MATH MODELING CAN MAKE YOU FILTHY RICH

ROBERT KAPLINSKY

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@robertkaplinsky

WANT THE RESOURCES?

Text the message:

FILTHYRICH

To 44222

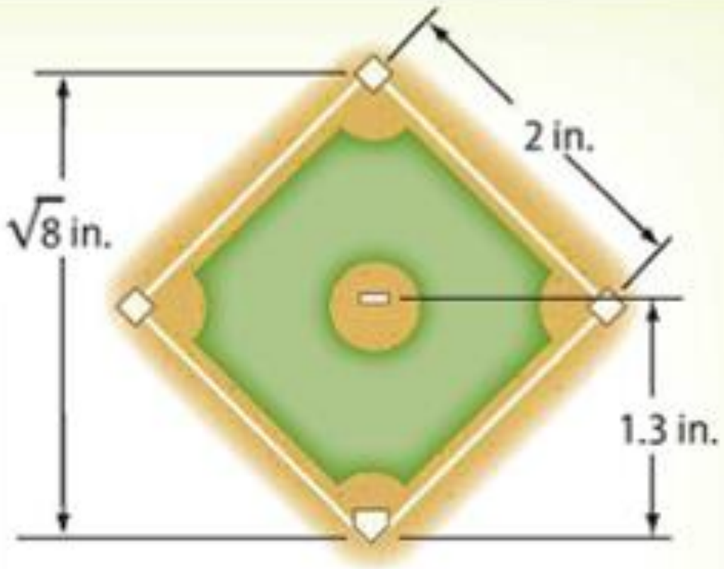
Real-World Link

Common Core State Standards

Content Standards
8.NS.1, 8.NS.2, 8.EE.2

Mathematical Practices
1, 3, 4, 6

Sports Major League baseball has rules for the dimensions of the baseball diamond. A model of the diamond is shown.



1. On the model, the distance from the pitching mound to home plate is 1.3 inches. Is 1.3 a rational number? Explain.

2. On the model, the distance from first base to second base is 2 inches. Is 2 a rational number? Explain.

3. The distance from home plate to second base is $\sqrt{8}$ inches. Using a calculator, find $\sqrt{8}$. Does it appear to terminate or repeat?

Real-World Link

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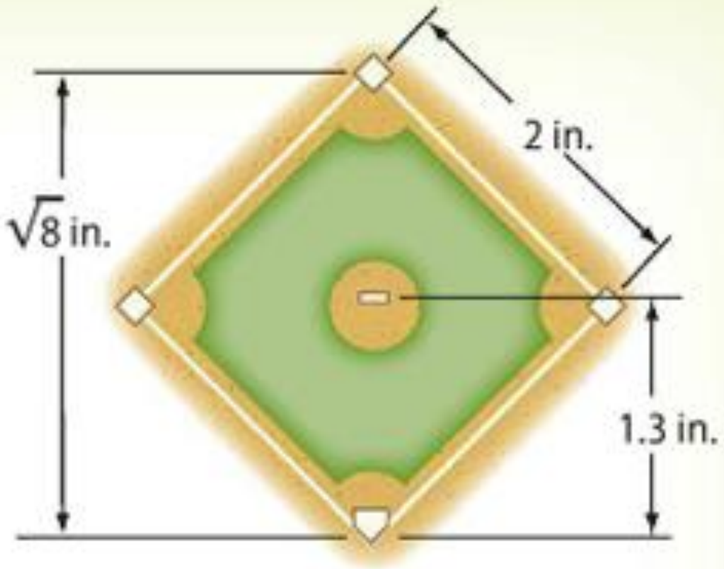

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2. On the model, the distance from first base to second base is 2 inches. Is 2 a rational number? Explain.

3. The distance from home plate to second base is $\sqrt{8}$ inches. Using a calculator, find $\sqrt{8}$. Does it appear to terminate or repeat?

Doritos® & Cheetos® Mix

20 Singles

DORITOS® Nacho Cheese Flavored Tortilla Chips 1 OZ. EA. DORITOS® COOL RANCH® Flavored Tortilla Chips 1 OZ. EA. CHEETOS® Puffs Cheese Flavored Snacks 7/8 OZ. EA. CHEETOS® Crunchy Cheese Flavored Snacks 1 OZ. EA.

20 INDIVIDUAL BAGS: 7/8 OZ. EACH, 1 OZ. EACH, TOTAL NET WT. 19 5/8 OZ. (1 LB. 3 5/8 OZ.) 556.3 g

⚠ WARNING: PREVENT ENTANGLEMENT AND STRANGULATION. KEEP THIS BAG AWAY FROM YOUNG CHILDREN. IT IS NOT A TOY.

THINKING TIME

- Why did many of you expect there to be five of each?
- Why was it not five of each?
- How might they decide on this combination?

Classic Mix

20 Singles

LAY'S® Classic Potato Chips, DORITOS® Nacho Cheese Flavored Tortilla Chips, DORITOS® COOL RANCH® Flavored Tortilla Chips, CHEETOS® Crunchy Cheese Flavored Snacks, SUNCHIPS® Original Multigrain Snacks, FRITOS® Original Corn Chips (All 1 OZ. Each)

20 INDIVIDUAL BAGS: 1 OZ. EACH, TOTAL NET WT. 20 OZ. (1 LB. 4 OZ.) 567 g

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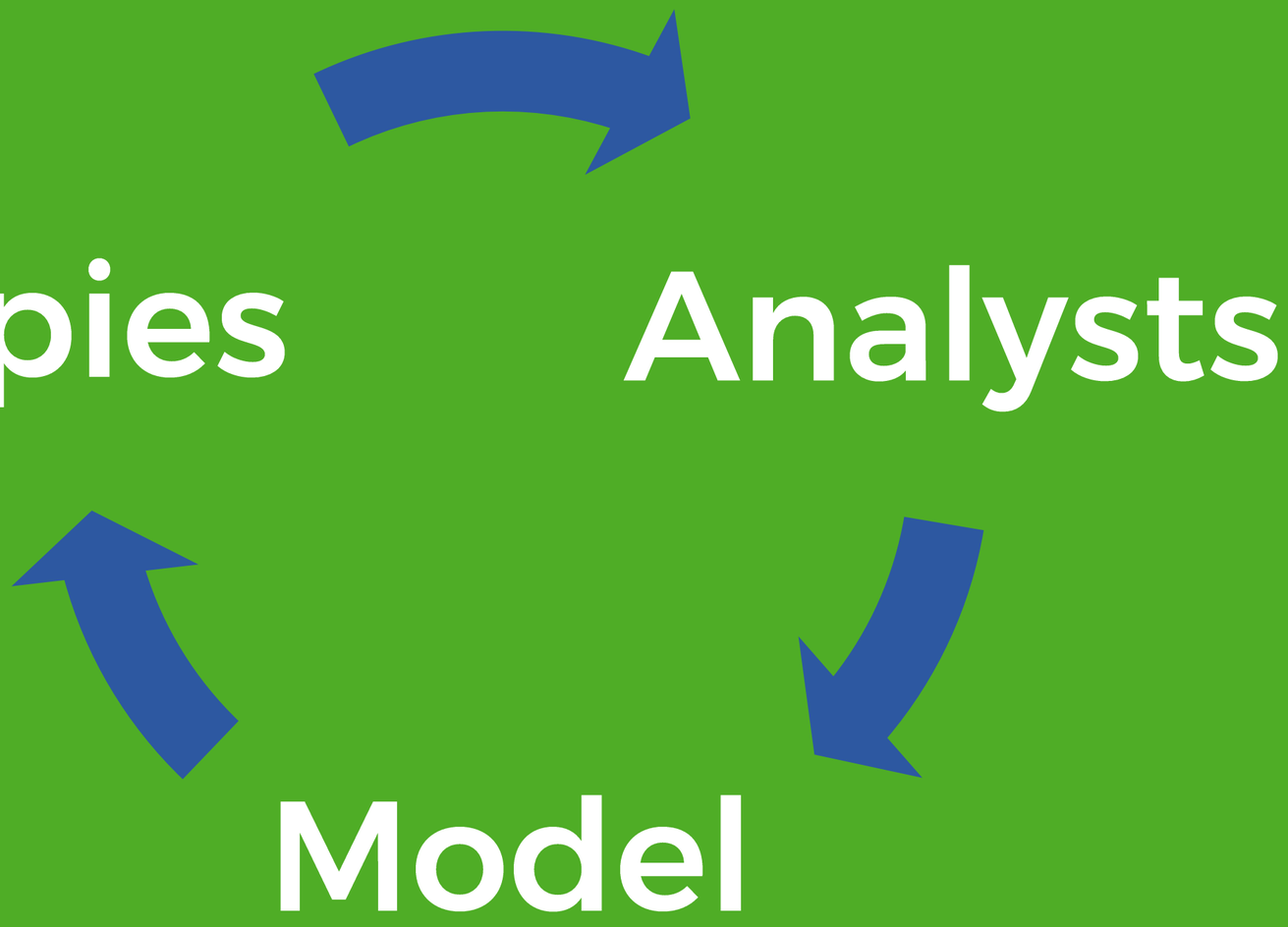
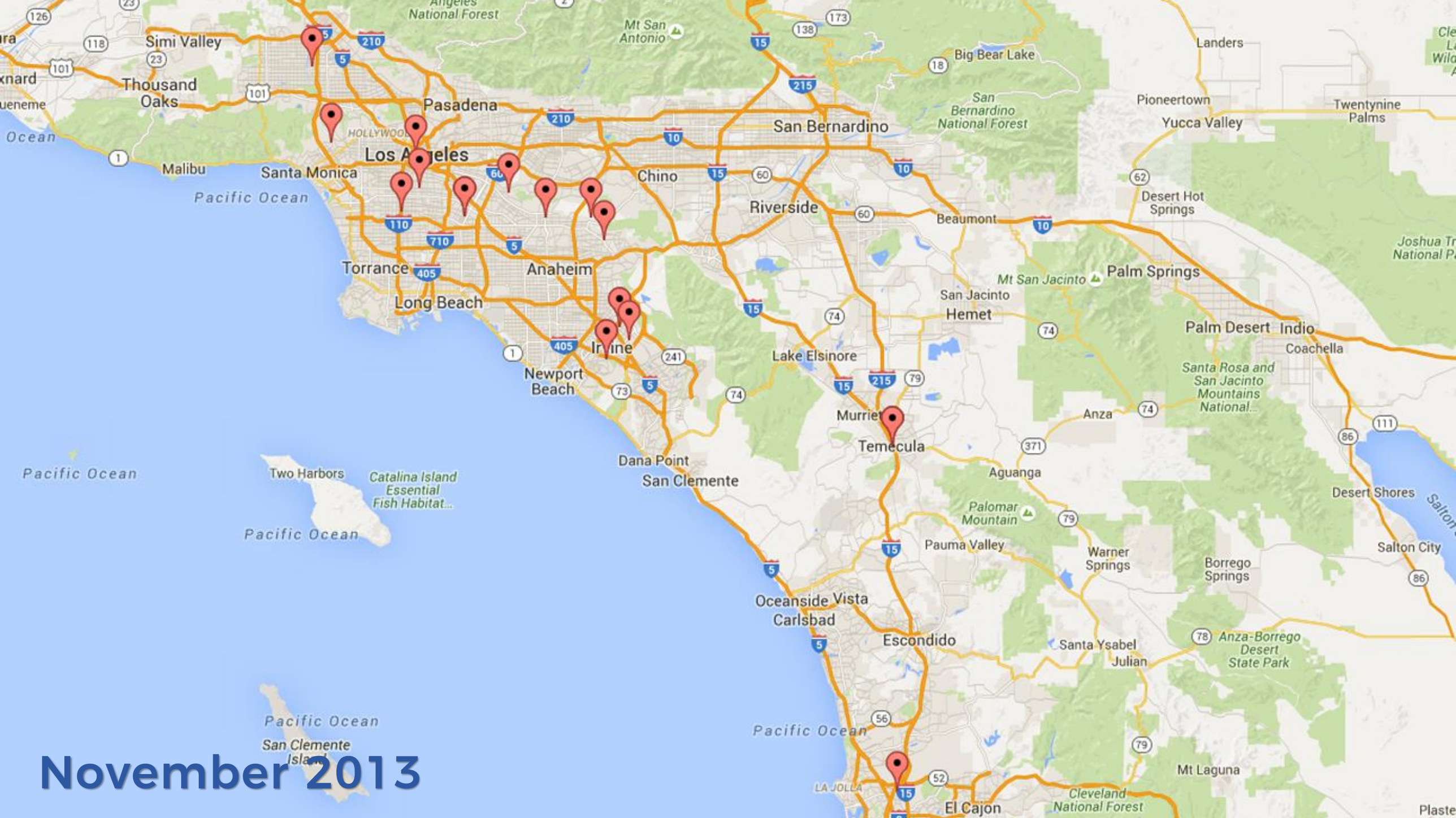
GOALS

- ❑ HOW DO WE MAKE SENSE OF MATH MODELING?
- ❑ IS IT JUST ANSWERING QUESTIONS?
- ❑ HOW DO YOU PROFIT FROM MATH MODELING?
- ❑ HOW DO WE HELP OUR STUDENTS IMPROVE?
- ❑ WHERE CAN WE FIND MORE RESOURCES?

CENTRAL INTELLIGENCE AGENCY
UNITED STATES OF AMERICA


Spies
Analysts
Model



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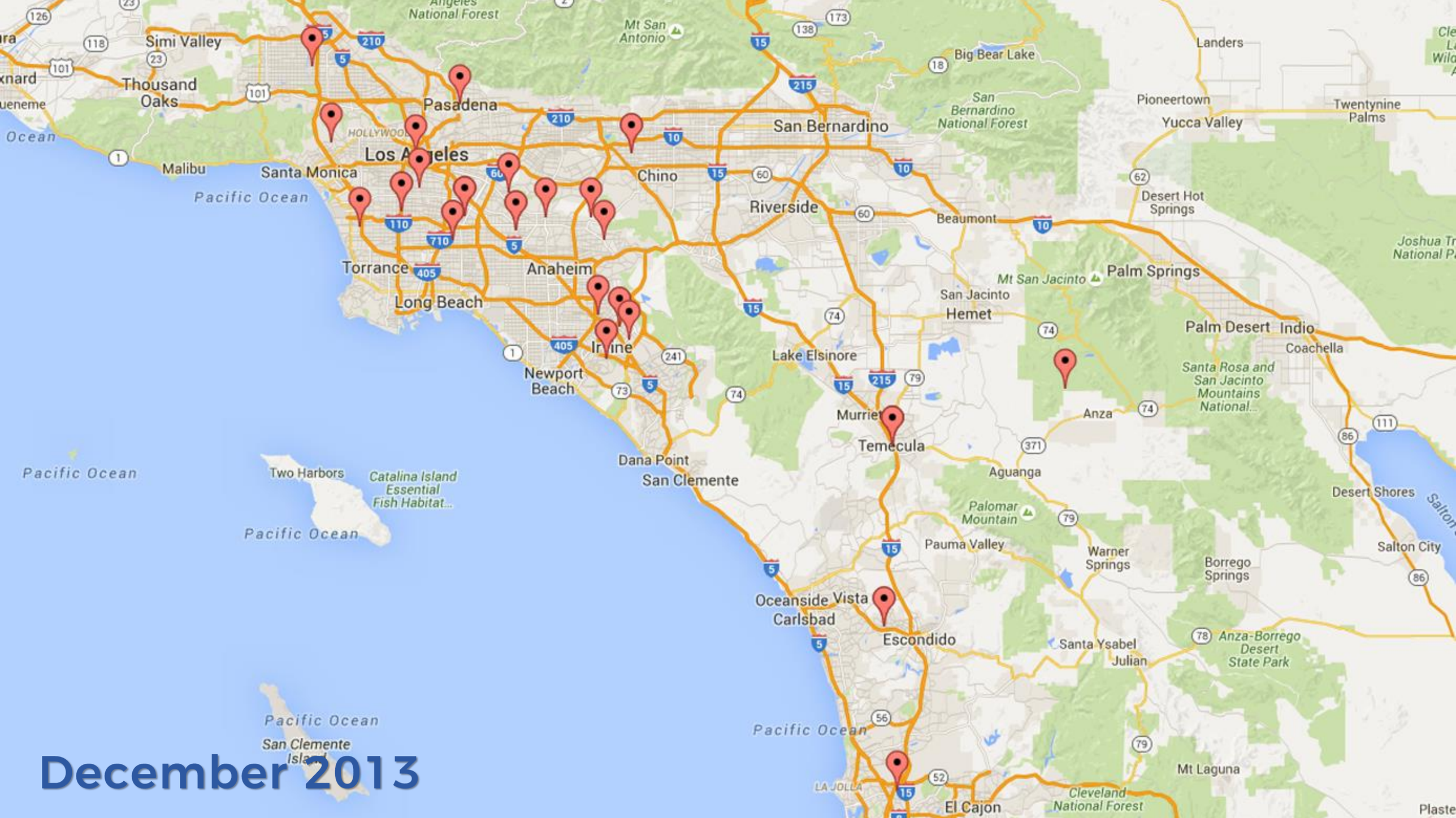

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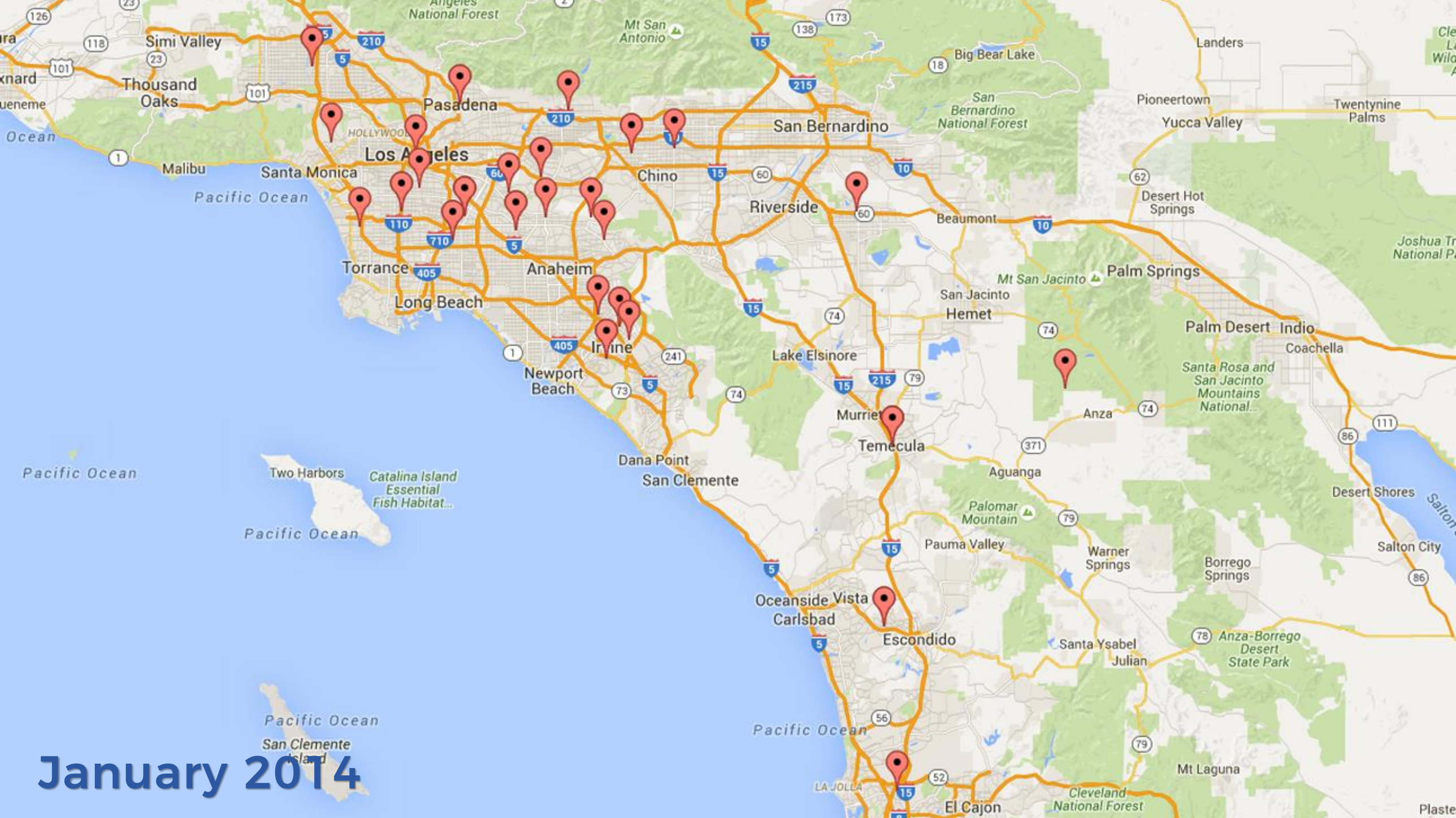

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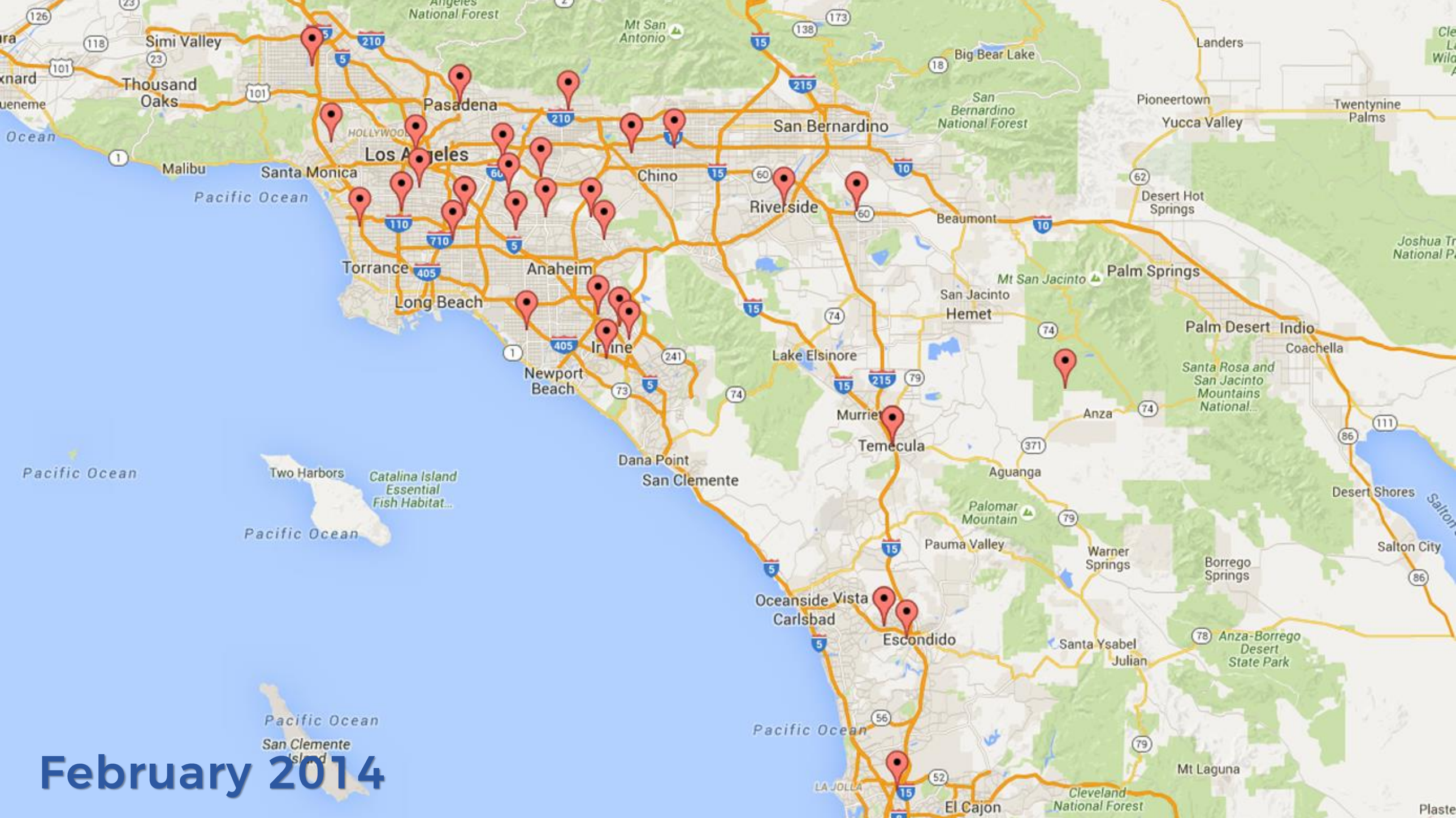

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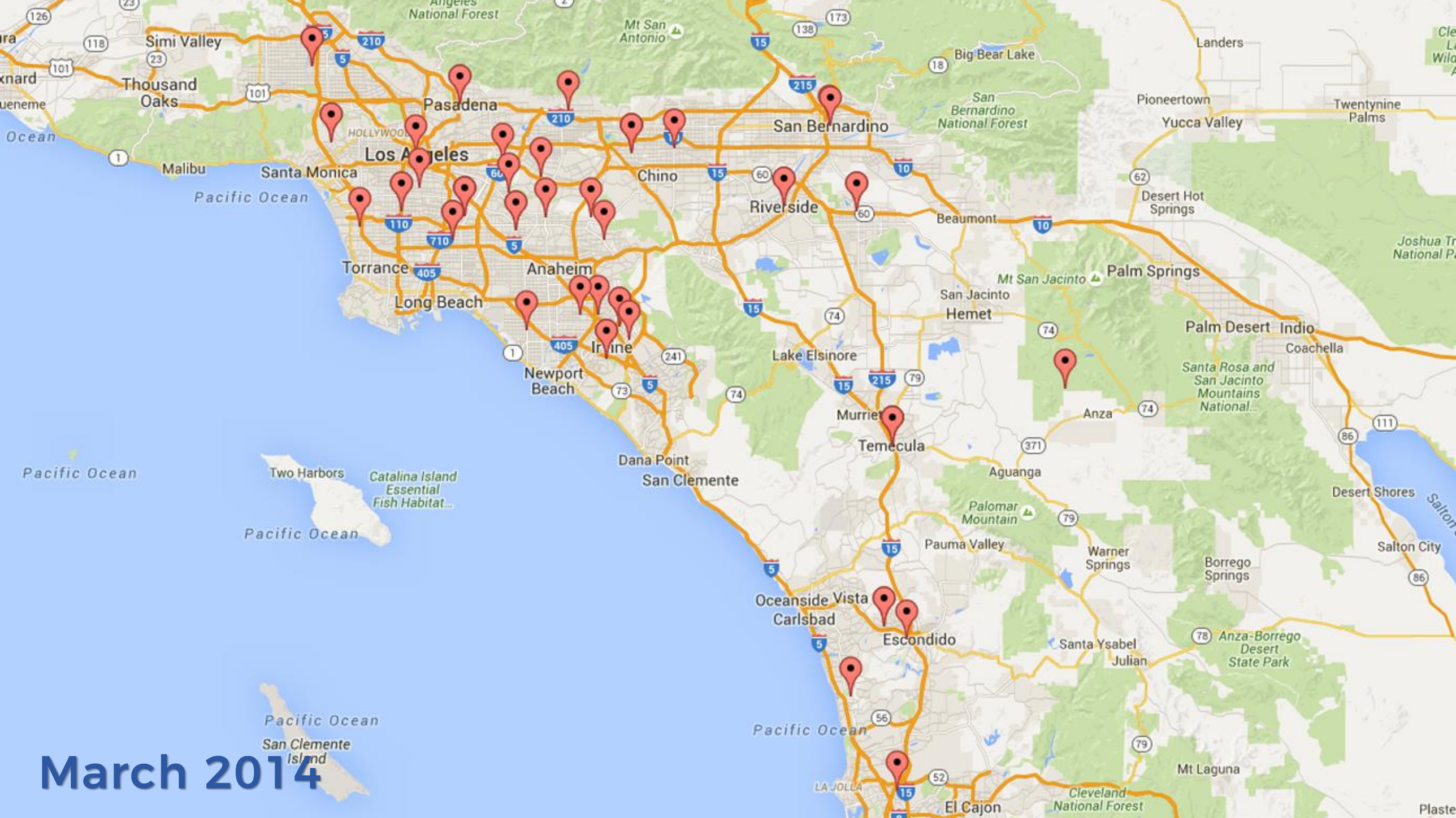
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Pioneertown
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Irvine
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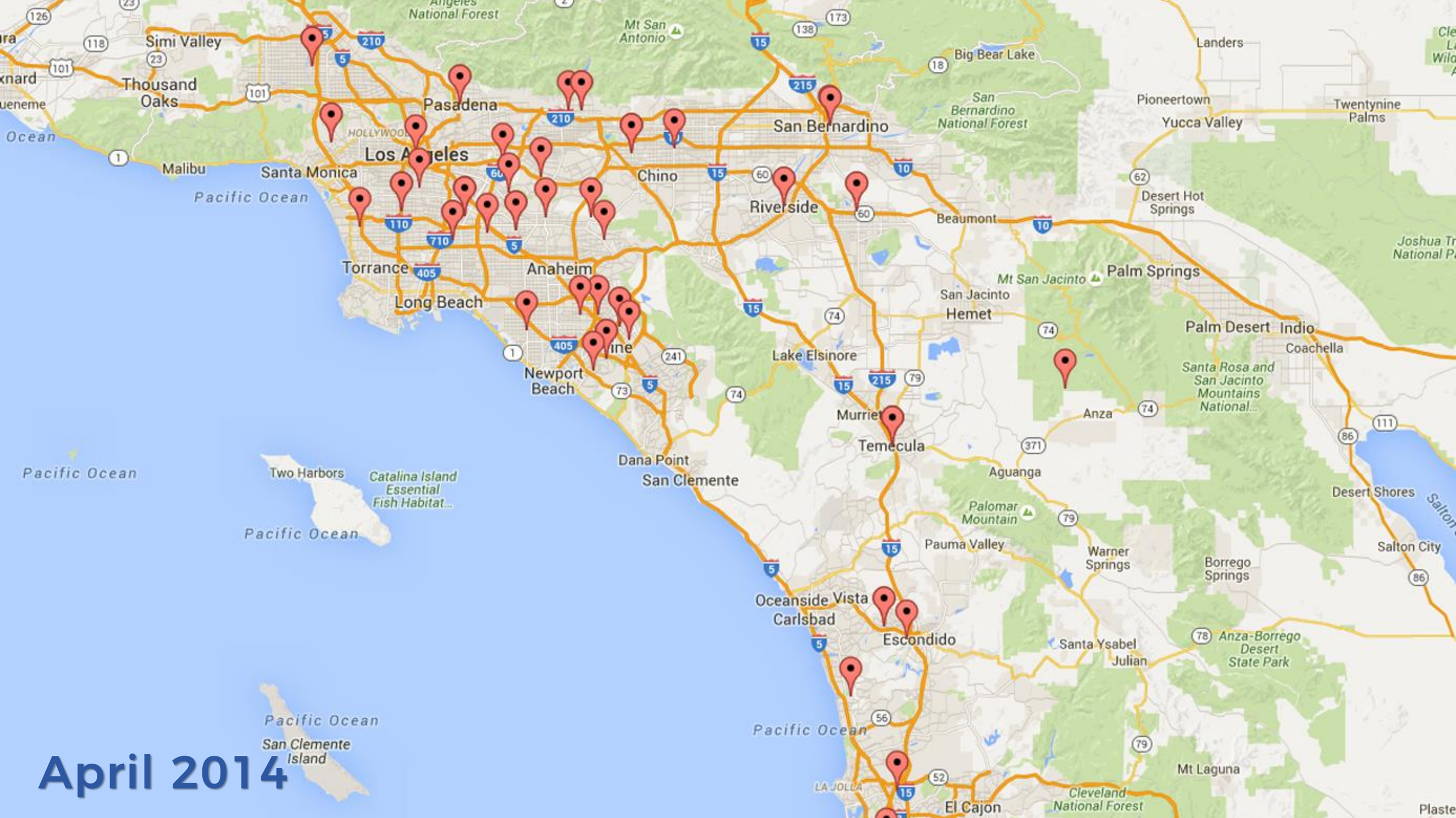
Mt Laguna
El Cajon
Cleveland National Forest
LA JOLLA
San Clemente Island

March 2014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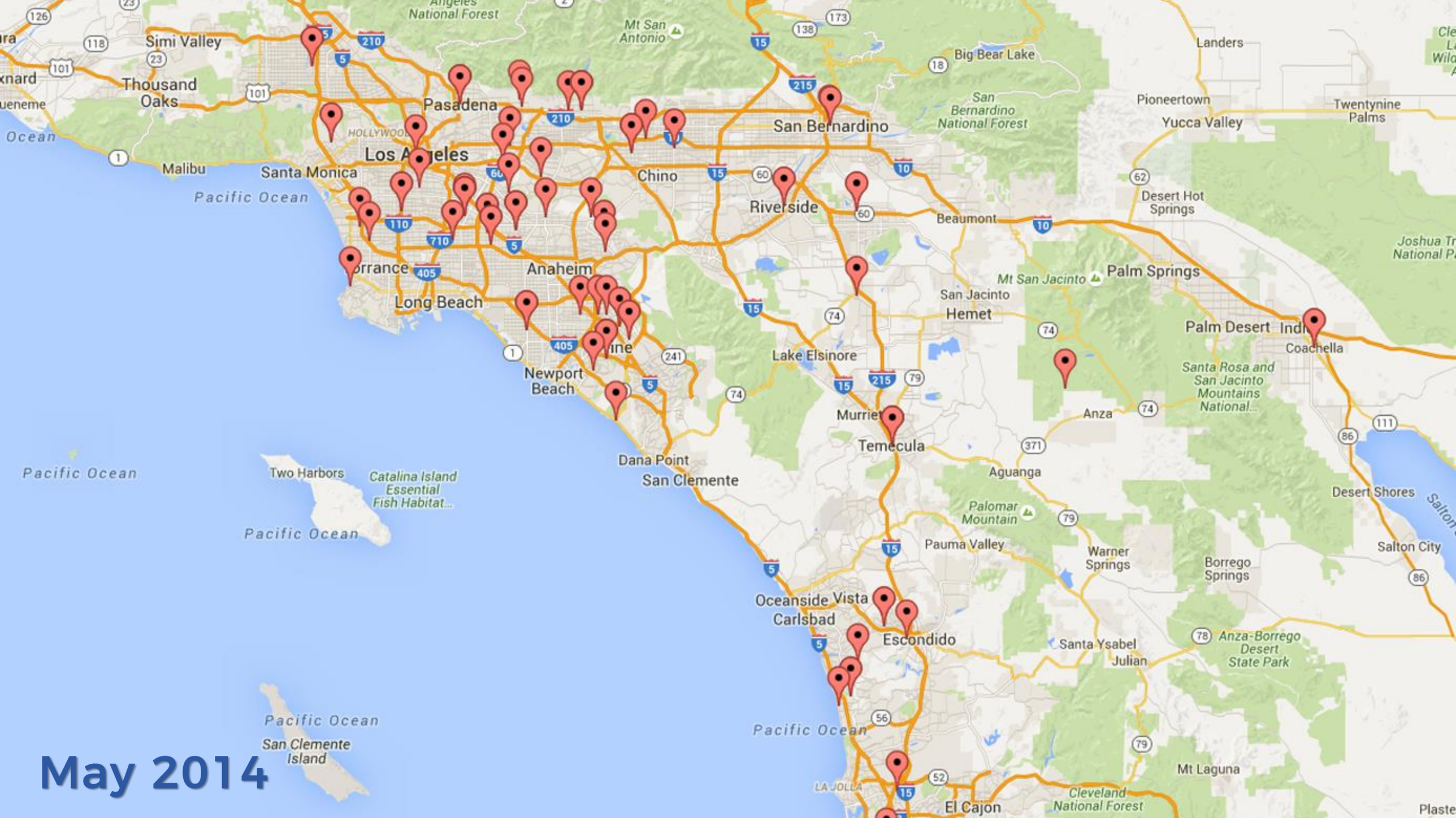
LA JOLLA

April 2014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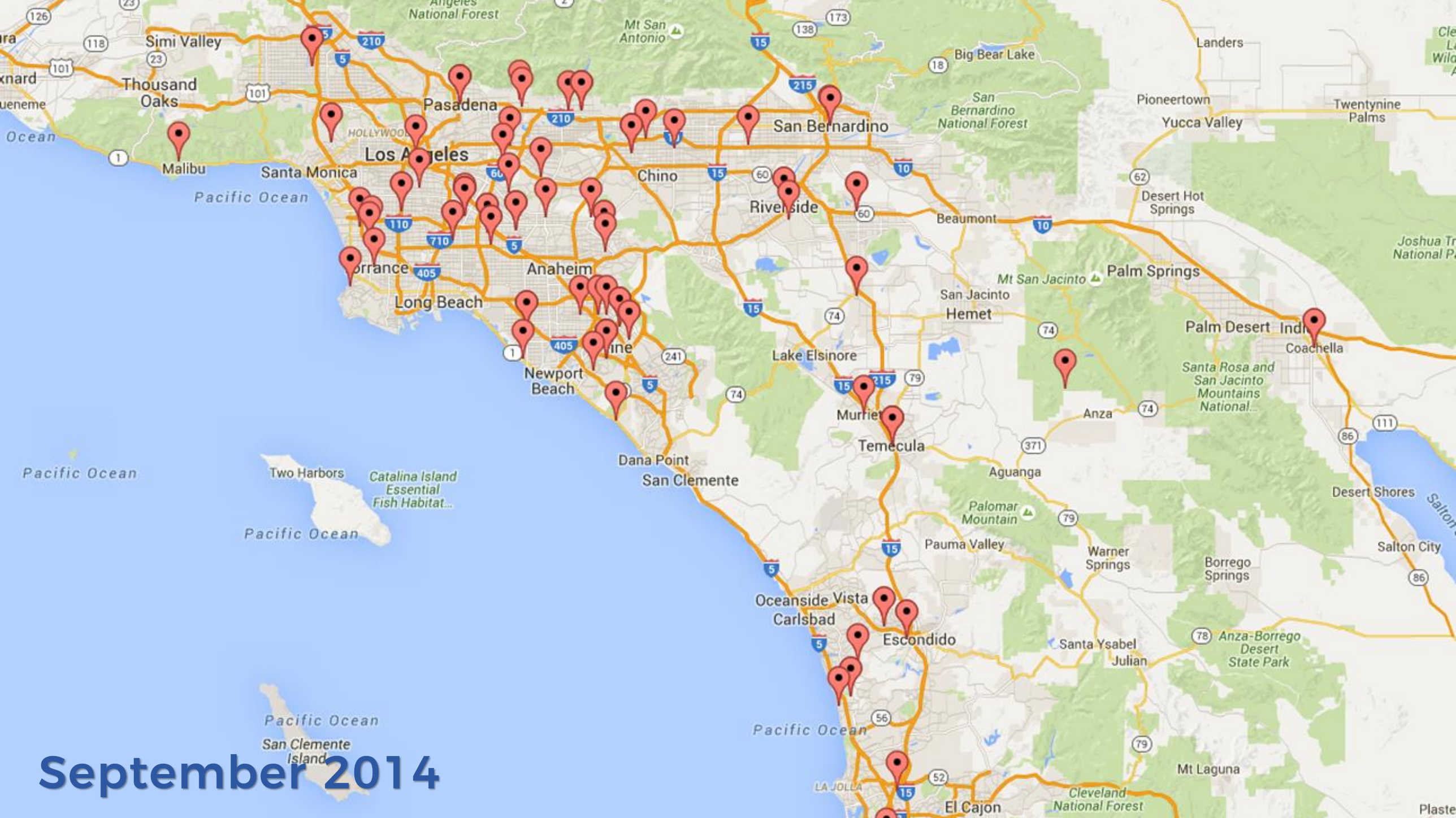

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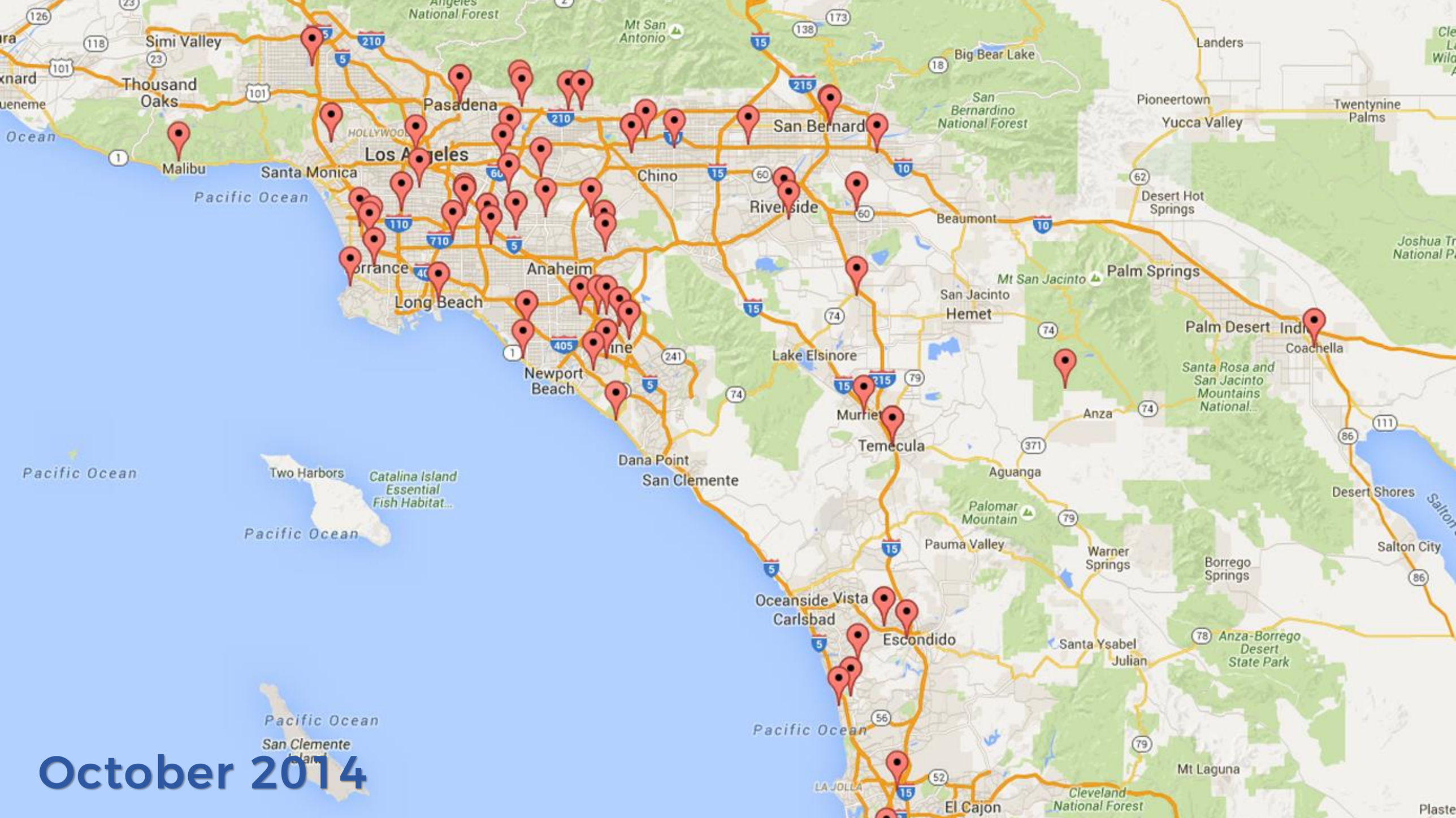

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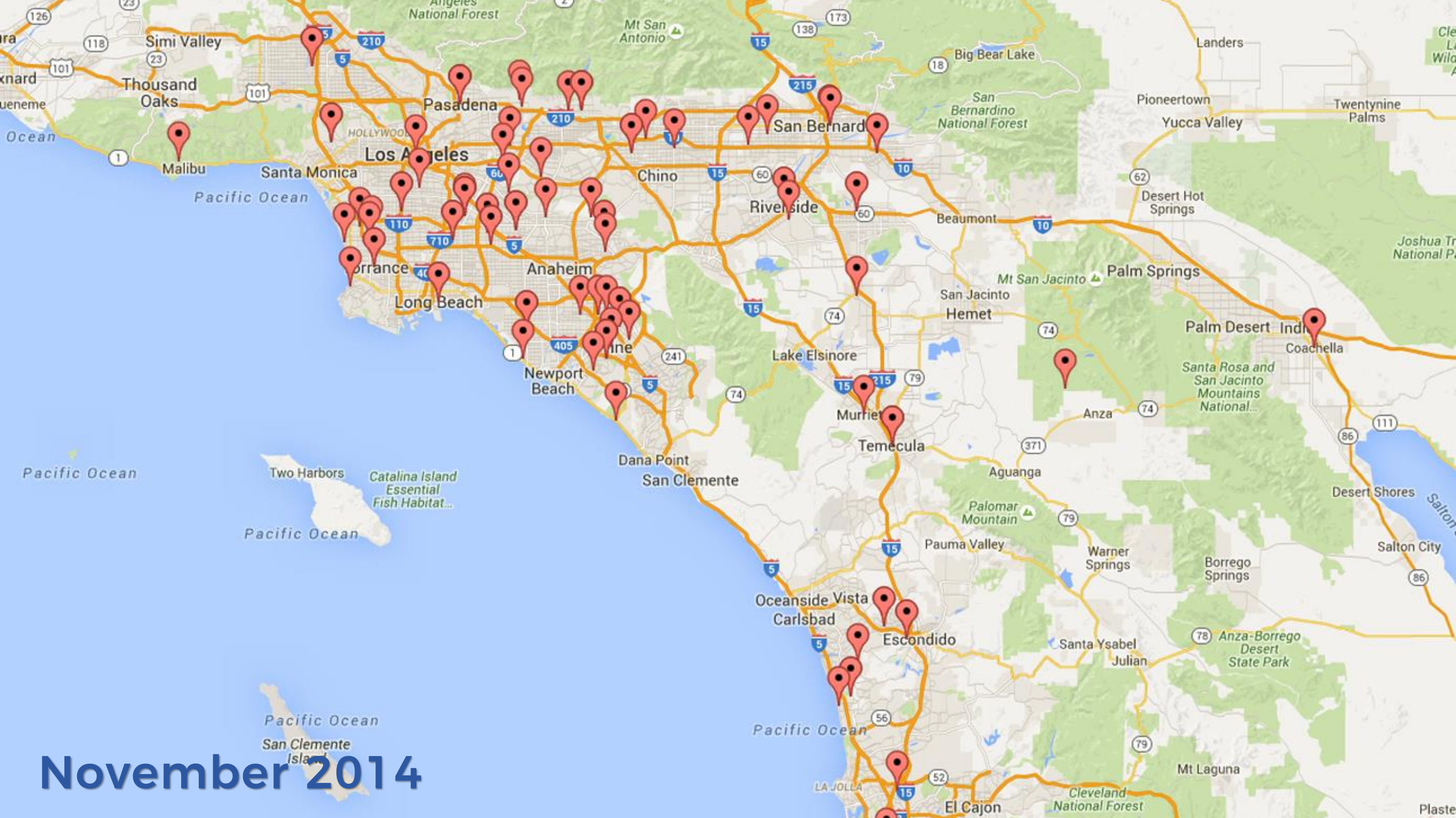

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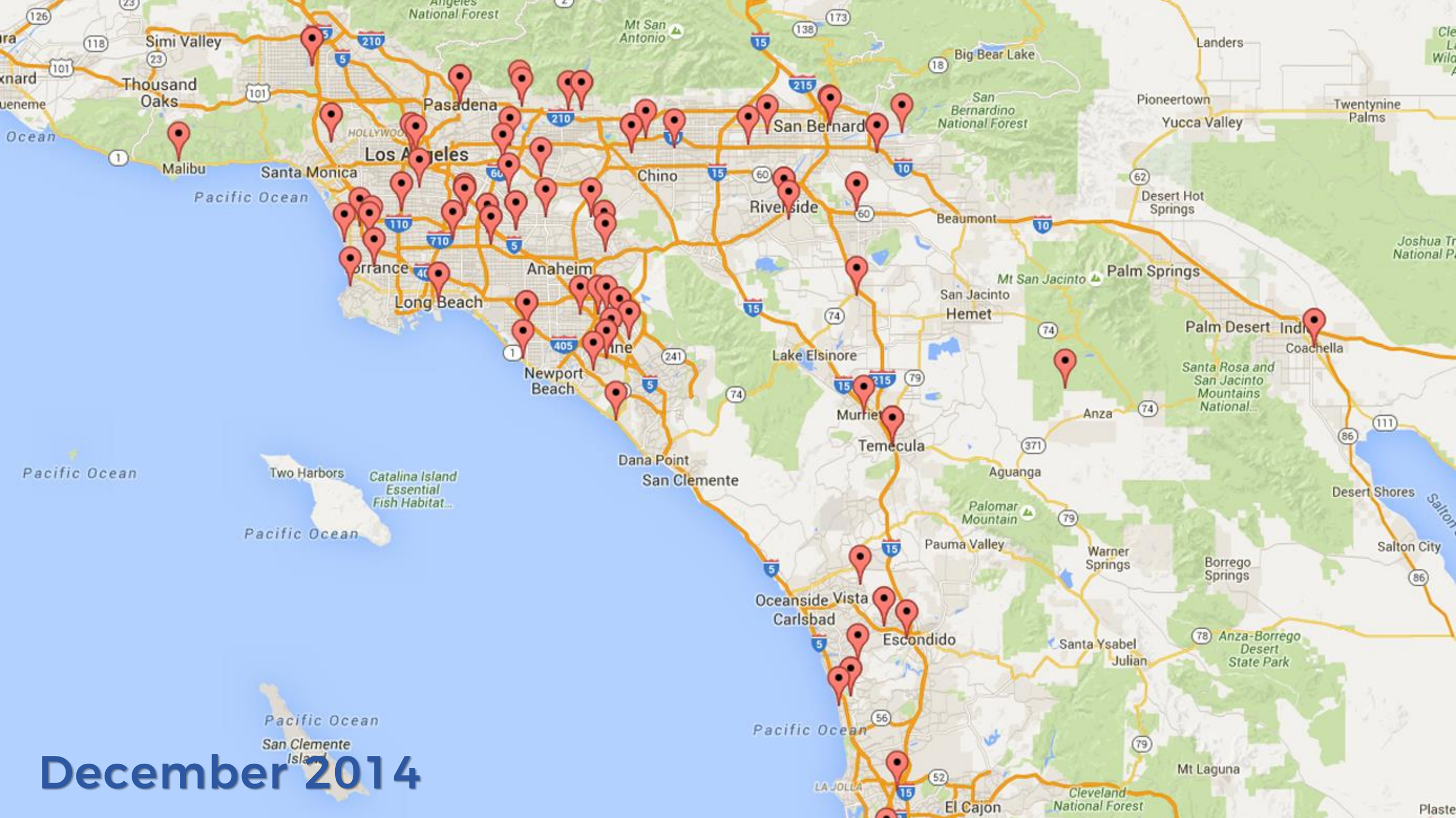

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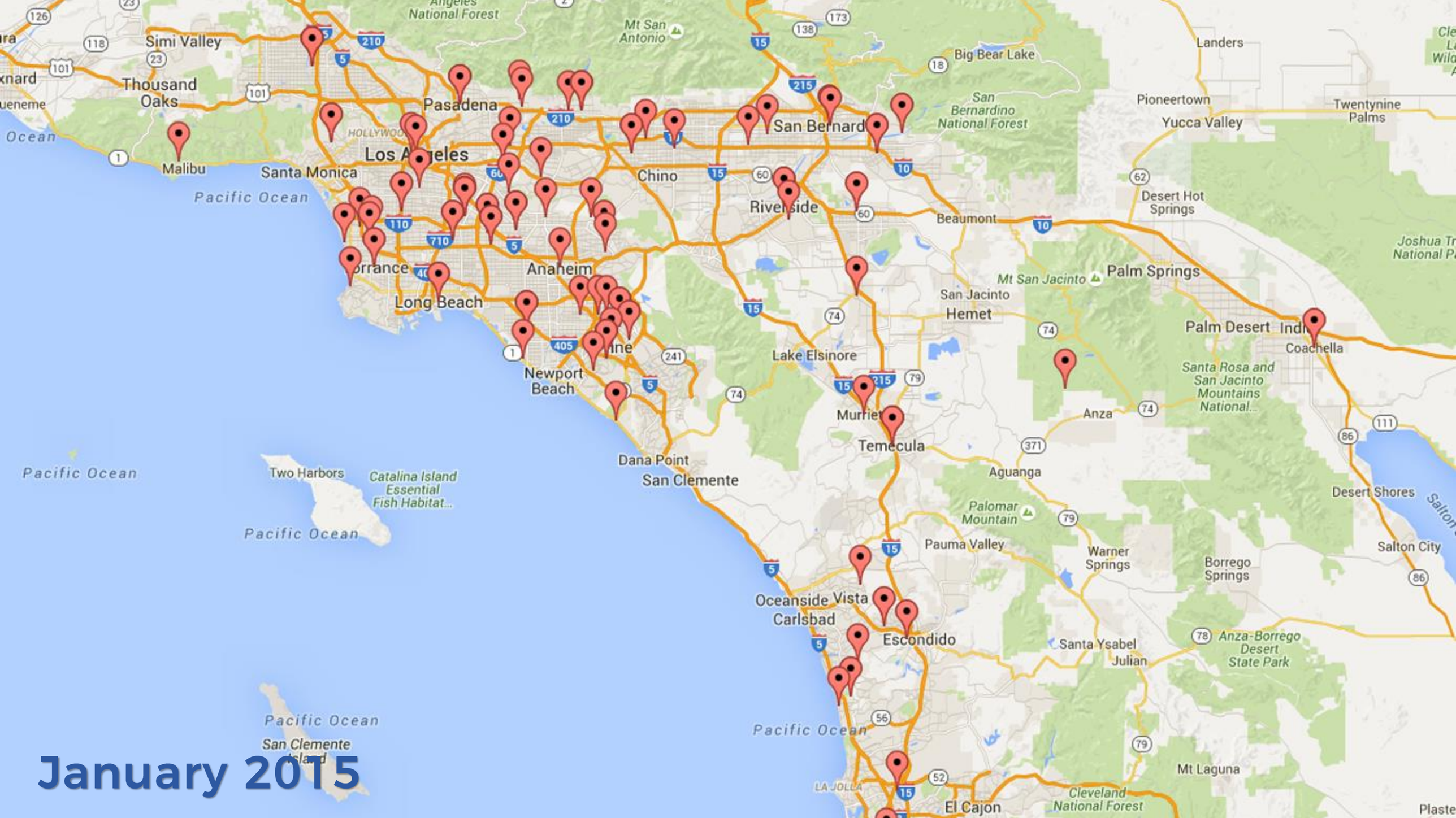

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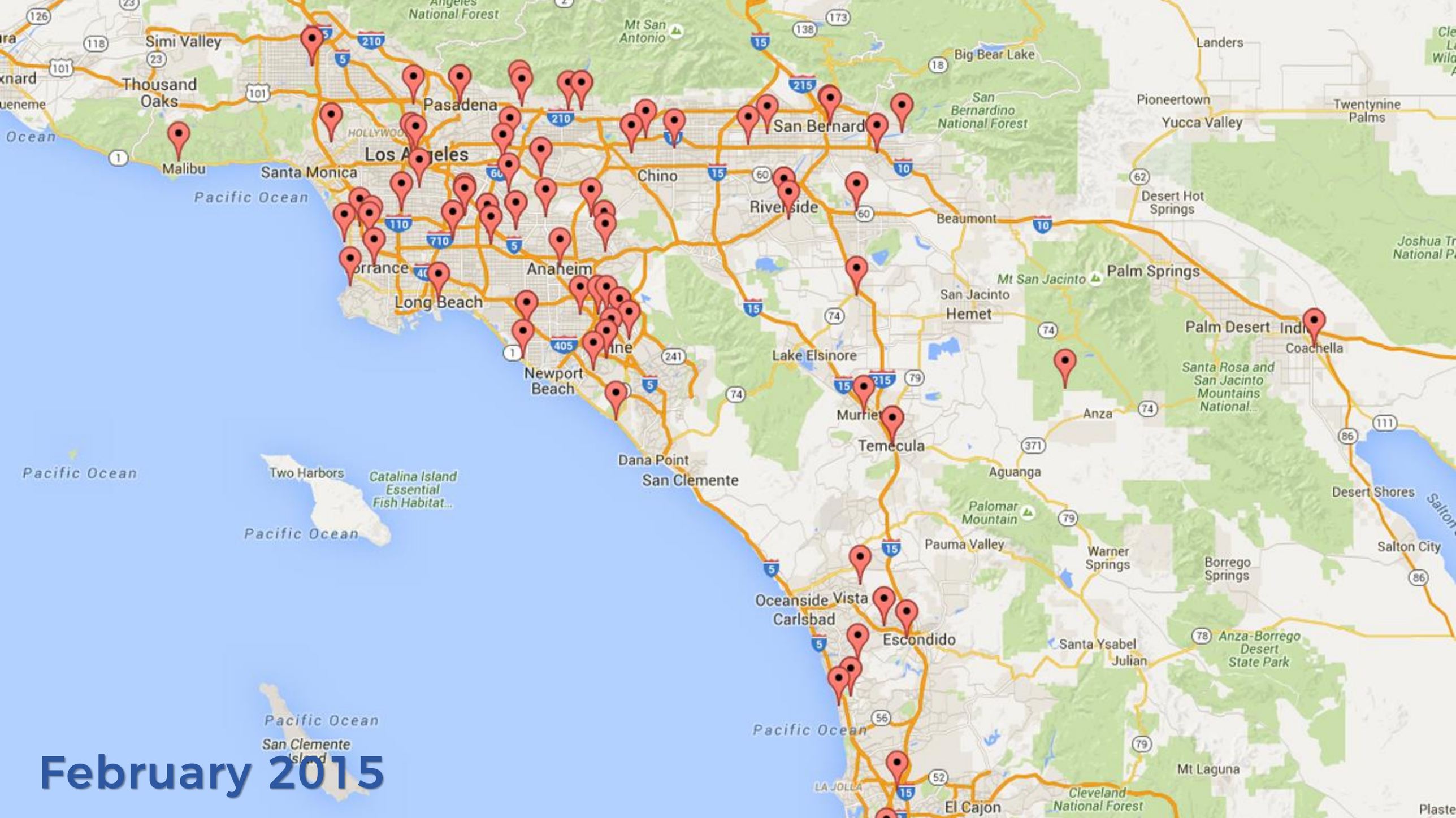

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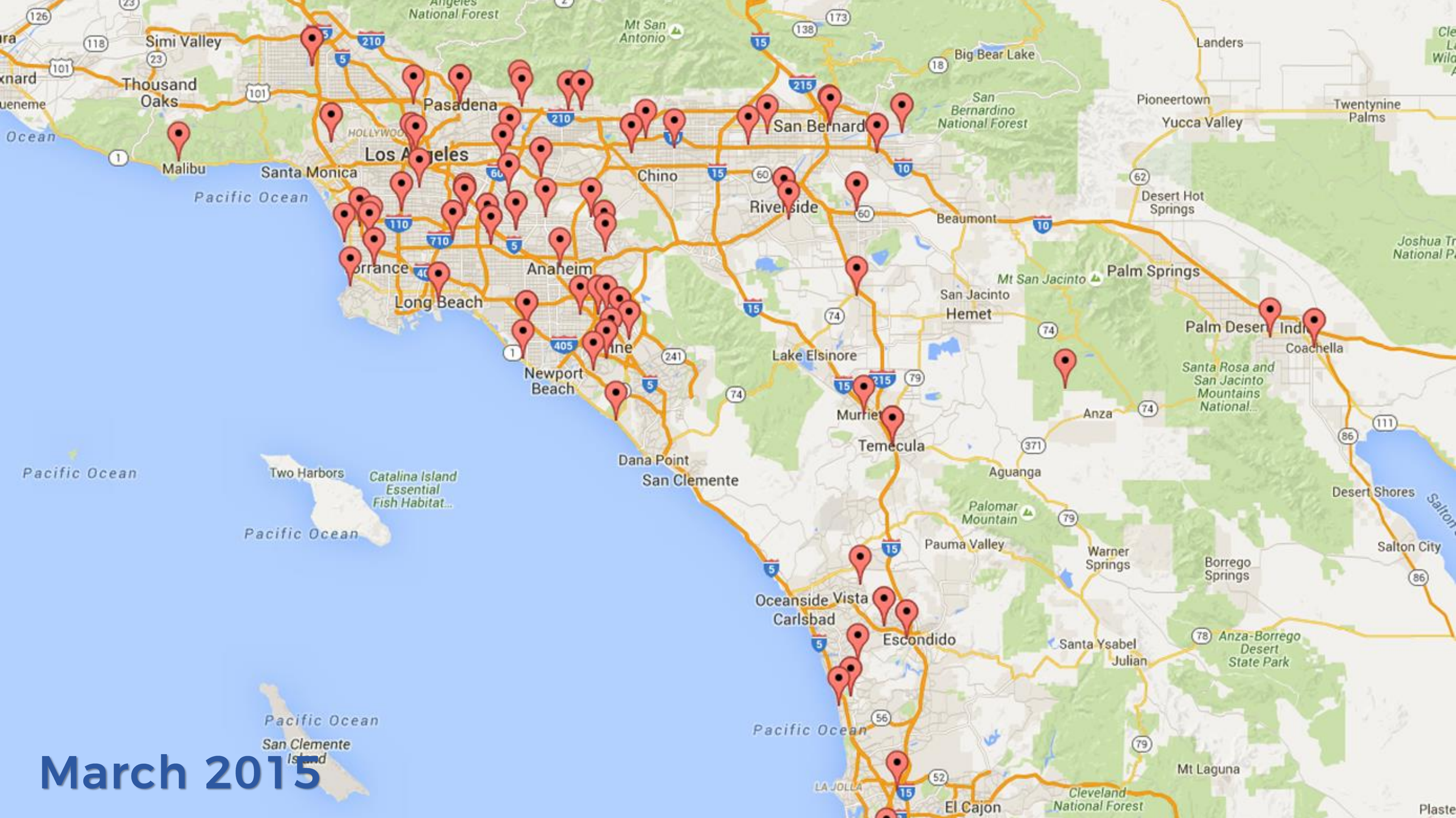
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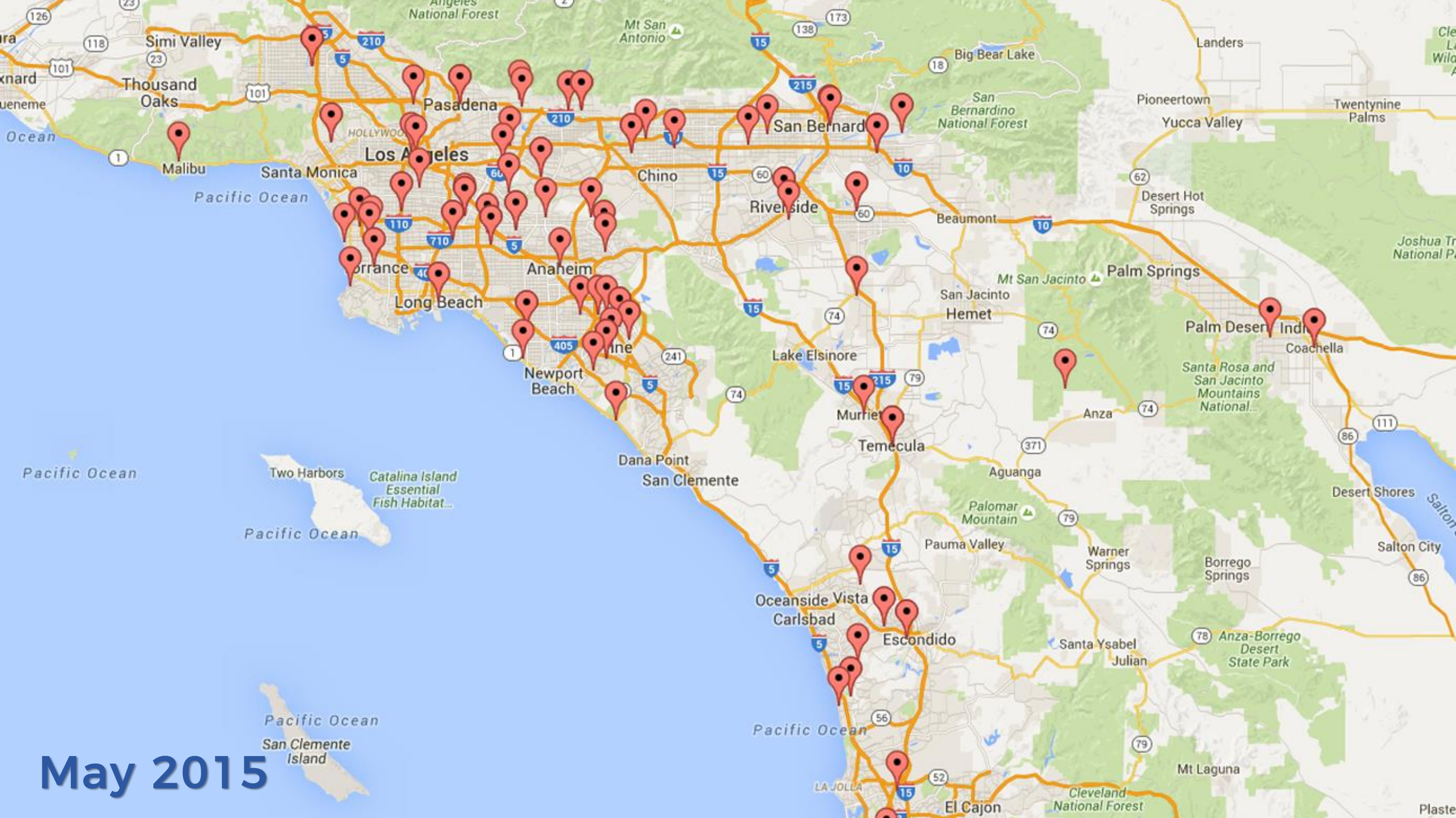
March 2015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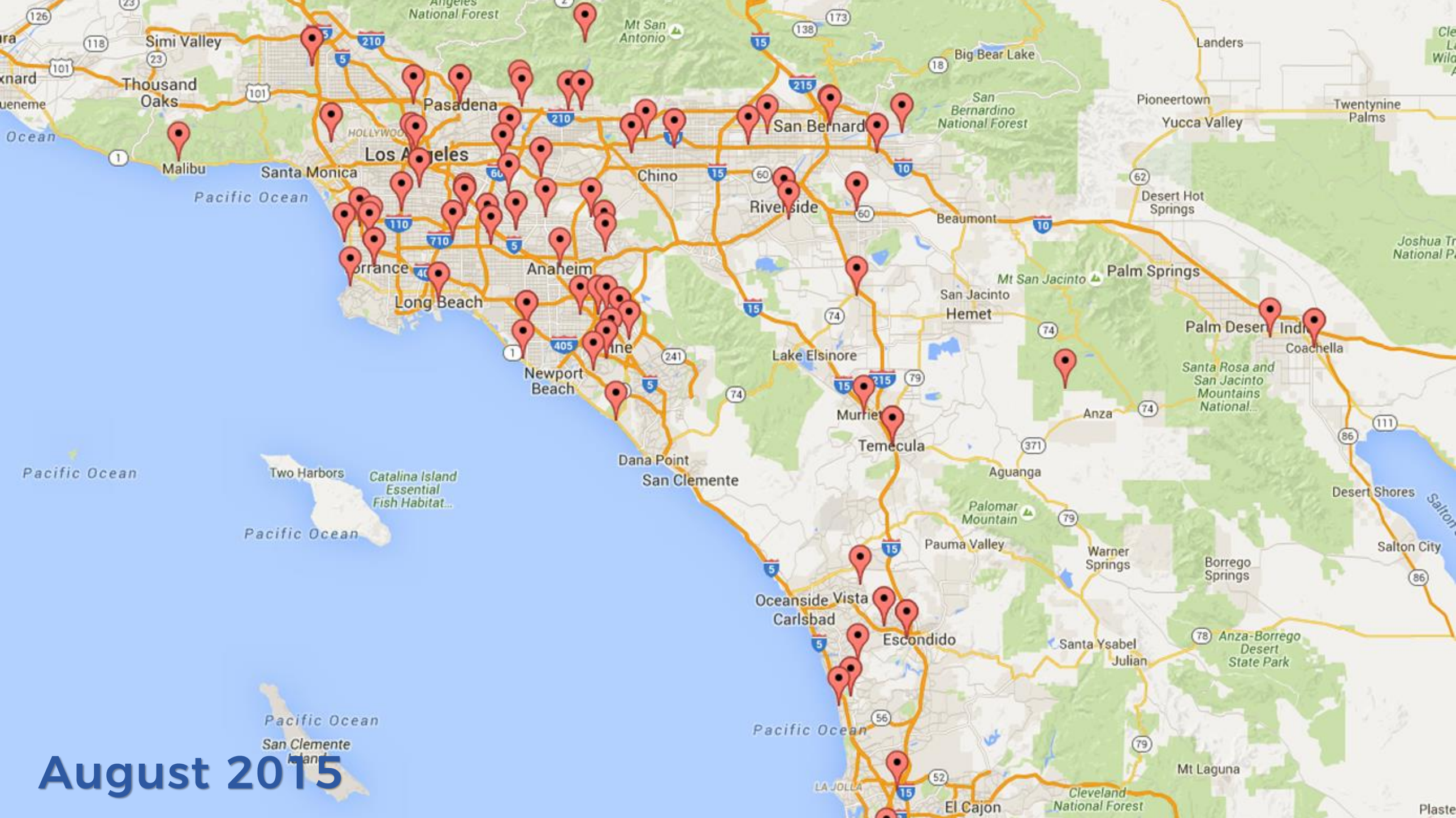
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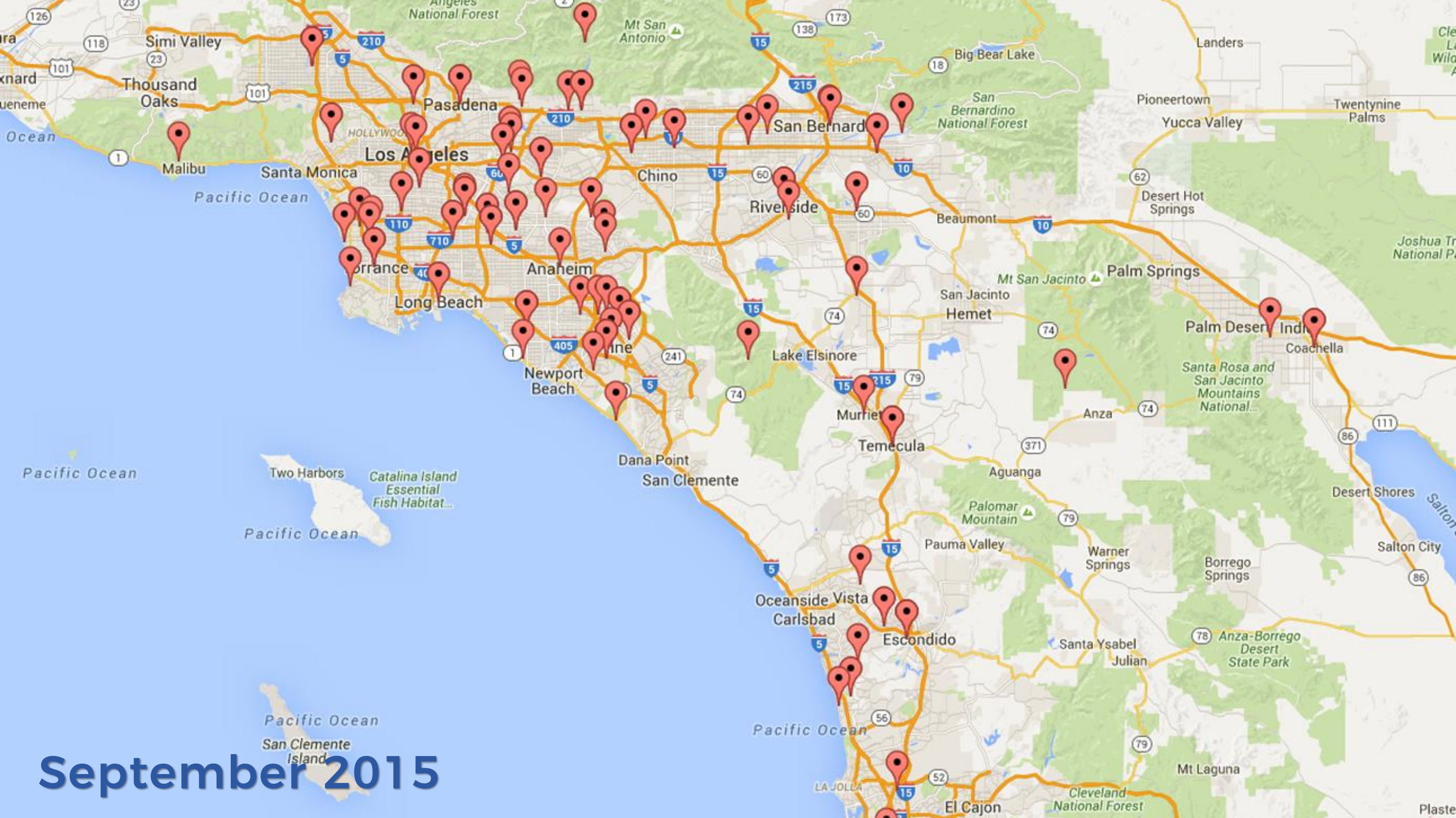
August 2015



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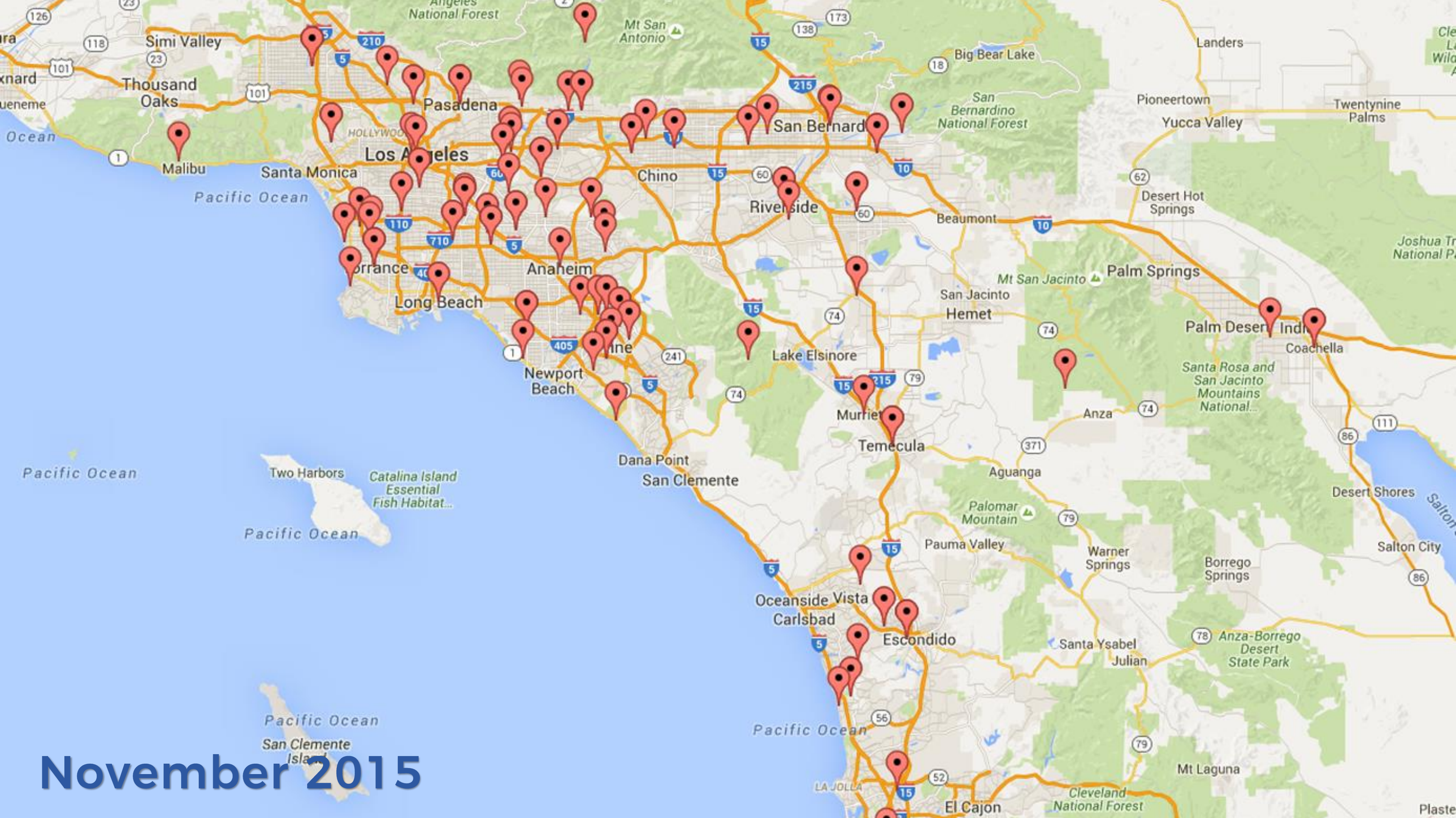

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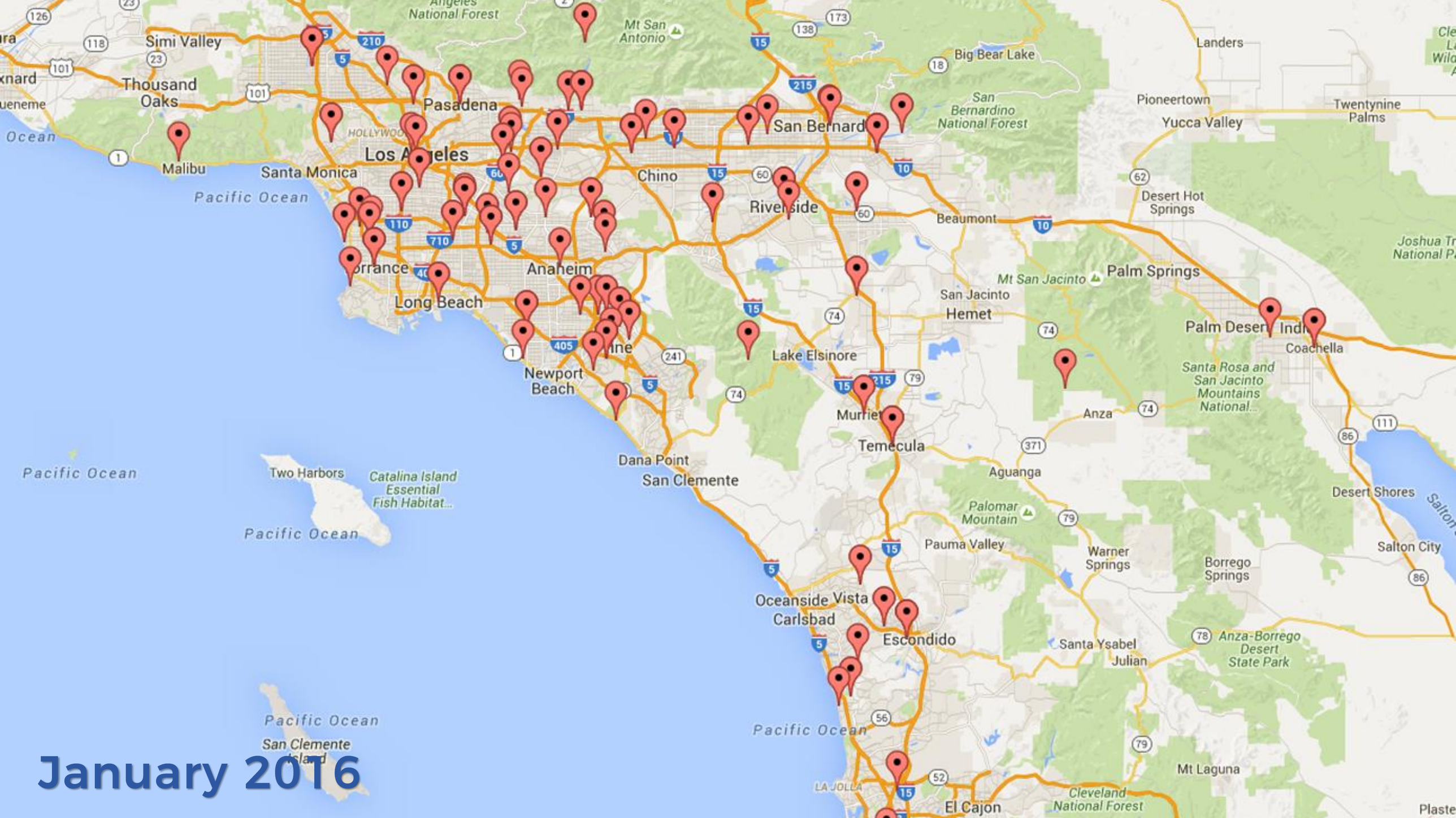

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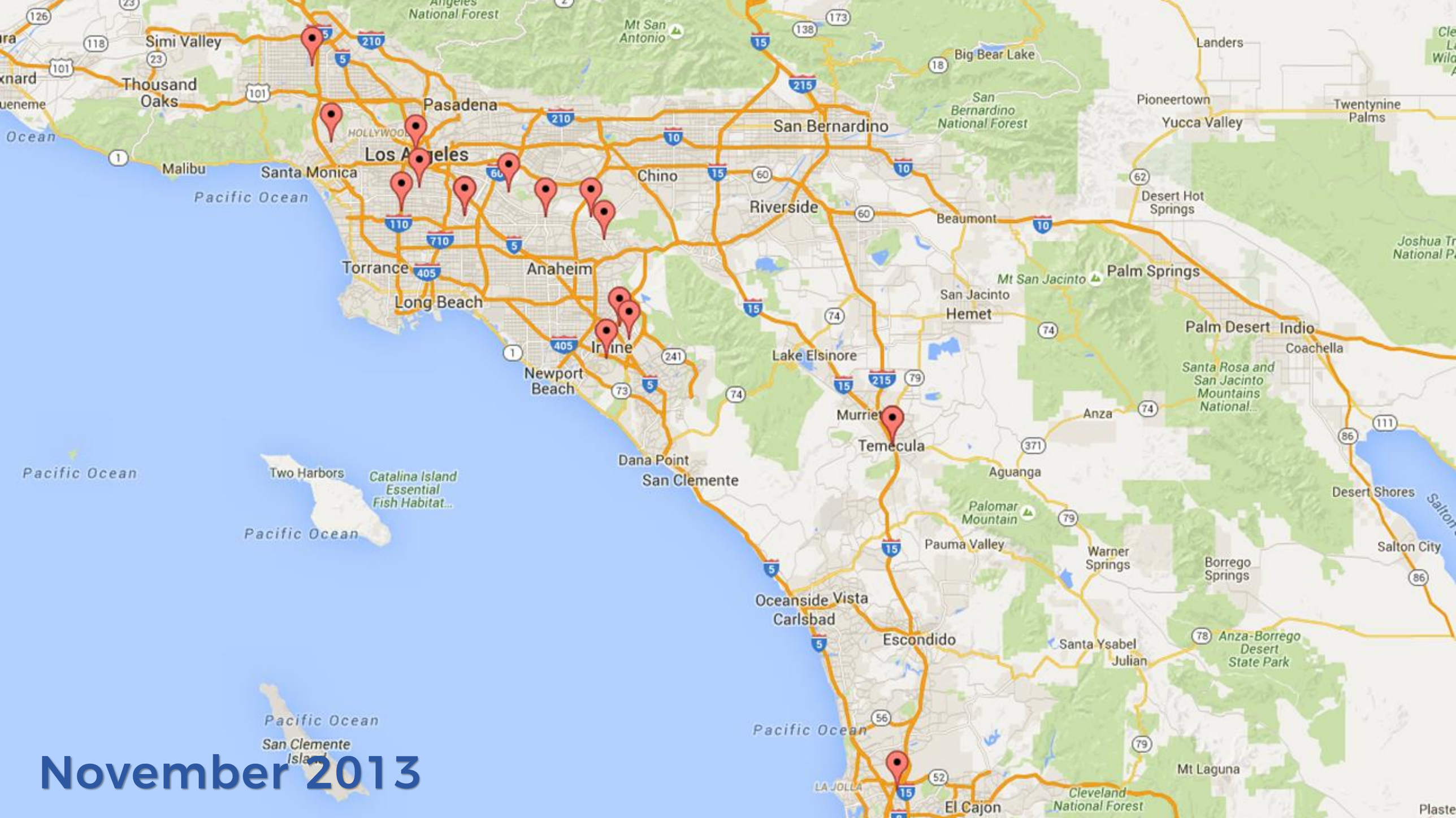

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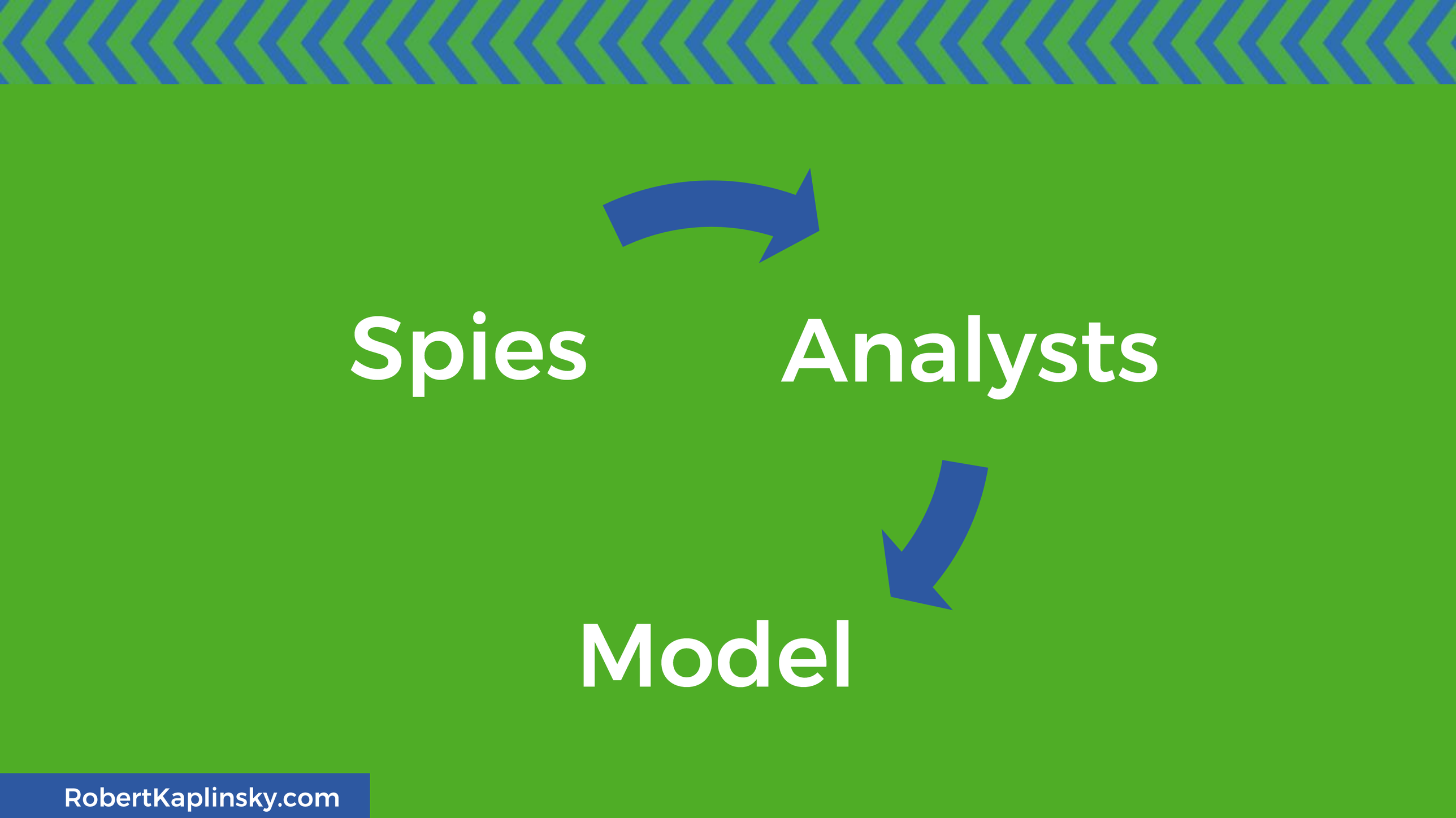
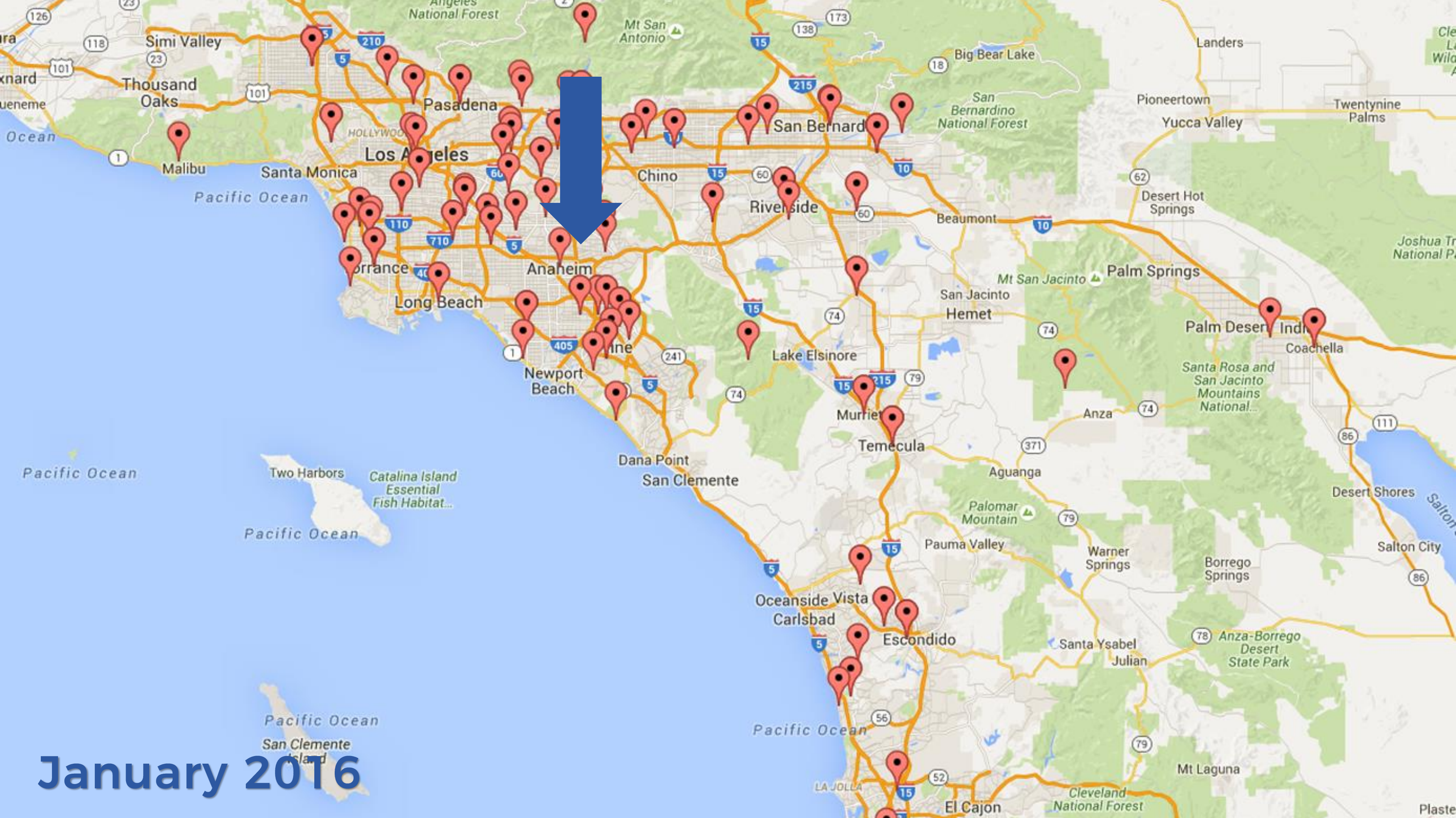

Spies
Analysts
Model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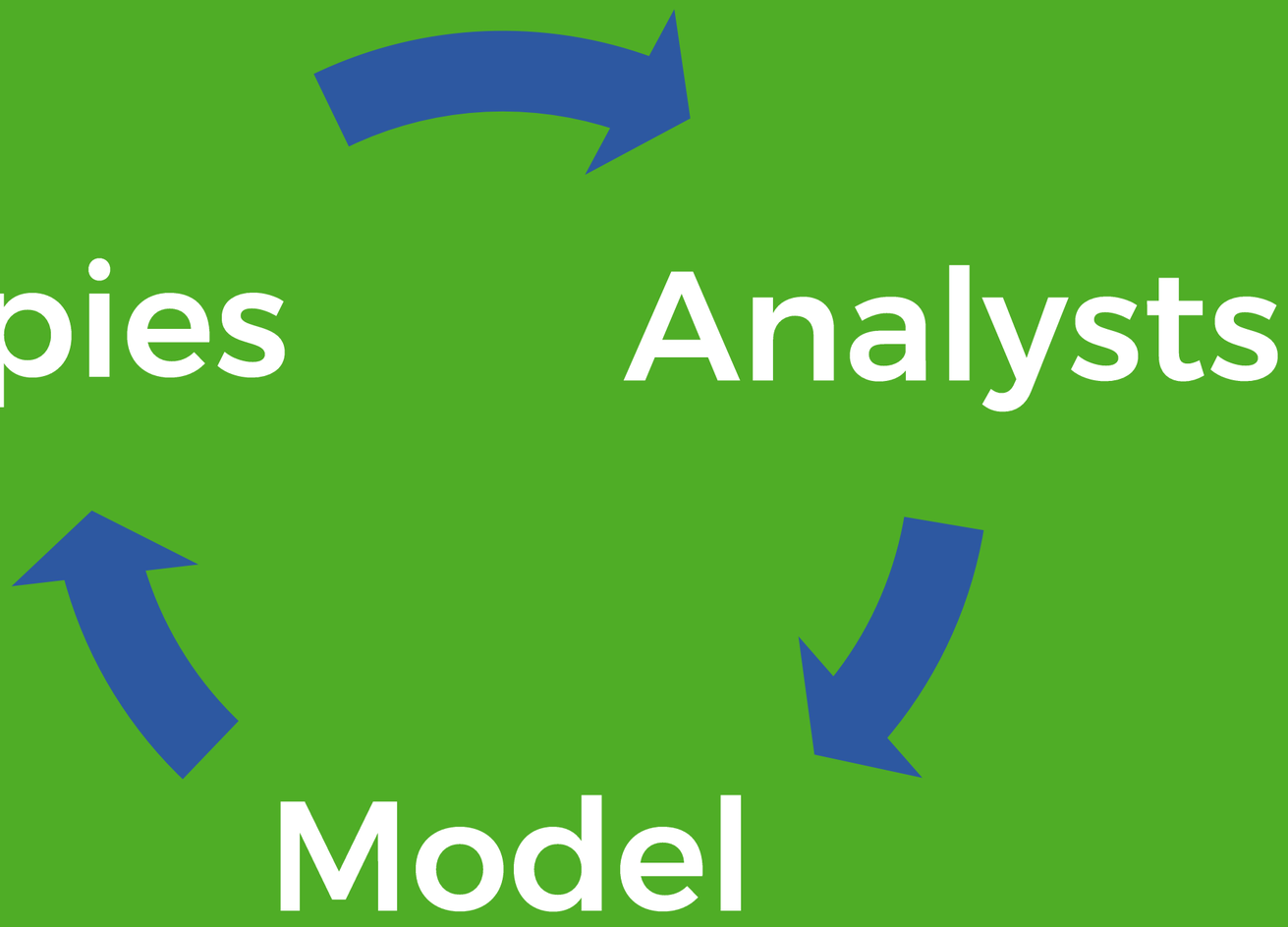
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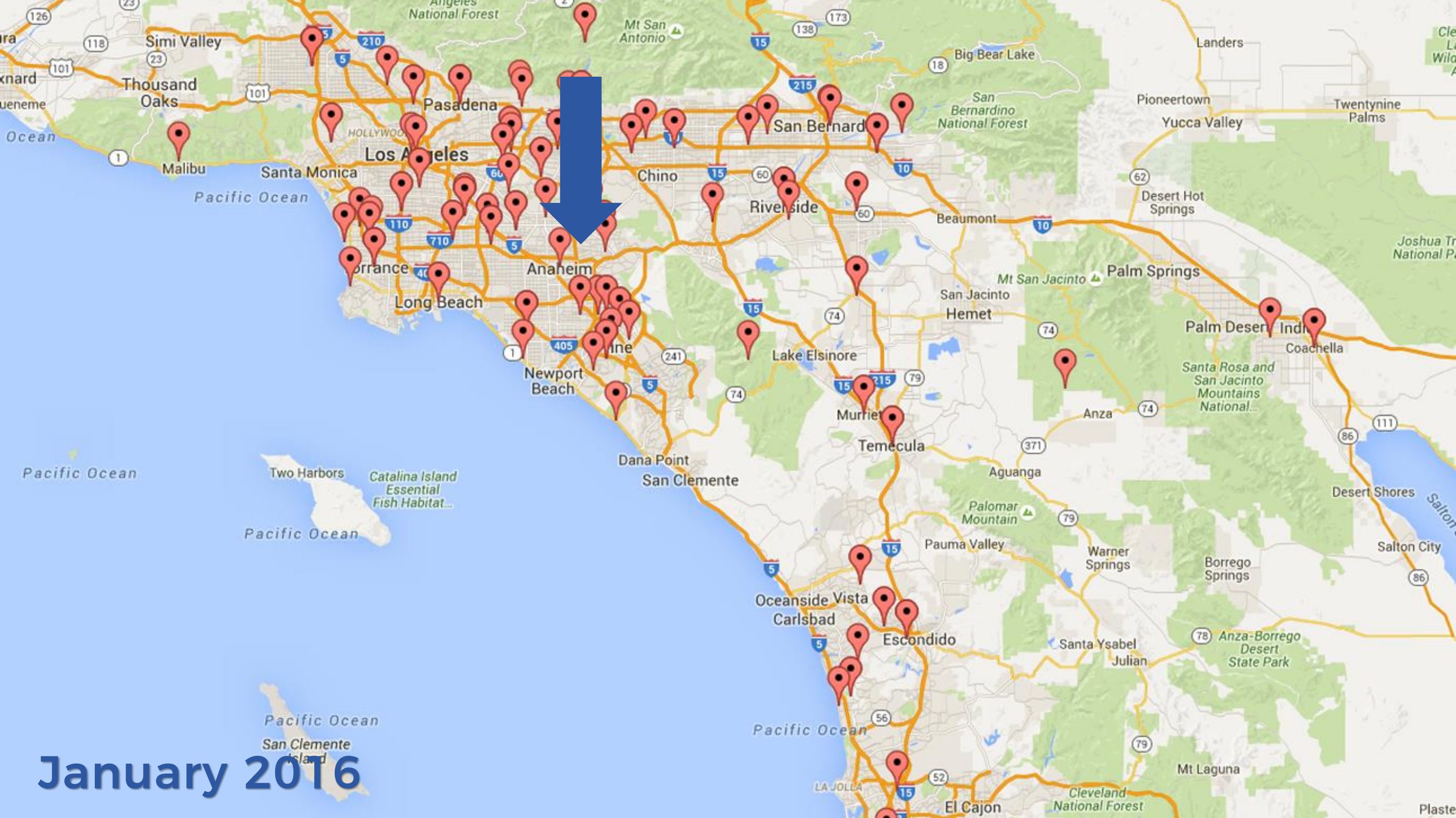
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All models are wrong, but some are useful.

GEORGE E. P. BOX

Classic Mix

20 Singles

LAY'S® Classic Potato Chips, DORITOS® Nacho Cheese Flavored Tortilla Chips, DORITOS® COOL RANCH® Flavored Tortilla Chips, CHEETOS® Crunchy Cheese Flavored Snacks, SUNCHIPS® Original Multigrain Snacks, FRITOS® Original Corn Chips (All 1 OZ. Each)

20 INDIVIDUAL BAGS: 1 OZ. EACH, TOTAL NET WT. 20 OZ. (1 LB. 4 OZ.) 567 g

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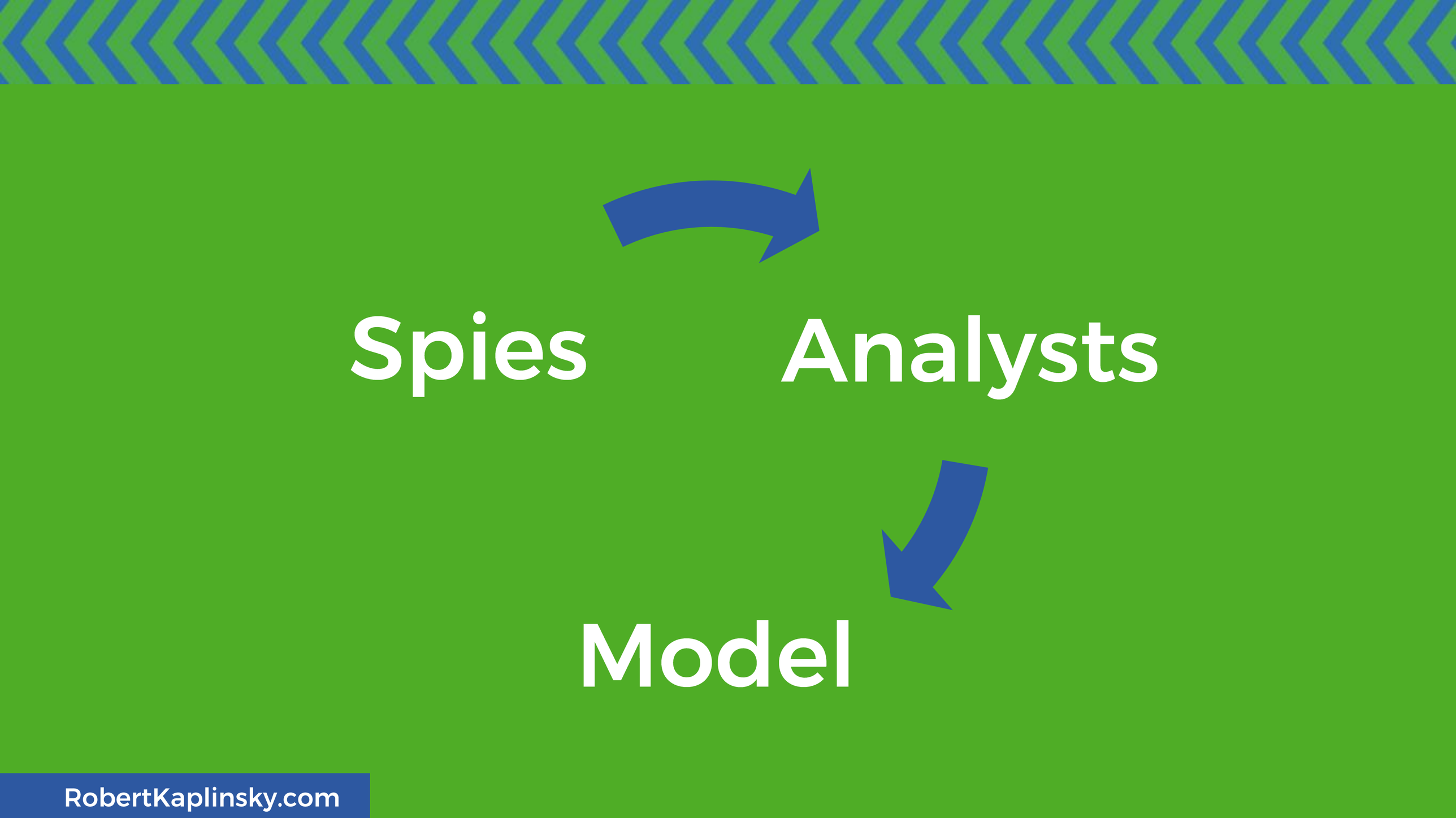
Spies
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Model

THINKING TIME

RobertKaplinsky.com

Robert Kaplinsky
@robertkaplinsky

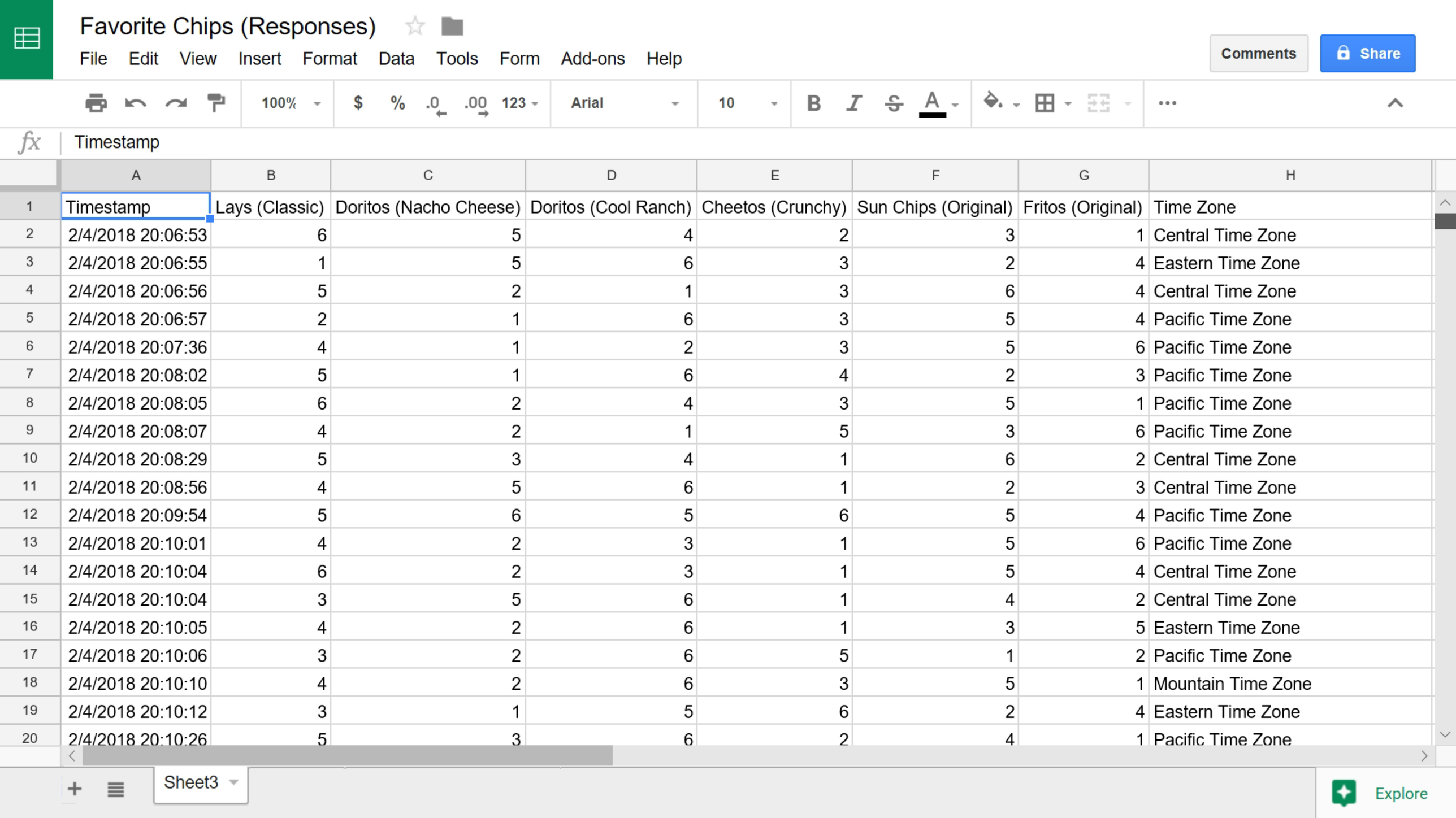
Hey #MTBoS, can you do me a favor and complete this 3 question anonymous survey about your favorite chips? I need data for a presentation. Please RT.
goo.gl/forms/etPtujII… #iteachmath

Favorite Chips
Please complete this anonymous survey. I'll be using this data in a presentation.
docs.google.com

8:05 PM - 4 Feb 2018

63 Retweets **45** Likes

18 63 45



	A	B	C	D	E	F	G	H
1	Timestamp	Lays (Classic)	Doritos (Nacho Cheese)	Doritos (Cool Ranch)	Cheetos (Crunchy)	Sun Chips (Original)	Fritos (Original)	Time Zone
2	2/4/2018 20:06:53	6	5	4	2	3	1	Central Time Zone
3	2/4/2018 20:06:55	1	5	6	3	2	4	Eastern Time Zone
4	2/4/2018 20:06:56	5	2	1	3	6	4	Central Time Zone
5	2/4/2018 20:06:57	2	1	6	3	5	4	Pacific Time Zone
6	2/4/2018 20:07:36	4	1	2	3	5	6	Pacific Time Zone
7	2/4/2018 20:08:02	5	1	6	4	2	3	Pacific Time Zone
8	2/4/2018 20:08:05	6	2	4	3	5	1	Pacific Time Zone
9	2/4/2018 20:08:07	4	2	1	5	3	6	Pacific Time Zone
10	2/4/2018 20:08:29	5	3	4	1	6	2	Central Time Zone
11	2/4/2018 20:08:56	4	5	6	1	2	3	Central Time Zone
12	2/4/2018 20:09:54	5	6	5	6	5	4	Pacific Time Zone
13	2/4/2018 20:10:01	4	2	3	1	5	6	Pacific Time Zone
14	2/4/2018 20:10:04	6	2	3	1	5	4	Central Time Zone
15	2/4/2018 20:10:04	3	5	6	1	4	2	Central Time Zone
16	2/4/2018 20:10:05	4	2	6	1	3	5	Eastern Time Zone
17	2/4/2018 20:10:06	3	2	6	5	1	2	Pacific Time Zone
18	2/4/2018 20:10:10	4	2	6	3	5	1	Mountain Time Zone
19	2/4/2018 20:10:12	3	1	5	6	2	4	Eastern Time Zone
20	2/4/2018 20:10:26	5	3	6	2	4	1	Pacific Time Zone

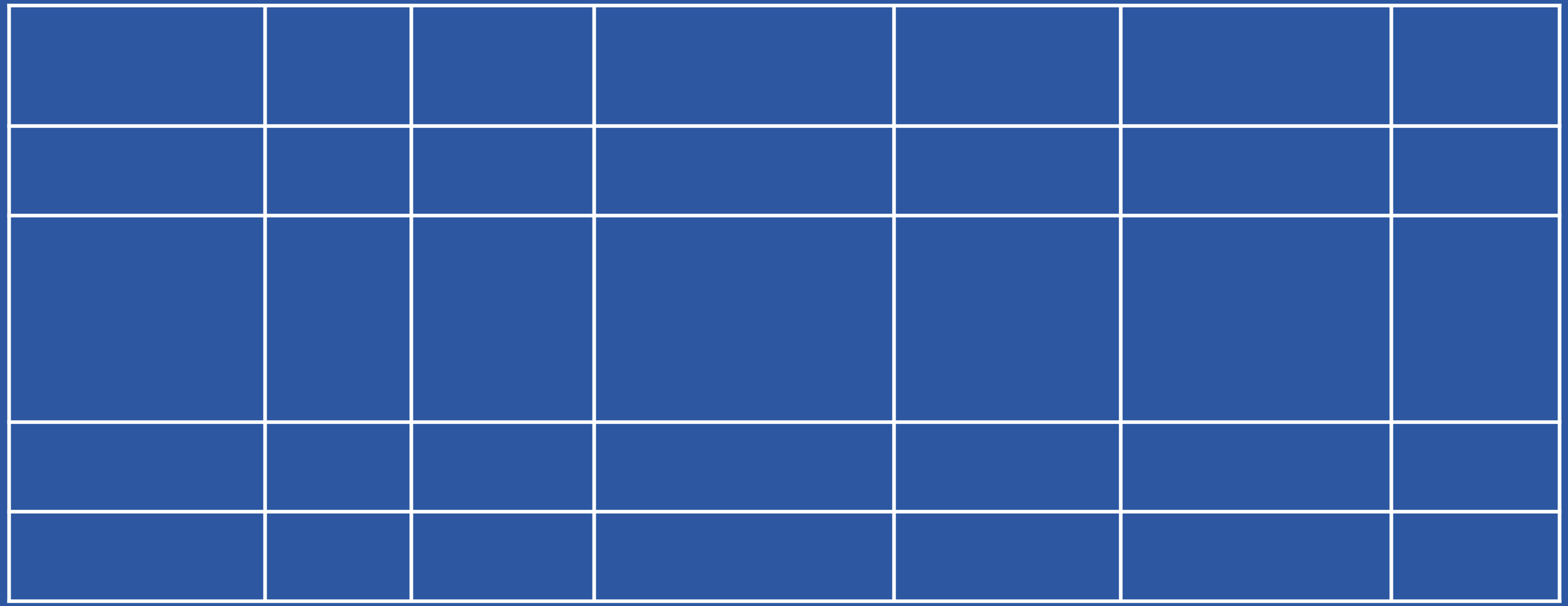
THINKING TIME

- The available data includes:
  - Lays, Nacho Cheese Doritos, Cool Ranch Doritos, Cheetos, Sun Chips, and Fritos ranked from 1 to 6
  - Geographic region: West, Central, or Eastern

ANALYSTS' JOB FOR THE TOP 1

1. Count all the first place votes for each chip type.
2. Divide the total first place votes for each chip type by the total number of votes.
3. Multiply that fraction by 20 to find how many bags there would be in a twenty pack, rounding as necessary.

ANALYSTS' EXAMPLE



CHIP BAG RESULTS

Kate Hayes
@MsHayesOG

Follow

We used a @robertkaplinsky video scinario to talk about chip bags. The lesson here was how math applies to the real world, solving word problems, and spies/analysts 😉😎🤓 the best part was reading student reflections of what they learned today ❤️🤗
@oakgrovees @WCPSS @OtterBias

8:32 AM - 14 Feb 2019

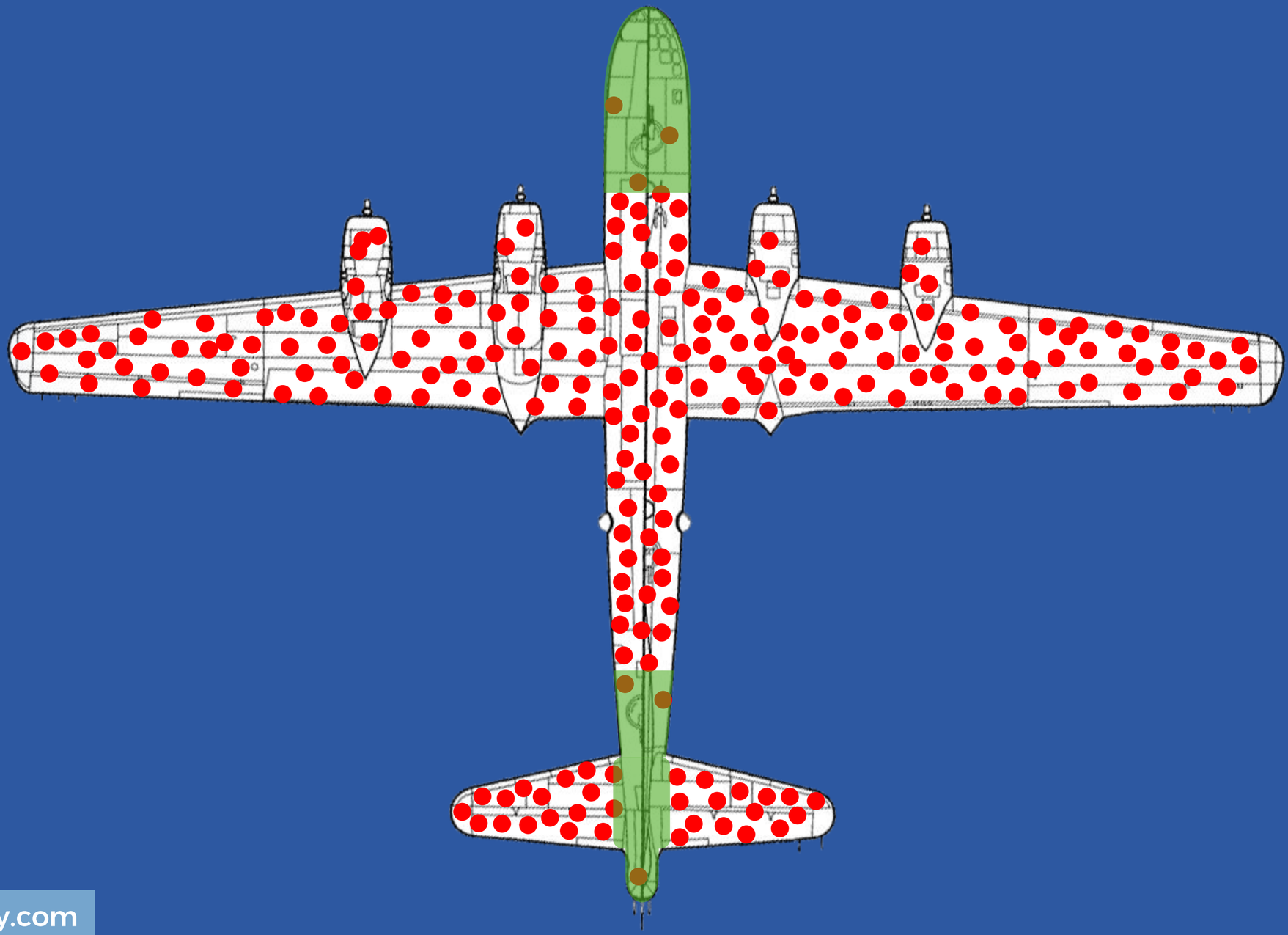
2 Retweets **18** Likes

2 2 18

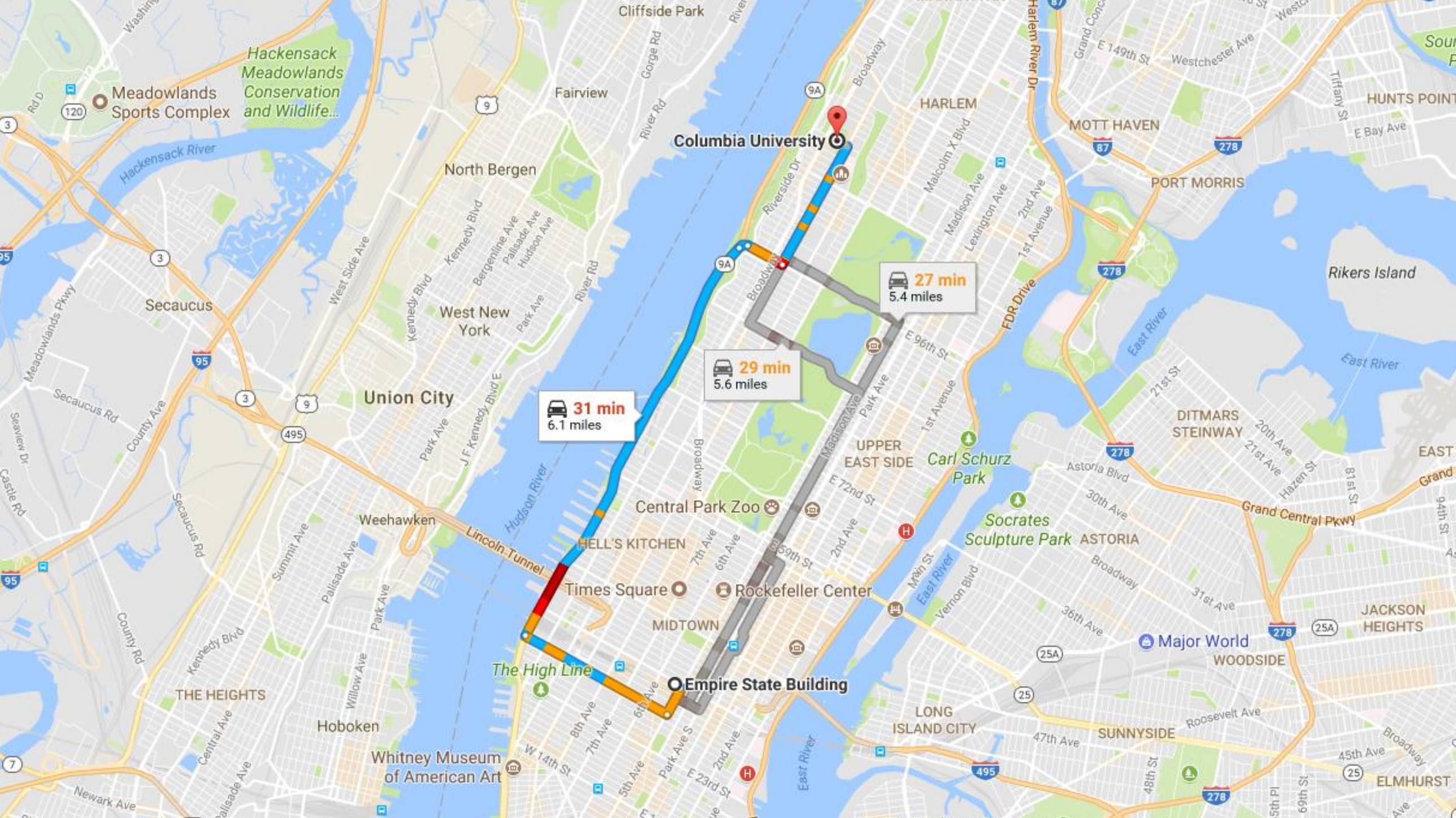
GOALS

- [x] HOW DO WE MAKE SENSE OF MATH MODELING?
- [ ] IS IT JUST ANSWERING QUESTIONS?
- [ ] HOW DO YOU PROFIT FROM MATH MODELING?
- [ ] HOW DO WE HELP OUR STUDENTS IMPROVE?
- [ ] WHERE CAN WE FIND MORE RESOURCES?

224612



- ~~How do we protect our planes?~~
- ~~Which parts of the plane are being hit by the most bullets?~~
- Which parts of the plane are the most critical to protect?



Columbia University
Empire State Building
27 min
5.4 miles
29 min
5.6 miles
31 min
6.1 miles
Cliffside Park
Fairview
North Bergen
Meadowlands Sports Complex
Hackensack Meadowlands Conservation and Wildlife...
Hackensack River
Secaucus
West New York
Union City
Weehawken
Lincoln Tunnel
Hudson River
HARLEM
MOTT HAVEN
PORT MORRIS
HUNTS POINT
Rikers Island
East River
UPPER EAST SIDE
Carl Schurz Park
DITMARS STEINWAY
Socrates Sculpture Park
ASTORIA
Grand Central Pkwy
Central Park Zoo
HELL'S KITCHEN
Times Square
Rockefeller Center
MIDTOWN
The High Line
THE HEIGHTS
Hoboken
Whitney Museum of American Art
LONG ISLAND CITY
SUNNYSIDE
Major World
WOODSIDE
JACKSON HEIGHTS
ELMHURST
FDR Drive
Harlem River Dr
Riverside Dr
Broadway
Madison Ave
Park Ave
1st Avenue
2nd Ave
Lexington Ave
Malcolm X Blvd
Westchester Ave
E 149th St
E 96th St
E 72nd St
59th St
W 14th St
E 23rd St
Roosevelt Ave
47th Ave
45th Ave
36th Ave
31st Ave
30th Ave
Astoria Blvd
Vernon Blvd
Main St
Park Ave S
2nd Ave
6th Ave
7th Ave
8th Ave
5th Ave
Willow Ave
Central Ave
Palisade Ave
Summit Ave
Kennedy Blvd
County Ave
Secaucus Rd
Meadowlands Pkwy
Newark Ave
Castle Rd
Seaview Dr
County Rd
Gorge Rd
River Rd
Bergenline Ave
Pallisade Ave
Hudson Ave
West Side Ave
J F Kennedy Blvd E
Park Ave
Kennedy Blvd
Westchester Ave
Tiffany St
E Bay Ave
21st St
20th Ave
21st Ave
Hazen St
81st St
94th St
48th St
69th St
5th Pl

- ~~How do we find the fastest route for each customer?~~
- How do we find the fastest route for each customer without impacting our other customers?

Classic Mix

20 Singles

4 LAY'S® Classic Potato Chips, 4 DORITOS® Nacho Cheese Flavored Tortilla Chips, 2 DORITOS® COOL RANCH® Flavored Tortilla Chips, 4 CHEETOS® Crunchy Cheese Flavored Snacks, 2 SUNCHIPS® Original Multigrain Snacks, 4 FRITOS® Original Corn Chips (All 1 OZ. Each)

20 INDIVIDUAL BAGS: 1 OZ. EACH, TOTAL NET WT. 20 OZ. (1 LB. 4 OZ.) 567 g

⚠ WARNING: PREVENT ENTANGLEMENT AND STRANGULATION. KEEP THIS BAG AWAY FROM YOUNG CHILDREN. IT IS NOT A TOY.

- ~~How many of each flavor should we put in a package?~~
- ~~How many of each flavor should we put in a package for each region?~~
- How can we determine if the extra cost of creating different packages will make us more money?

Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later.

CCSS MATH PRACTICE 4

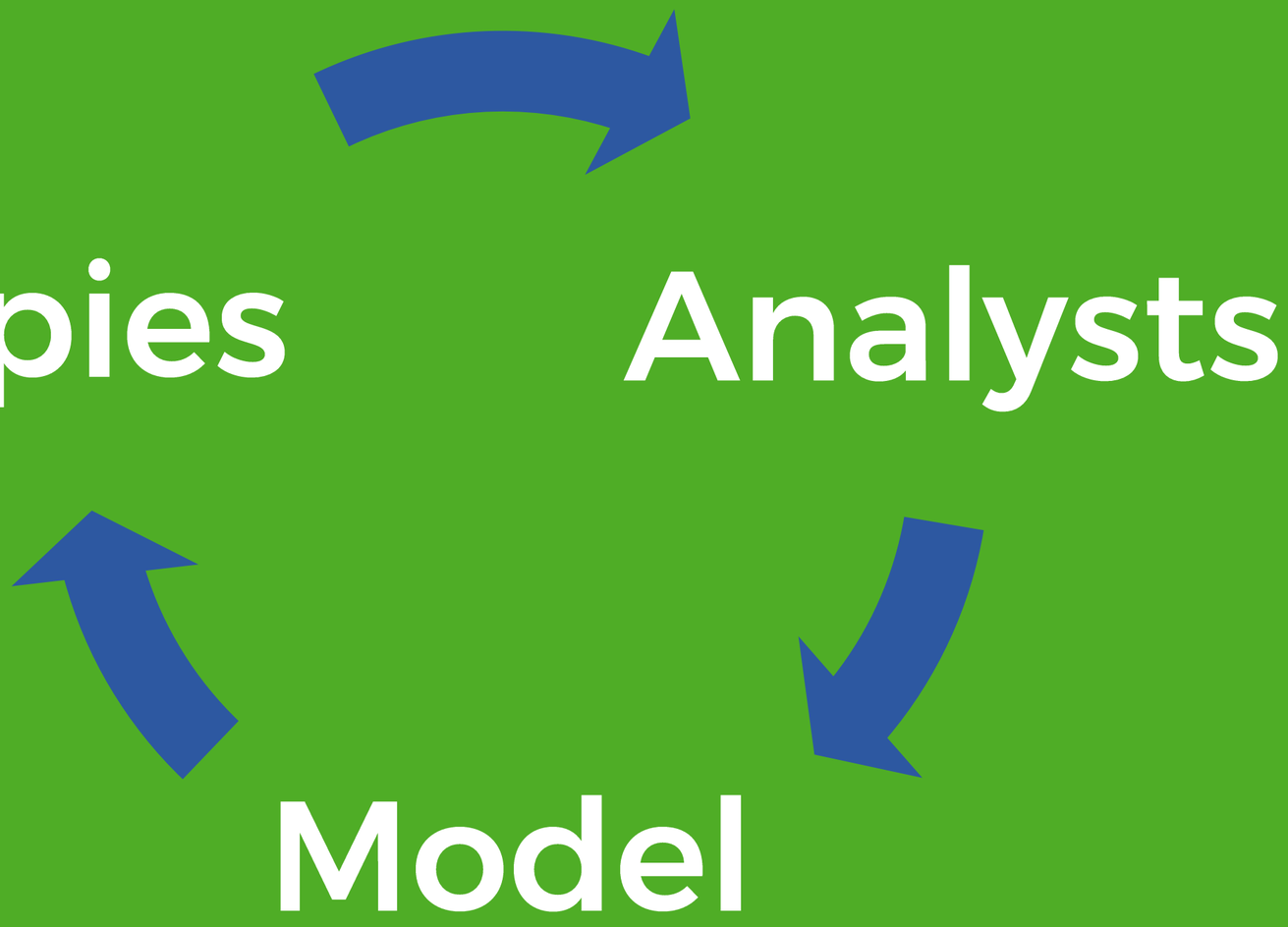
They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

CCSS MATH PRACTICE 4

GOALS

- [x] HOW DO WE MAKE SENSE OF MATH MODELING?
- [x] IS IT JUST ANSWERING QUESTIONS?
- [ ] HOW DO YOU PROFIT FROM MATH MODELING?
- [ ] HOW DO WE HELP OUR STUDENTS IMPROVE?
- [ ] WHERE CAN WE FIND MORE RESOURCES?

TARGET
TARGET PARKING

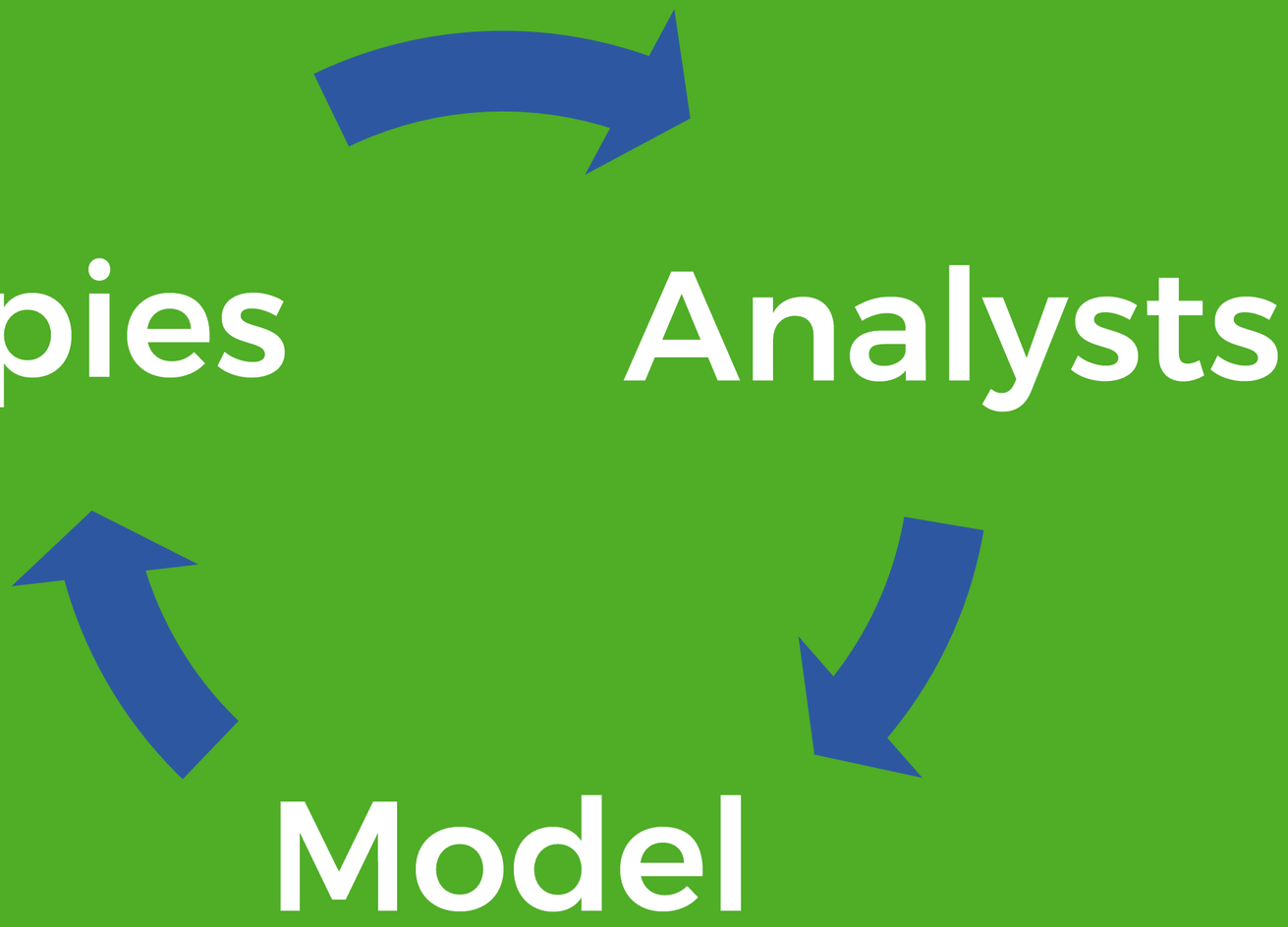

Spies
Analysts
Model

They used 25 products for a pregnancy prediction' score including:

- unscented lotion
- mineral supplements
- cotton balls

Source: New York Times

UNITED


Spies
Analysts
Model

Priority is determined by:

- passenger's fare class
- itinerary
- frequent flyer program membership
- check-in time

Source: United Airlines

Search

Robert | Home

Robert Kaplinsky

- News Feed
- Messenger
- Watch
- Marketplace

Explore

- Pages
- Events
- Groups
- Friend Lists
- On This Day 3
- Insights
- Games 7
- Fundraisers
- Live Video
- Pokes
- See More...

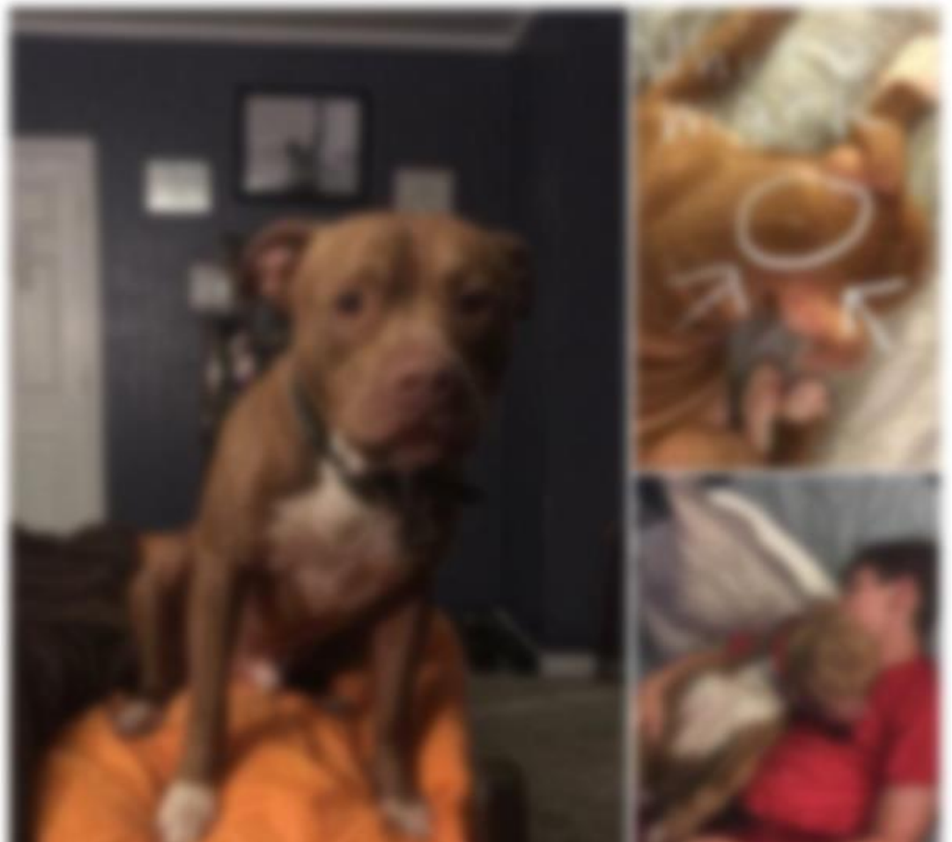
Create

Ad · Page · Group · Event · Fundraiser

Make Post | Photo/Video Album | Live Video

What's on your mind, Robert?

Photo/Video | Feeling/Activity | ...

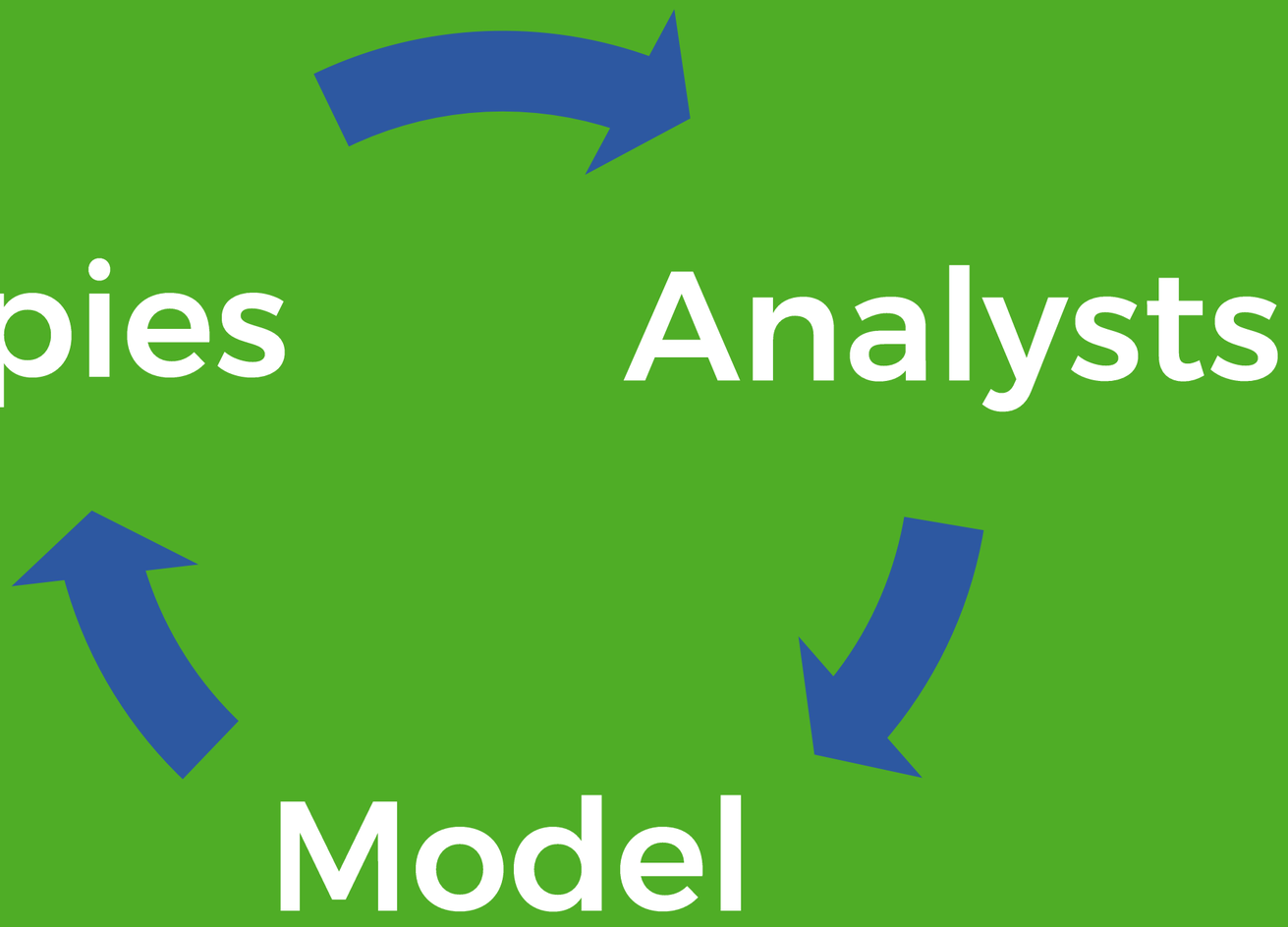


Trending

Watchlist: Latest Episodes

See All

Sponsored Create Ad


Spies
Analysts
Model

The stories that show in your News Feed are influenced by:

- friends you interact with the most
- the number of comments and likes a post receives
- what kind of story it is (ex: photo, video, status update)

Source: Facebook

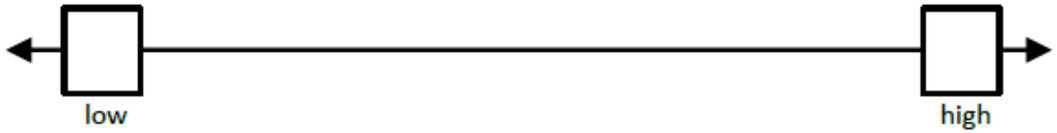
MORE EXAMPLES

- How does US News and World Reports rank colleges?
- How does Google know which results to show?
- How do sports teams know who to draft?
- How does Amazon know what products to recommend?
- How does Zillow estimate home prices?
- How does Pandora know what music to play?
- How does eHarmony know which people to show you?
- How do they figure out who should speak at a conference?

GOALS

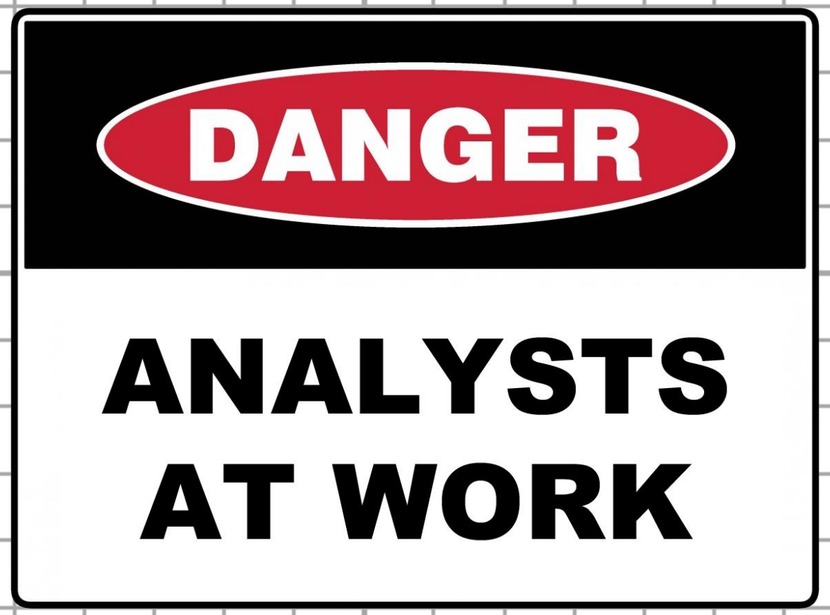
- ☑ HOW DO WE MAKE SENSE OF MATH MODELING?
- ☑ IS IT JUST ANSWERING QUESTIONS?
- ☑ HOW DO YOU PROFIT FROM MATH MODELING?
- ❑ HOW DO WE HELP OUR STUDENTS IMPROVE?
- ❑ WHERE CAN WE FIND MORE RESOURCES?

Name: _____ Period: _____ Date: _____

What problem are you trying to figure out?	What estimates do you have?
	 Place your estimate on the number line.
What info do you already know about the problem?	What info do you need about the problem?
What is your conclusion? How did you reach that conclusion?	

TOP SECRET! SPIES ONLY

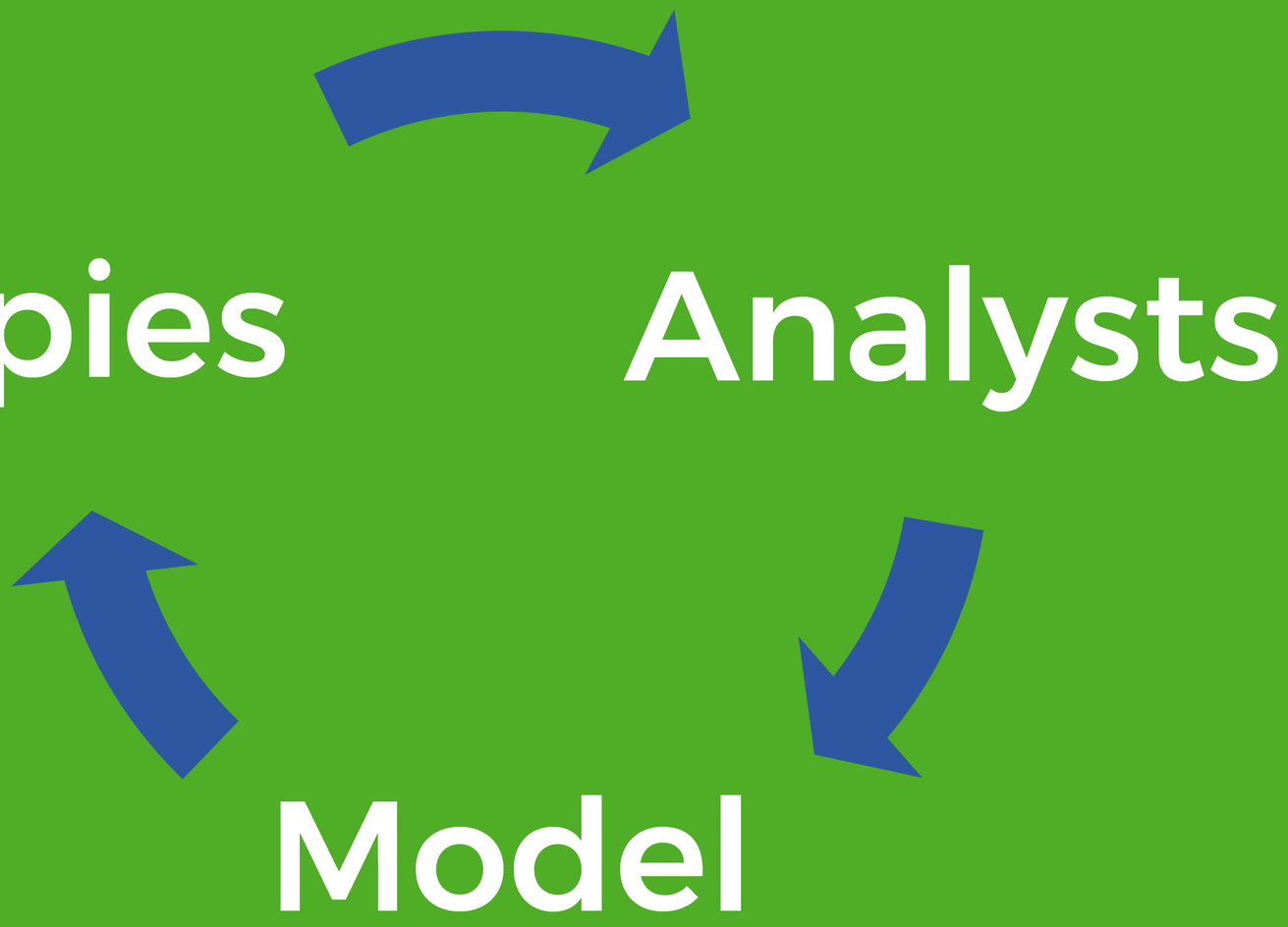
Your work



MODELING EXAMPLES

- ❑ ELEMENTARY SCHOOL
- ❑ MIDDLE SCHOOL
- ❑ HIGH SCHOOL

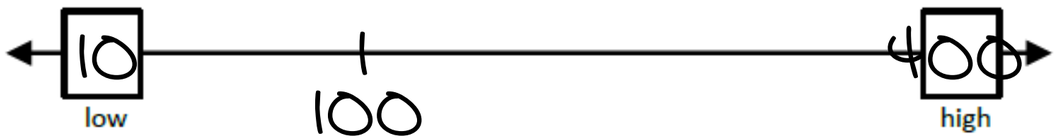
WYFF4.COM
Coca-Cola


Spies
Analysts
Model

THINKING TIME

RobertKaplinsky.com

Name: _____ Period: _____ Date: _____

What problem are you trying to figure out?	What estimates do you have?
How many beverage choices are there?	 Place your estimate on the number line.
What info do you already know about the problem?	**What info do you need about the problem?**
• There are main flavors and added flavors. • Lemonade is yummy.	• How many main flavors are there? • How many added flavors are there? • Can we mix them all together?
What is your conclusion? How did you reach that conclusion?	

COUNT ALL

1
8
16
24
27
32
40
46
no caffeine
25
no caffeine
26
low/no calories
54
62
69
76
84
92
95
103
111
117
125
no caffeine
93
no caffeine
94

COUNT GROUPS

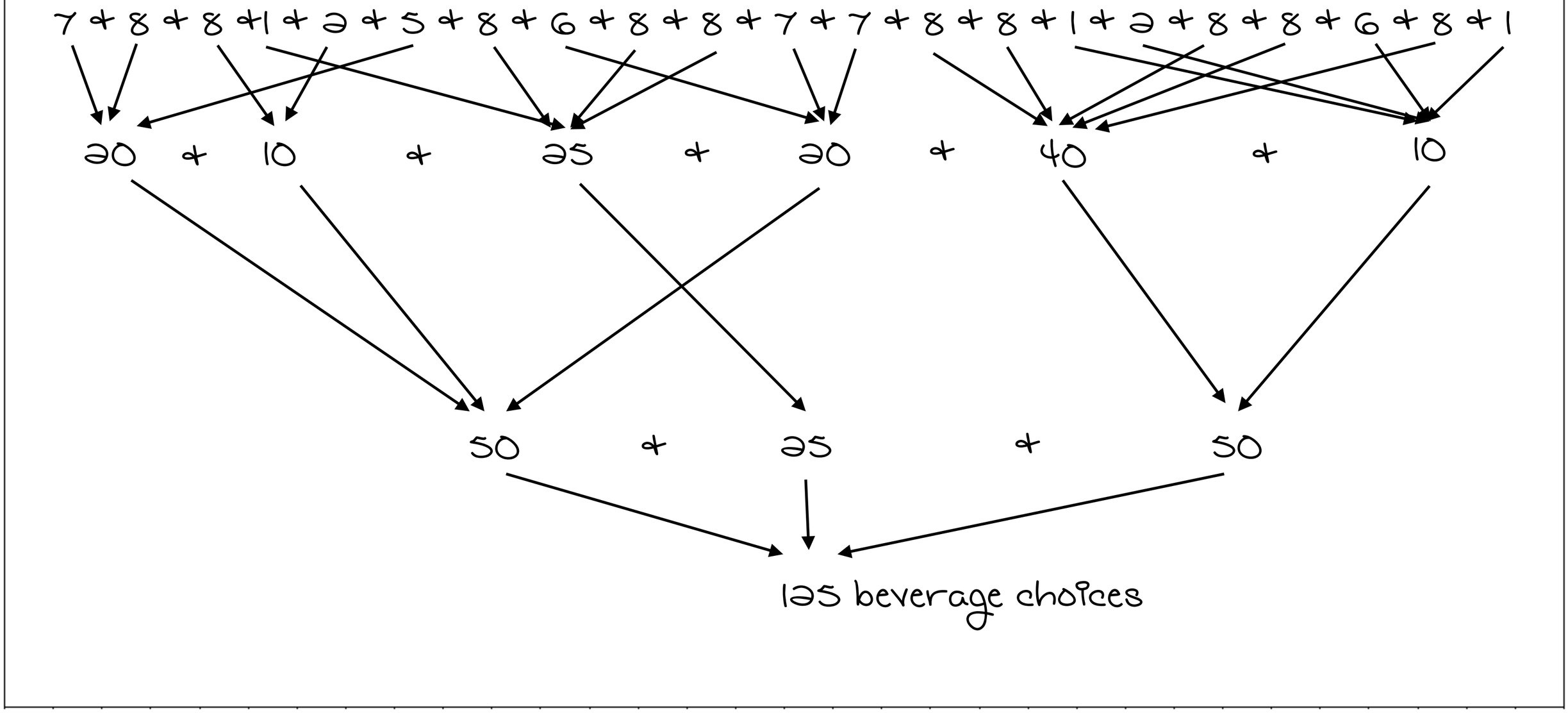
INVENTED STRATEGY

8 8 8 7 7 7 8

low/no calories

8 8 8 8 8 8 8 8 8 8

RobertKaplinsky.com


7 + 8 + 8 + 1 + 2 + 5 + 8 + 6 + 8 + 8 + 7 + 7 + 8 + 8 + 1 + 2 + 8 + 8 + 6 + 8 + 1
20 + 10 + 25 + 20 + 40 + 10
50 + 25 + 50
135 beverage choices

The main attraction for a busload of Dover fifth-graders was supposed to be the Museum of Fine Arts, but that all changed when they stopped by Kelly's Roast Beef and got a glimpse of their soda-drinking future.

At the entrance of Kelly's sat a sleek Coca-Cola Freestyle fountain crafted to resemble an old-fashioned vending machine, but with a twist: a touchscreen computer embedded in the machine gives customers the option of 125 flavors. You can quench your thirst with a Coke or a Sprite, or try something more exotic — Sprite with Grape or a Hi-C Orange Vanilla.

Kelly Hall
@hAllStars4th

Follow

@VgEagles sharing strategies for figuring out @robertkaplinsky's 3 Act math task: How many possible combinations of soda are there in a Coke Freestyle machine? #WEareLakota #CocaCola #3actmathtasks

12:53 PM - 5 Feb 2019

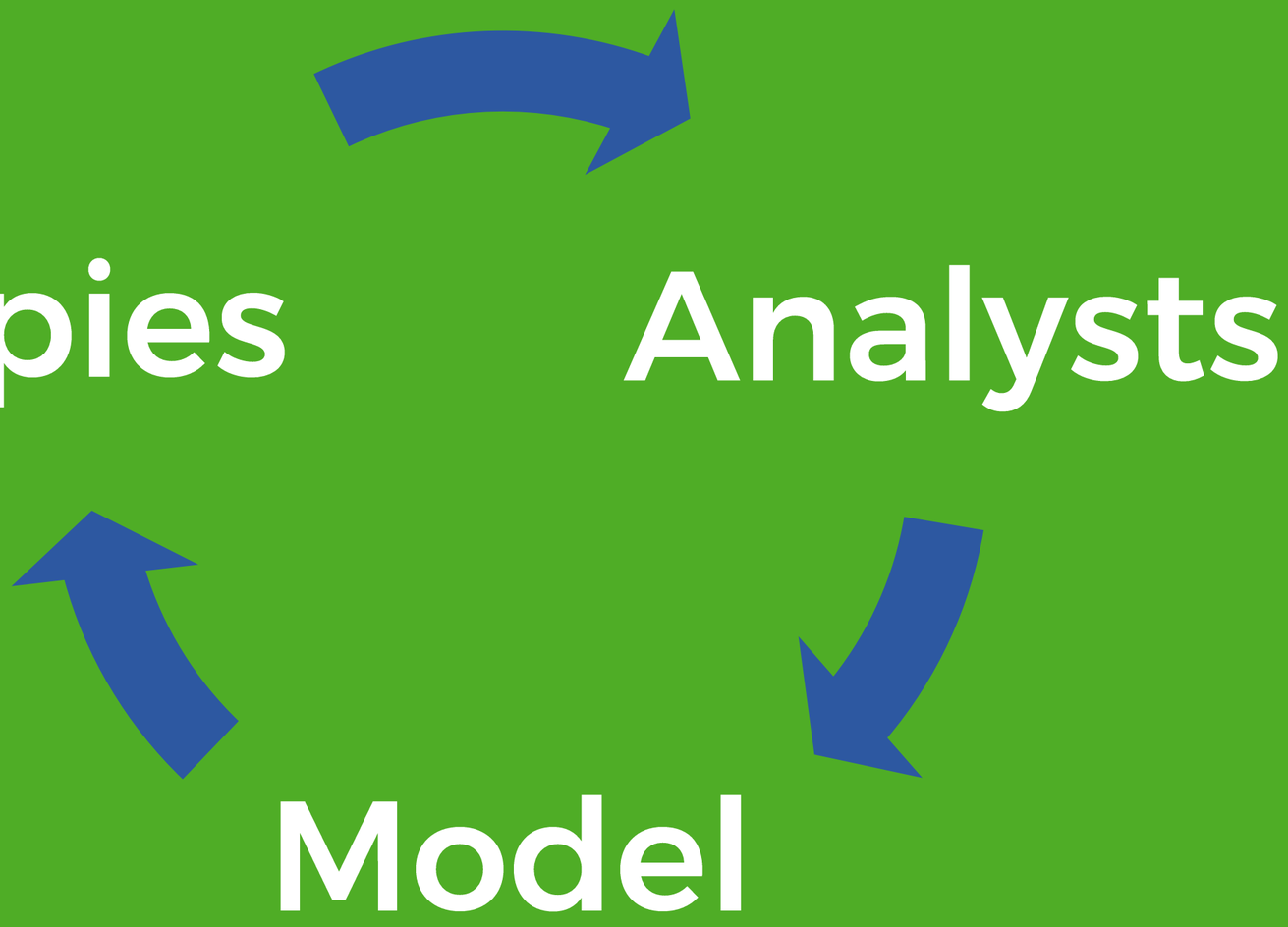
4 Retweets **30** Likes

2 4 30

MODELING EXAMPLES

- [x] ELEMENTARY SCHOOL
- [ ] MIDDLE SCHOOL
- [ ] HIGH SCHOOL

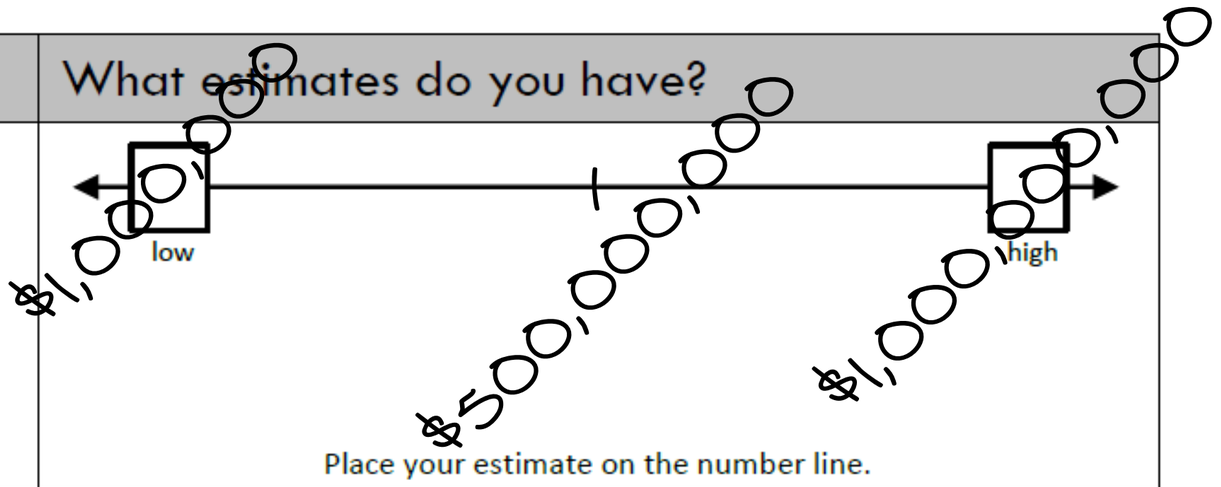
IVE
FOX NEWS
Junction


Spies
Analysts
Model

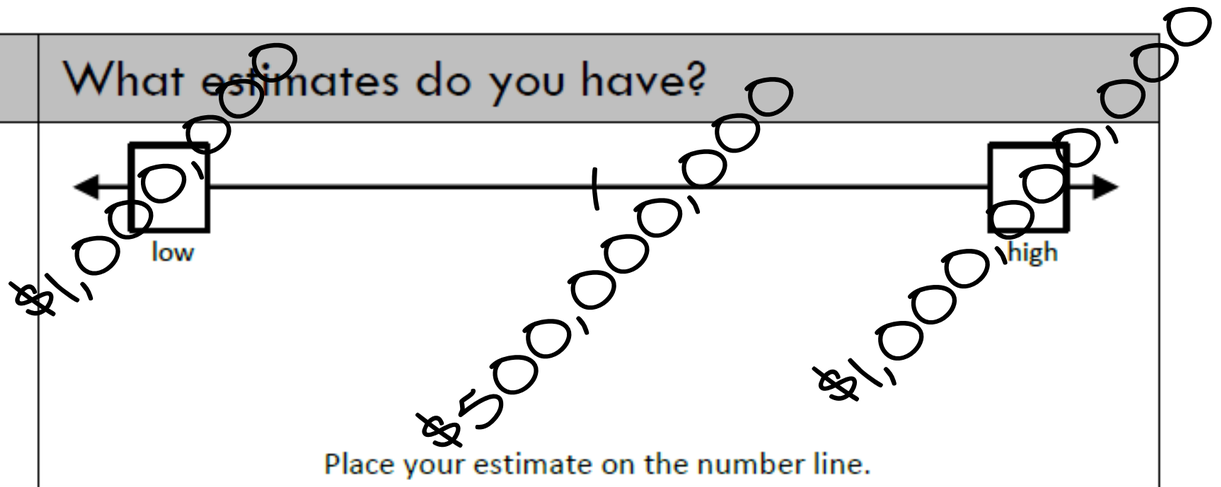
THINKING TIME

RobertKaplinsky.com

Name: _____ Period: _____ Date: _____

What problem are you trying to figure out?	What estimates do you have?
How much money was that?	 Place your estimate on the number line.
What info do you already know about the problem?	**What info do you need about the problem?**
• There is a lot of money. • It is in a pile. • It is in bundles.	• Is it all the same denomination? • ~~How much does one bill weigh?~~ • ~~How much does all the money weigh?~~
What is your conclusion? How did you reach that conclusion?	

Name: _____ Period: _____ Date: _____

What problem are you trying to figure out?	What estimates do you have?
How much money was that?	 Place your estimate on the number line.
What info do you already know about the problem?	**What info do you need about the problem?**
• There is a lot of money. • It is in a pile. • It is in bundles.	• Is it all the same denomination? • How many rows and columns are there? • How many bills are in one stack?
What is your conclusion? How did you reach that conclusion?	

PGR
SIEDO

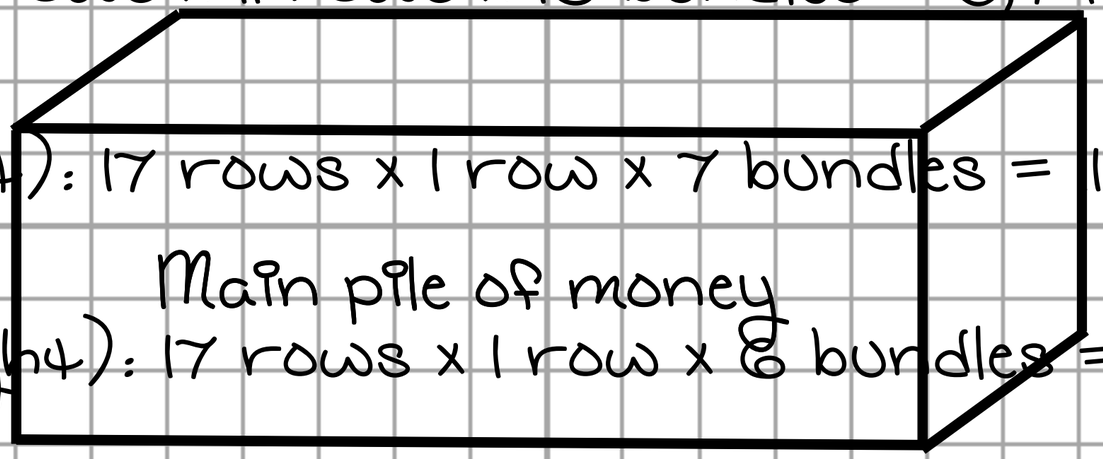
PGR
SIEDO
PGR
SIEDO

Your work

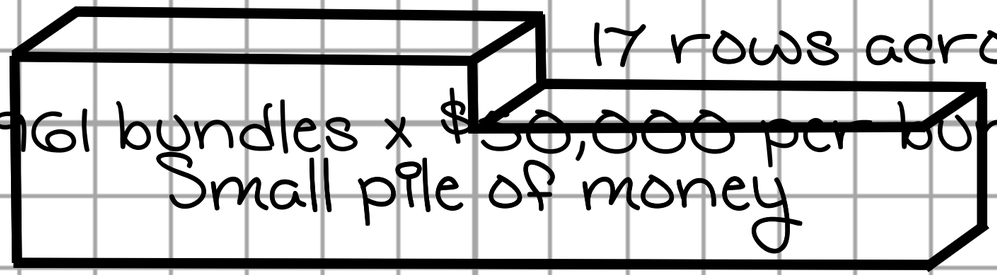
Main pile: 34 rows x 11 rows across x 10 bundles = 3,740 bundles

Small pile (left): 17 rows x 1 row x 7 bundles = 119 bundles

Small pile (right): 17 rows x 1 row x 8 bundles = 136 bundles



Total bundles: 3,740 + 119 + 136 = 3,961 bundles



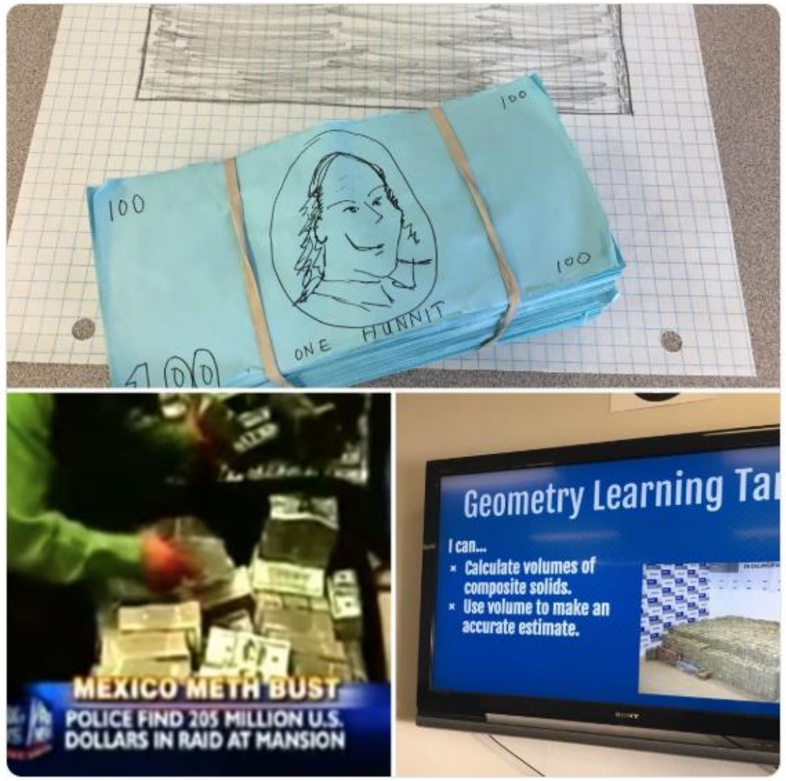
Total money: 3,961 bundles x $50,000 per bundle = $198,050,000

FOX
FOX NEWS

Brandon Brown
@branowar

Follow

One of my favorite days of the year in geometry. Putting a spin on the “drug money” volume problem from @robertkaplinsky #exceptional



9:11 AM - 21 Mar 2018

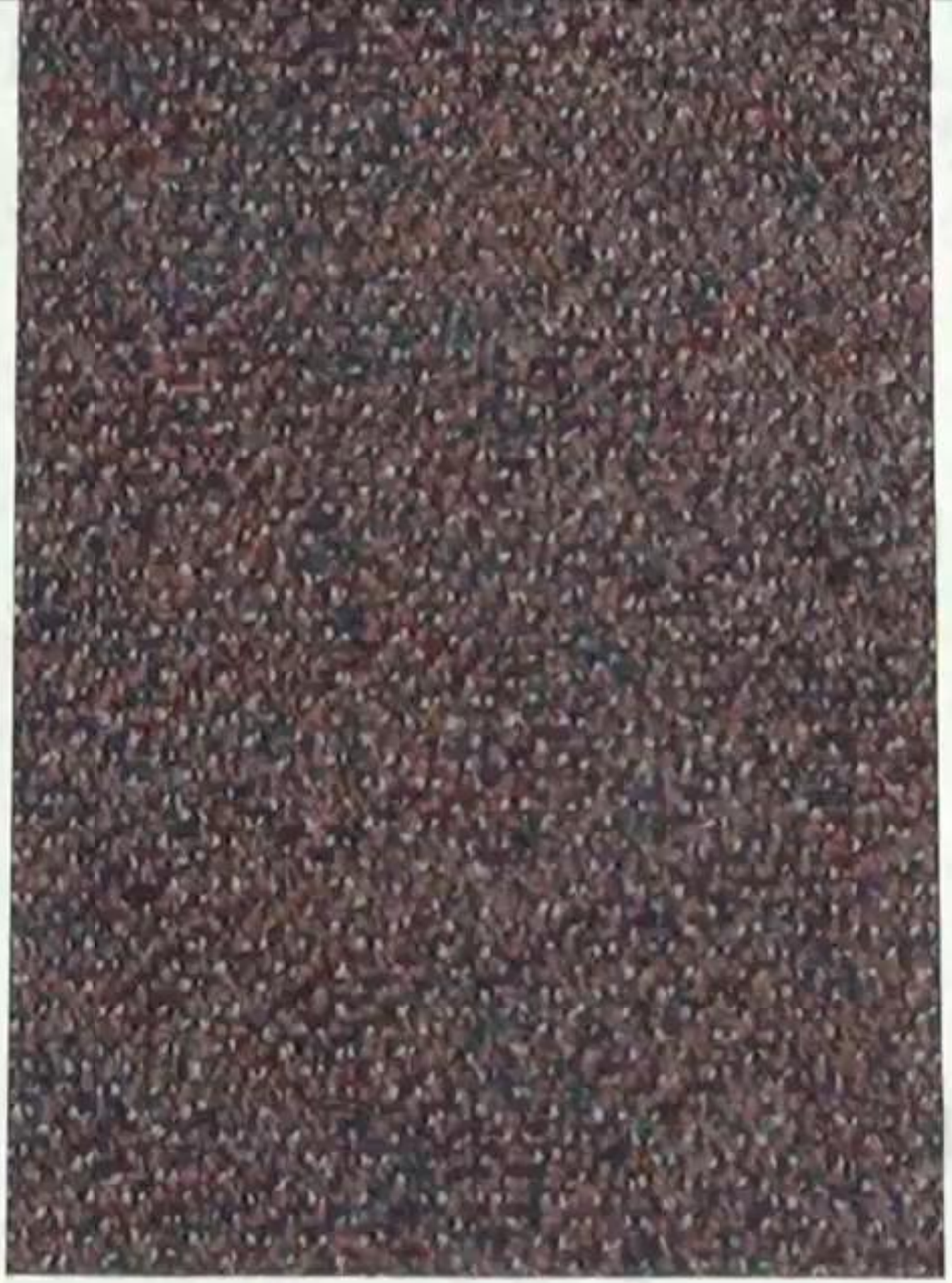
3 Likes

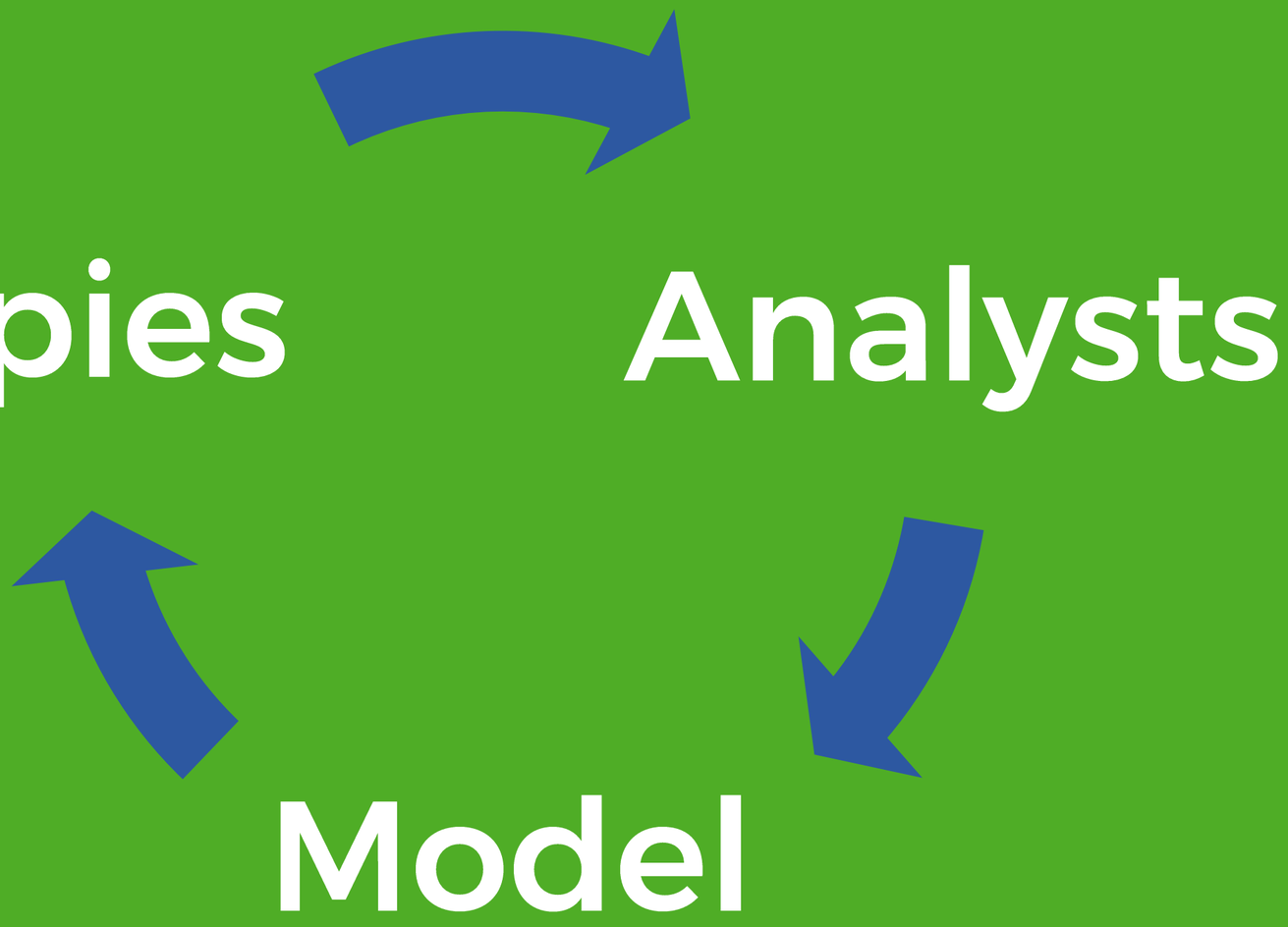
1 3

MODELING EXAMPLES

- [x] ELEMENTARY SCHOOL
- [x] MIDDLE SCHOOL
- [ ] HIGH SCHOOL

NON-STAGGERED
STAGGERED

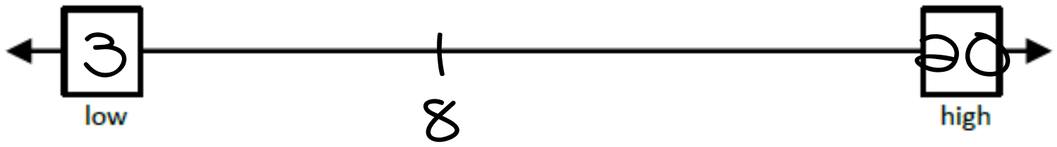



Spies
Analysts
Model

THINKING TIME

RobertKaplinsky.com

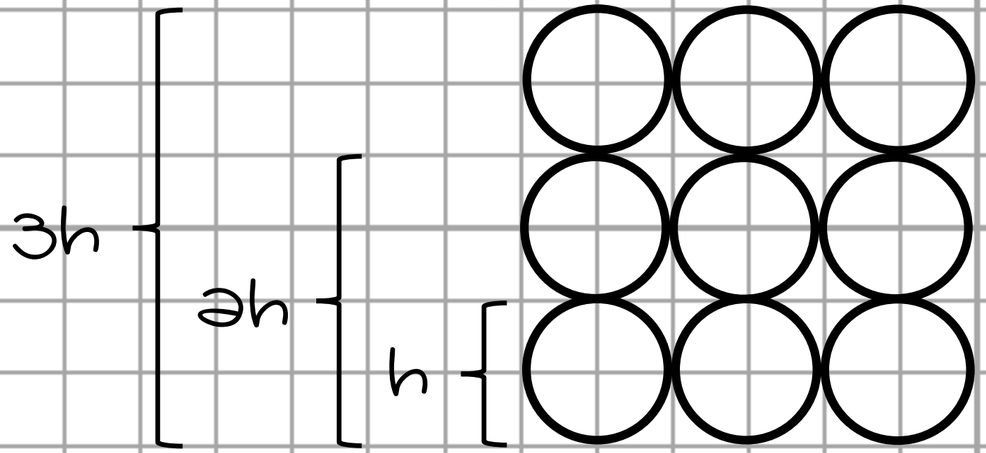
Name: _____ Period: _____ Date: _____

What problem are you trying to figure out?	What estimates do you have?
How much shorter are 20 layers of staggered pipes?	 (in inches) Place your estimate on the number line.
What info do you already know about the problem?	**What info do you need about the problem?**
• One pile of pipes is staggered. • One pile of pipes is not staggered. • We have to compare 20 layers of each.	• What are the dimensions of a pipe? • What units are we using to measure?
What is your conclusion? How did you reach that conclusion?	

6
7

Your work

Non-staggered pipes



1 pipe = h cm

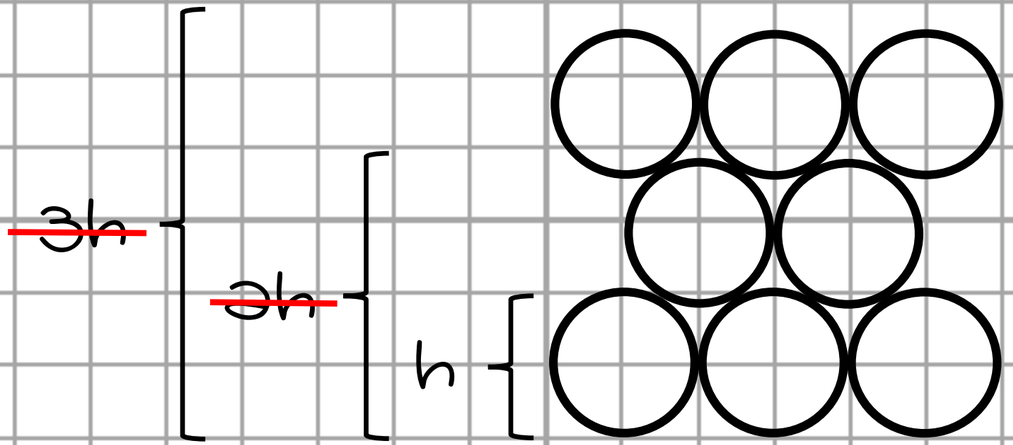
2 pipes = 2h cm

3 pipes = 3h cm

⋮

20 pipes = 20h cm

Staggered pipes



1 pipe = h cm

2 pipes = 33 cm

3 pipes = 33 cm

⋮

20 pipes = 33 cm

John Mahlstedt
@jdmahlstedt

Following

Working on @robertkaplinsky's Staggered Pipes prob 2day and modeling it w/ cups. Great prob!
robertkaplinsky.com/work/staggered ...

11:19 AM - 10 Apr 2015

2 Likes

MODELING EXAMPLES

- [x] ELEMENTARY SCHOOL
- [x] MIDDLE SCHOOL
- [x] HIGH SCHOOL

GOALS

- ☑ HOW DO WE MAKE SENSE OF MATH MODELING?
- ☑ IS IT JUST ANSWERING QUESTIONS?
- ☑ HOW DO YOU PROFIT FROM MATH MODELING?
- ☑ HOW DO WE HELP OUR STUDENTS IMPROVE?
- ☐ WHERE CAN WE FIND MORE RESOURCES?

PBL RESOURCES

- Problem-based lesson search engine:
  robertkaplinsky.com/prbl-search-engine
- My lessons (Elementary, Middle, and High School)
  robertkaplinsky.com/lessons
- Dan Meyer (Middle and High School)
  threeacts.mrmeyer.com
- Andrew Stadel (Elementary and Middle School)
  www.estimation180.com/lessons.html
- Graham Fletcher (Elementary and Middle School)
  gfletchy.com/3-act-lessons

Home

Math resources that create problem solvers, not robots.

Download my favorite lessons for elementary, middle, and high school.

GET FREE LESSONS TAKE MY WORKSHOP

What happens next?

1

Keep coming back for more free lessons and resources.

2

Learn implementation tips from my blog and weekly emails.

3

Take my online workshop for more implementation support.

Lessons

View all | Kinder | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th | 8th | Alg 1 | Geo | Alg 2

How Much Money Were Those Pennies?

How Can We #SaveNelly?

How Many Chip Bags Will There Be?

How Can We Make Stronger Passwords?

Search

Type and hit enter ...

Get My Emails

Do you like the ideas you're reading? If so, you'll love having the best ones sent to you via email!

First Name

Last Name

Email address

Zip Code (optional)

Job Role(s)

- Elementary School
- Middle School
- High School
- Higher Education

Resources

Depth of Knowledge

- Open Middle
- Open Middle Worksheet – English (student version)
- Open Middle Worksheet – English (document camera version)
- Open Middle Worksheet – Spanish (student version)
- Open Middle Worksheet – Spanish (document camera version)
- Robert's blog posts on Depth of Knowledge
- Tool to Distinguish Between Depth of Knowledge Levels

Problem-Based Lesson Tools

- Problem-Based Lesson Search Engine
- Problem Solving Framework v8.1
- Robert's blog posts on Problem-Based Learning

Problem-Based Lesson Sources

- 101 Questions
- Andrew Gael
- Andrew Stadel
- Catherine Castillo
- Christina Tondevold
- Dan Meyer
- Dane Ehlert
- Emergent Math's Problem Based Curriculum Maps

Search

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Robert Kaplinsky's Problem-Based Lessons

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	A	B	C	D	E	F	G	H	
1	Lesson	Concept / Skill	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6	Stan 7
2	How Much Money Were Those Pennies?	Money, Multiplying Decimals, Proportions	4.MD.2	5.NBT.5	5.NBT.7	7.RP.3			
3	How Can We #SaveNelly?	Dividing Decimals	6.NS.3						
4	How Many Chip Bags Will There Be?	Ratio and Proportions, Population Sampling	6.RP.3	6.RP.3c	7.RP.2	7.RP.3	7.SP.1	7.SP.2	
5	How Can We Make Stronger Passwords?	Permutations, Combinations, Probability, Exponents, Exponential Growth	7.SP.8	8.EE.1	S-MD.7	S-CP.5	S-CP.9		
6	How Many Hot Dogs And Buns Should He Buy?	Least Common Multiple (LCM)	6.NS.4						
7	What Does 2000 Calories Look Like?	Unit Rates, Ratios, Solving Equations, and Solving Inequalities	6.EE.3	6.EE.4	6.EE.5	6.EE.6	6.EE.7	6.EE.8	6.RP.2
8	How Much Money Are The Coins Worth?	Decimal Operations and Coin Counting	2.MD.8	5.NBT.7	6.NS.3				
9	How Many Times Will A Case of Paper Jam?	Interpreting Percentages	6.RP.3c	7.RP.3					
10	How Many Soda Combinations Are There On A Coke Freestyle?	Counting, Composing, and Decomposing Numbers	K.CC.5	K.CC.6	K.OA.1	K.OA.2	K.OA.3	K.OA.4	K.NBT
11	What Should The Freeway Sign Show?	Fractions on Number Lines, Converting Units, Decimal and Fraction Operations	3.NF.1	3.NF.2	3.NF.2a	3.NF.2b	3.NF.3	3.NF.3a	4.MD.
12	How Fast Was The Fastest Motorcycle Speeding Ticket Ever?	Converting Units and Unit Rates	5.MD.1	6.RP.3d	7.RP.1	N.Q.1			
13	How Much Did Patrick Peterson Lose By Not Cashing His Check?	Compound and/or Simple Interest	7.RP.3	N-RN.2	A-SSE.1	A-SSE.3c	A-SSE.4	A-REI.11	F-IF.4
14	How Many Biscuits Can You Make?	Dividing Fractions and Mixed Numbers	5.NF.7	5.NF.7a	5.NF.7b	5.NF.7c	6.NS.1		
15	How Much Bigger Should They Make Zoolander's School?	Scale and Proportions	5.NF.5A	7.RP.2	7.G.1				
16	Where Is The Freeway Sign Located?	Identifying Fractions on a Number Line	3.NF.1	3.NF.2	3.NF.2a	3.NF.2b	3.NF.3	3.NF.3a	3.NF.3
17	How Far Apart Are Exits On A Ring Road?	Arc length measures	G-C.5						
18	How Much Is One Third Of A Cup Of Butter?	Identifying Fractions on a Number Line	3.NF.1	3.NF.2	3.NF.2a	3.NF.2b	3.NF.3	3.NF.3a	3.NF.3
19	How Do Skytypers Write Messages?	Transformations (Rotations, Reflections, Dilations, and Translations)	8.G.1	8.G.2	8.G.3	8.G.4	G-CO.2	G-CO.3	G-CO
20	How Big Is The Bermuda Triangle?	Coordinate Geometry: Area of Triangle	G-GPE.7						
21	What Fraction Of Children Are In The Right Car Seat?	Representing and Comparing Fractions	3.NF.1	3.NF.2	3.NF.3	4.NF.1	4.NF.2		
22	How Much Did The Temperature Drop?	Absolute Value	6.NS.7c	7.NS.1c					
23	How Much Shorter Are Staggered Pipe Stacks?	Circles, Pythagorean Theorem, trigonometric ratios, and linear functions	8.G.7	A-CED.1	A-CED.3	A-CED.4	A-SSE.1a	A-SSE.1b	A-SSE
24	How Do You Write A Check To Pay For Something?	Expanded Form	2.NBT.3	4.NBT.2	5.NBT.3a				
25	How Can We Correct The Scarecrow?	Pythagorean Theorem	8.G.6	G-SRT.4					
26	How Much Does A 100×100 In-N-Out Cheeseburger Cost?	Building and Interpretting Linear Functions	8.F.1	8.F.3	8.F.4	8.F.5	F-IF.4	F-IF.5	F-IF.6
27	How Can We Water All Of The Grass?	Circles, Pythagorean Theorem, trigonometric ratios	7.G.4	8.G.7	G-SRT.8	G-MG.1	G-MG.3		
28	How Much Money IS That?!	Volume of rectangular prism	5.MD.3	5.MD.4	5.MD.5	5.MD.5b	5.MD.5c	6.G.2	7.G.6
29	How Much Money Should Dr. Evil Demand?	Exponential Growth	N-RN.2	A-SSE.1	A-SSE.3c	A-SSE.4	A-REI.11	F-IF.4	F-IF.7
30	How Tall Is Mini-Me?	Scale and Dividing Decimals	5.NF.5	5.NF.5a	5.NF.5b	6.NS.3			
31	How Did They Make Ms. Pac-Man?	Transformations (Rotations, Reflections, and Translations)	8.G.1	8.G.2	8.G.3	8.G.4	G-SRT.2	G-CO.4	G-CO
32	Which Ticket Option Is The Best Deal?	Unit Rates and Ratios	6.RP.2	6.RP.3	6.RP.3a	6.RP.3b			
33	How Far Apart Are The Freeway Exits?	Fractions on a Number Line and Subtracting Fractions	3.NF.2	3.NF.2b	4.NF.2	4.NF.3a	4.NF.3c	4.NF.3d	5.NF.1
34	Do We Have Enough Paint?	Area	3.MD.5	3.MD.6	3.MD.7				

Sheet1

GOALS

- ☑ HOW DO WE MAKE SENSE OF MATH MODELING?
- ☑ IS IT JUST ANSWERING QUESTIONS?
- ☑ HOW DO YOU PROFIT FROM MATH MODELING?
- ☑ HOW DO WE HELP OUR STUDENTS IMPROVE?
- ☑ WHERE CAN WE FIND MORE RESOURCES?

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