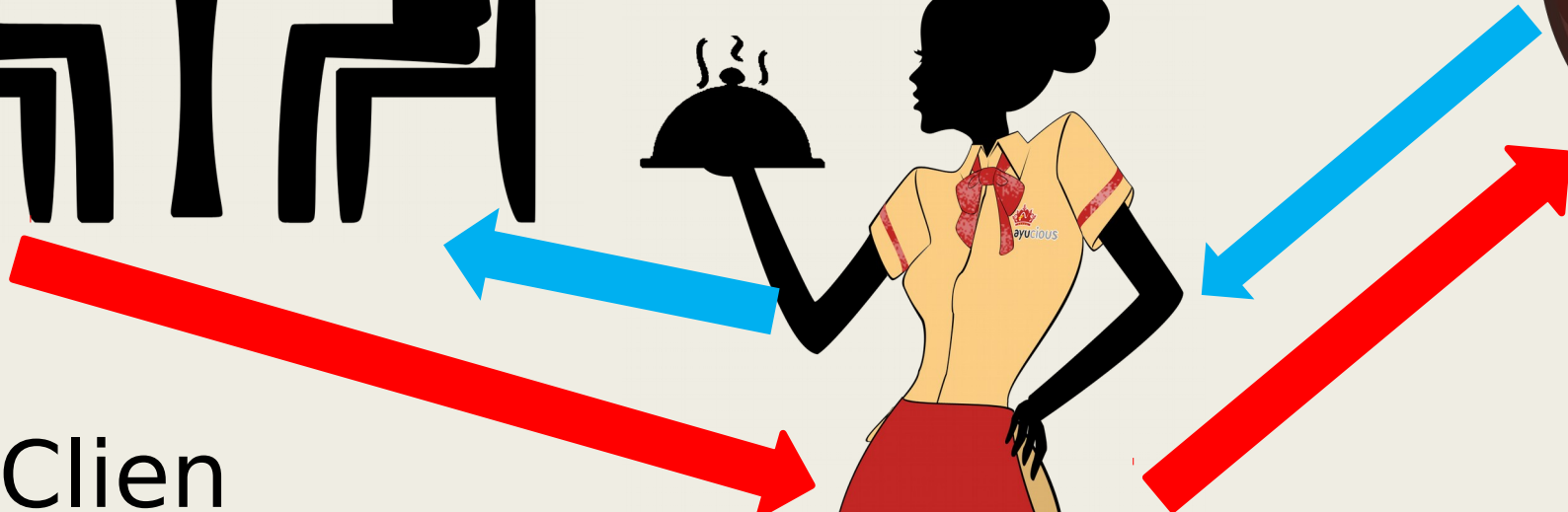
Client

Sandwiches or Wrap			Chocolate Milkshakes		
	¼ lb Patty with Cheese	\$3.49 560 Cal.		Small	\$0.99 350 Cal.
	½ lb Patty with Cheese	\$4.29 820 Cal.		Medium	\$2.19 470 Cal.
	¾ lb Patty with Cheese	\$5.59 1070 Cal.		Large	\$2.49 590 Cal.
	½ lb Patty with Bacon	\$5.39 930 Cal.			
	Mini-Bacon Cheeseburger	\$1.39 370 Cal.	Fries		
	Chicken Wrap	\$1.69 260 Cal.		Small	\$1.59 310 Cal.
				Medium	\$1.99 410 Cal.
				Large	\$2.39 520 Cal.
Salads			Chili		
	Hummus & Chicken Salad	Full Size \$5.89 470 Cal. ½ Size \$3.89 240 Cal.		Small	\$0.99 160 Cal.
	Bacon & Chicken Salad	Full Size \$5.89 580 Cal. ½ Size \$3.89 300 Cal.		Large	\$1.99 260 Cal.
	Chicken Caesar	Full Size \$5.89 710 Cal. ½ Size \$3.89 400 Cal.	Sides		
				Sour Cream & Chive Baked Potato	\$0.99 300 Cal.
				Bacon & Cheddar Baked Potato	\$2.49 470 Cal.
Or Pair Two					
	Choose any ½ Size salad and ADD 1 of these options	\$5.59			
	Chicken Wrap			Small Milkshake	
	Mini-Bacon cheese burger			Small Chili	
	Small Fries			Sour Cream & Chive Baked Potato	
					

2,000 calories a day is used for general nutrition advice, but calorie needs vary.
Additional nutrition information available upon request.

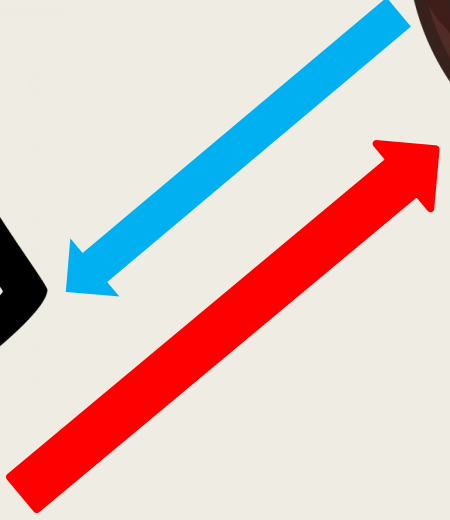
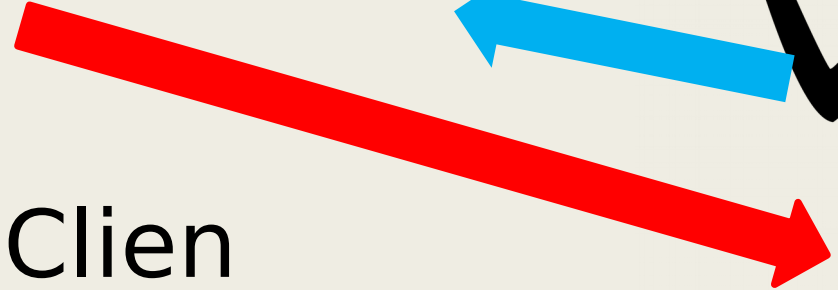
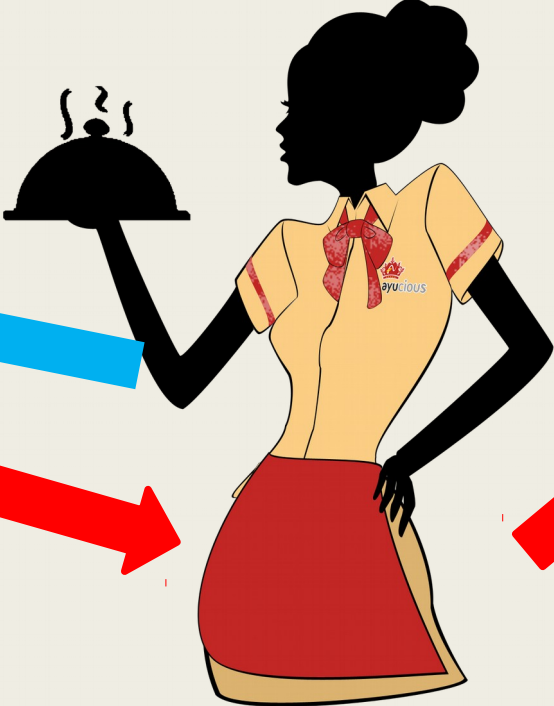


Server





Sandwiches or Wrap			Chocolate Milkshakes		
	¼ lb Patty with Cheese	\$3.49 560 Cal.		Small	\$0.99 350 Cal.
	½ lb Patty with Cheese	\$4.29 820 Cal.		Medium	\$2.19 470 Cal.
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				Sour Cream & Chive Baked Potato	\$0.99 300 Cal.
				Bacon & Cheddar Baked Potato	\$2.49 470 Cal.
Or Pair Two					
	Choose any ½ Size salad and ADD 1 of these options				\$5.59
	Chicken Wrap		Small Milkshake		
	Mini-Bacon cheese burger		Small Chili		
	Small Fries		Sour Cream & Chive Baked Potato		
	2,000 calories a day is used for general nutrition advice, but calorie needs vary. Additional nutrition information available upon request.				



Client

Server

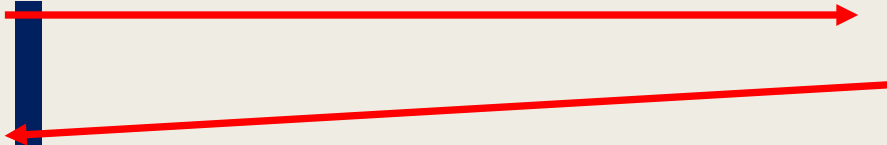
Roundtrip One-way Multi-city ▶ Use TrueBlue points

From: New York, NY (LGA) ↔ To: Where to?



API

jetBlue



jetBlue

American Airlines 

UNITED AIRLINES 

API

API

API

K A Y A K

API

API

API

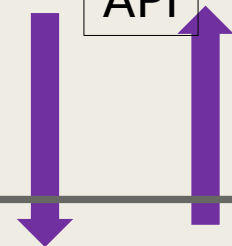

AIR CANADA

Southwest 

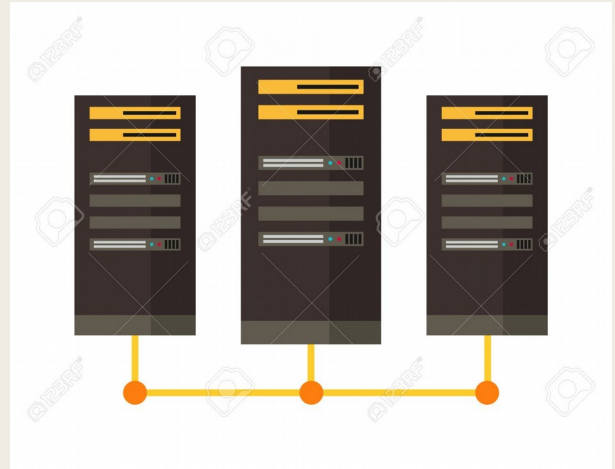

spirit
Less Money. MORE GO.



API



Calculate Distance
Between Each Pair
of Points



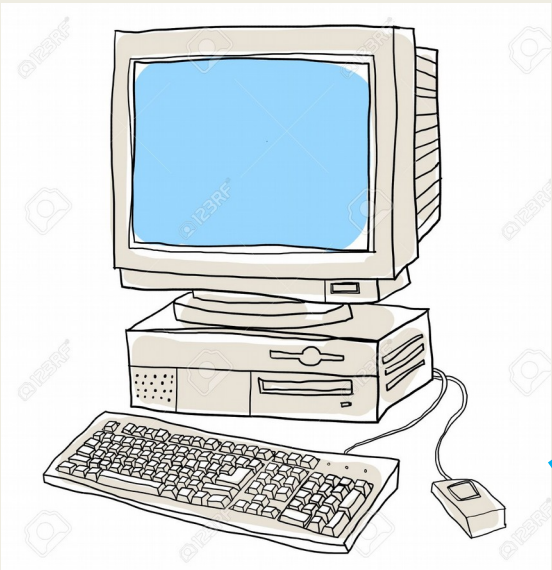
88 West Road
697 Ross Corner Road
93 Oak St
33 Apple Way



API



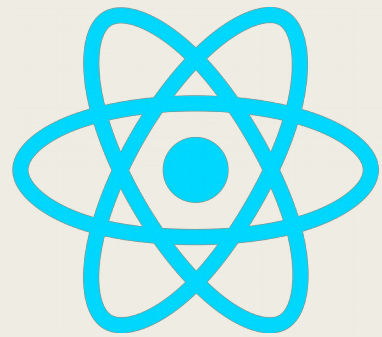
697 Ross Corner Road
33 Apple Way
93 Oak St
88 West Road



- The freedom to run the program as you wish, for any purpose (freedom 0).
- The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help others (freedom 2).
- The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.

<https://www.gnu.org/philosophy/free-sw.en.html>





React



JavaScript

Address 1

13 Gore Rd. Lyman, ME 04076

Address 2

123 Bridge St Waterboro, ME
04061

Address 3

58 West St. Alfred, ME 04065

Address 4

697 Ross Corner Rd. Shapleigh, ME
04174

SUBMI

BIG WORD ALERT!



Frameworks & Programming Languages

- Programming Language - The vocabularies developers use to build applications and tell a piece of software what to do, how to do it, and when to do it.
 - *E.g. JavaScript*
- Framework - The foundation on which software developers can build programs for specific platforms.
 - *Frameworks are written in a programming language.*
 - *E.g. React*

BIG WORD ALERT!





ன் நூலகம் தமிழ் மின் நூலகம் தமிழ் மின் நூலகம் தமிழ் மின் நூலகம் தமிழ்

NEW

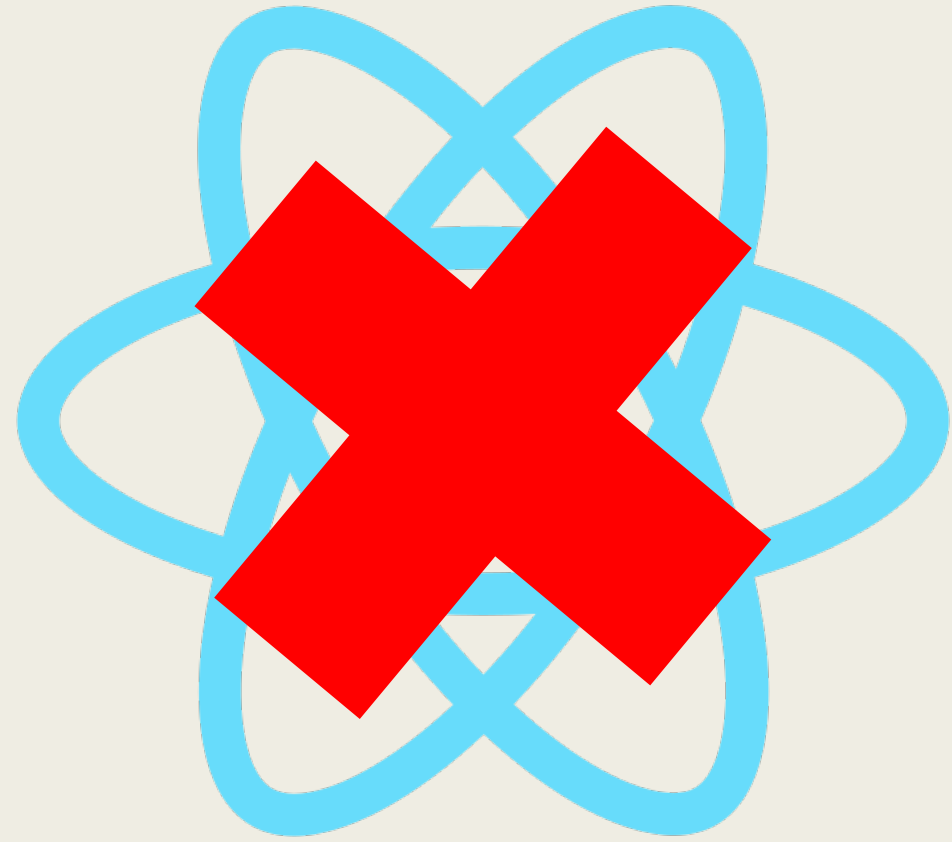
A JavaScript script is not trivial if...

- it is referred to as an external script (from another page).
- it declares an array more than 50 elements long.
- it defines a named entity (function or method) that calls anything other than a primitive.
- it defines a named entity with more than three conditional constructs and loop construction.
- code outside of named definitions calls anything but primitives and functions defined further up in the page.
- code outside of named definitions contains more than three conditional constructs and loop construction, total.
- it does Ajax calls.
- it alters the DOM.
- it uses dynamic JavaScript constructs that are difficult to analyze without interpreting the program.

LibreJS

Free JavaScript in your browser

<https://www.gnu.org/software/librejs/>



Settings

- Preferences
- Workspace
- Experiments
- Blackboxing
- Devices
- Throttling
- Shortcuts

Preferences

Bracket matching

Show whitespace characters:

Display variable values inline while debugging

Enable CSS source maps

Default indentation:

Performance

Flamechart mouse wheel action:

High resolution CPU profiling


Show native functions in JS Profile

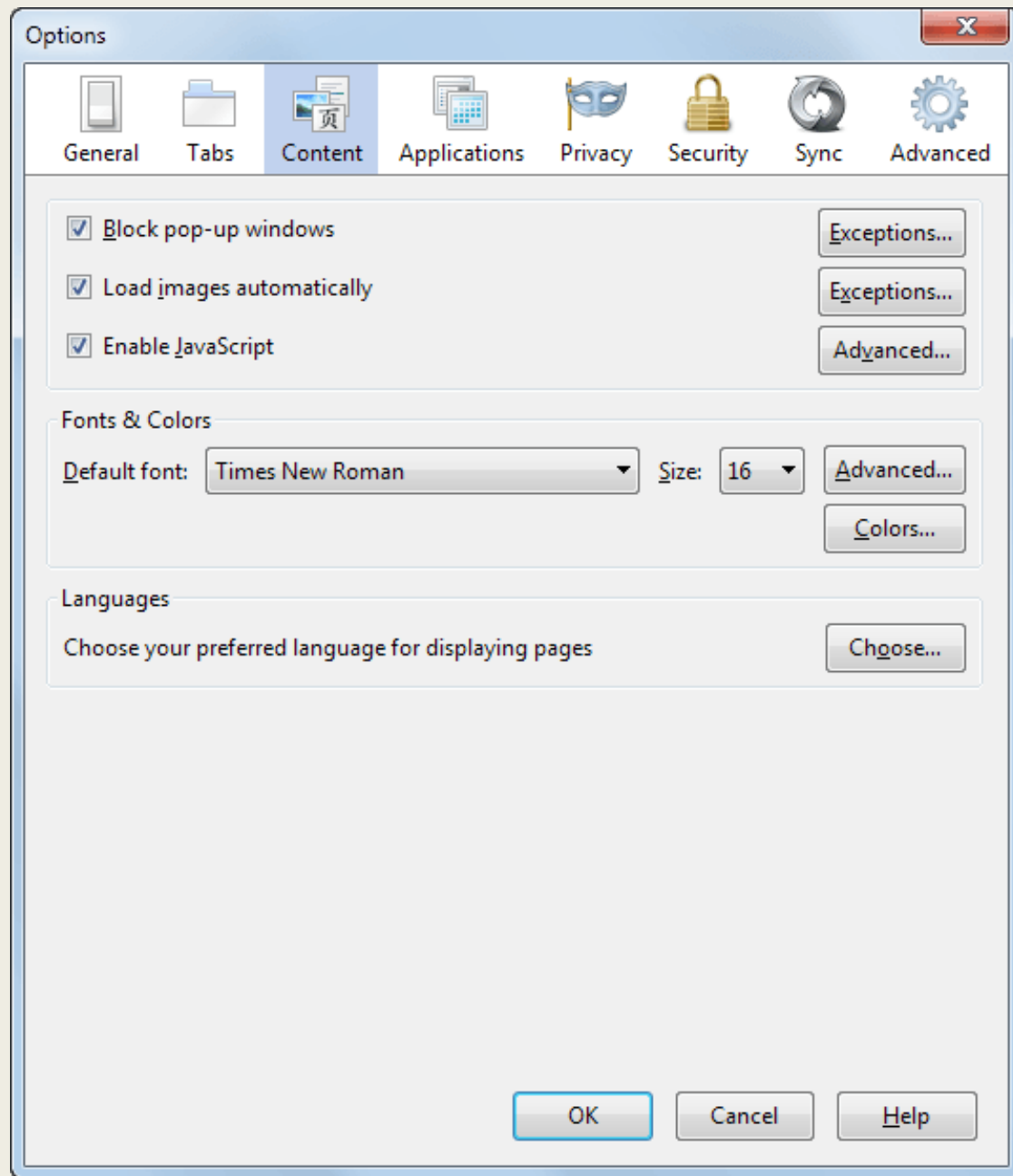
Hide chrome frame in Layers view

Debugger

Disable JavaScript

Disable async stack traces





The Java Trap



BIG WORD ALERT!



Development Kit

- a set of tools, libraries, relevant documentation, code samples, processes, and or guides that allow developers to create software applications on a specific platform.

OPEN JDK / Oracle JDK

OpenJDK



■ Oracle's JDK

- *Developers can use it freely in development and testing.*
- *If you use it in production, you must pay for it.*

■ Open JDK

- *Free Software*

- Oracle's JDK

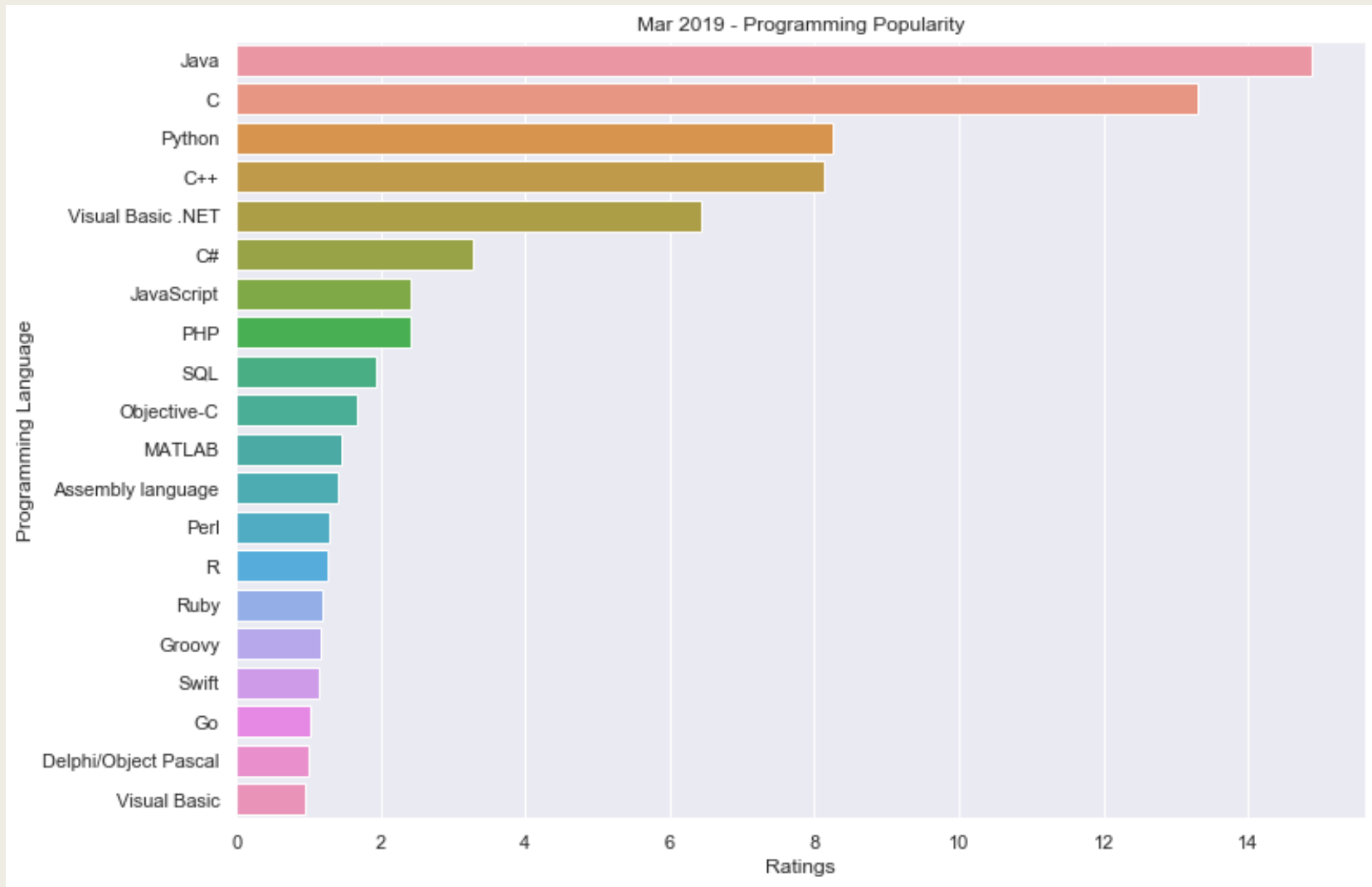
- *If you are using Oracle's JDK, you will get updates and supports.*

- Open JDK

- *Oracle will not provide any new updates to past versions.*



Java SE 10 (JDK 10)

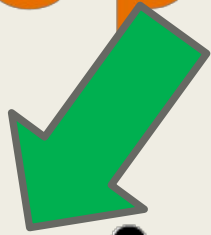


<https://www.tiobe.com/tiobe-index/>

<https://towardsdatascience.com/visualize-programming-language-popularity-using-tiobeindexpy-f896400d>



OpenJDK



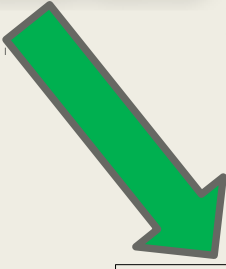
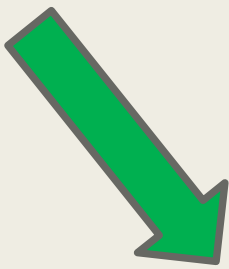
Sakai







Sakai



APP

APP 2

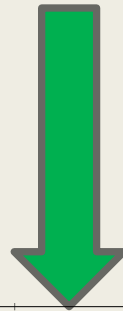
APP

APP 4

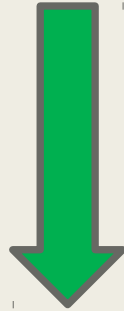




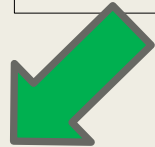
- Your Maps API Implementation must be accessible to the general public without charge and must not require a fee-based subscription or other fee-based restricted access.
- You must conspicuously display the "powered by Google" attribution (and any other attribution(s) required by Google in the Maps APIs Documentation) on or adjacent to the relevant Service search box and Google search results.

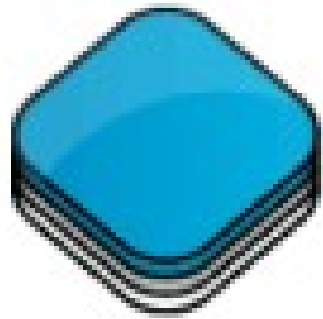


MY
APPLICATION

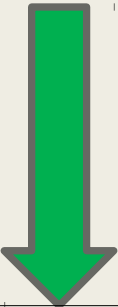


MY
APPLICATION





OpenLayers



**MY
APPLICATION**



Google Analytics



My Licensing



My Licensing



You cannot use my program to benefit Republican candidates or the Republican Party Committee

My Licensing



~~You cannot use this program to benefit Republican candidates or the Republican Party Committee~~

What I Learned

- Ensuring your applications provide free access to their APIs is critical for the development of free software. If you are using an API that is not a free, no one can use your program freely. Since there are so many interconnected devices, it is easy for your software to get "infected". To prevent it from "infecting" other people, you must take responsibility and do an audit through your integrations.
- It's not enough to provide access to code. You must provide it in the original framework that you wrote it in, not a transpiled version that is obscured.
- It is more important to protect a user's freedom rather than protecting how your application will be used.

Questions

?

