

The ABCs of SOCs: Evaluating Operator Training with EPA SOC Numbers

By Ben Thomas



Or,
Has Operator Training
Improved UST
Compliance?





BUT FIRST, AN INFORMAL POLL

Do you think compliance is improving?



BUT FIRST, AN INFORMAL POLL

Do you think it could be due to
operator training?

verview

About Presenter

The Basic Questions

Background

Definitions

Assumptions

SOC charts/ State by state discussion

Criteria to Assess Effectiveness

Outside Influencers

Closing ideas



About Presenter

Ben Thomas Bio: state inspector turned private trainer.

Creates and provides live and online training since 2003, created online state agency training content, chaired ICC committee.

Interested in behavioral psychology (Don't Shoot the Dog, LUSTLine articles).

Training: to motivate and change behavior through triangulating equipment, rules and management

Emphasis on training being relevant, applicable and inspirational.

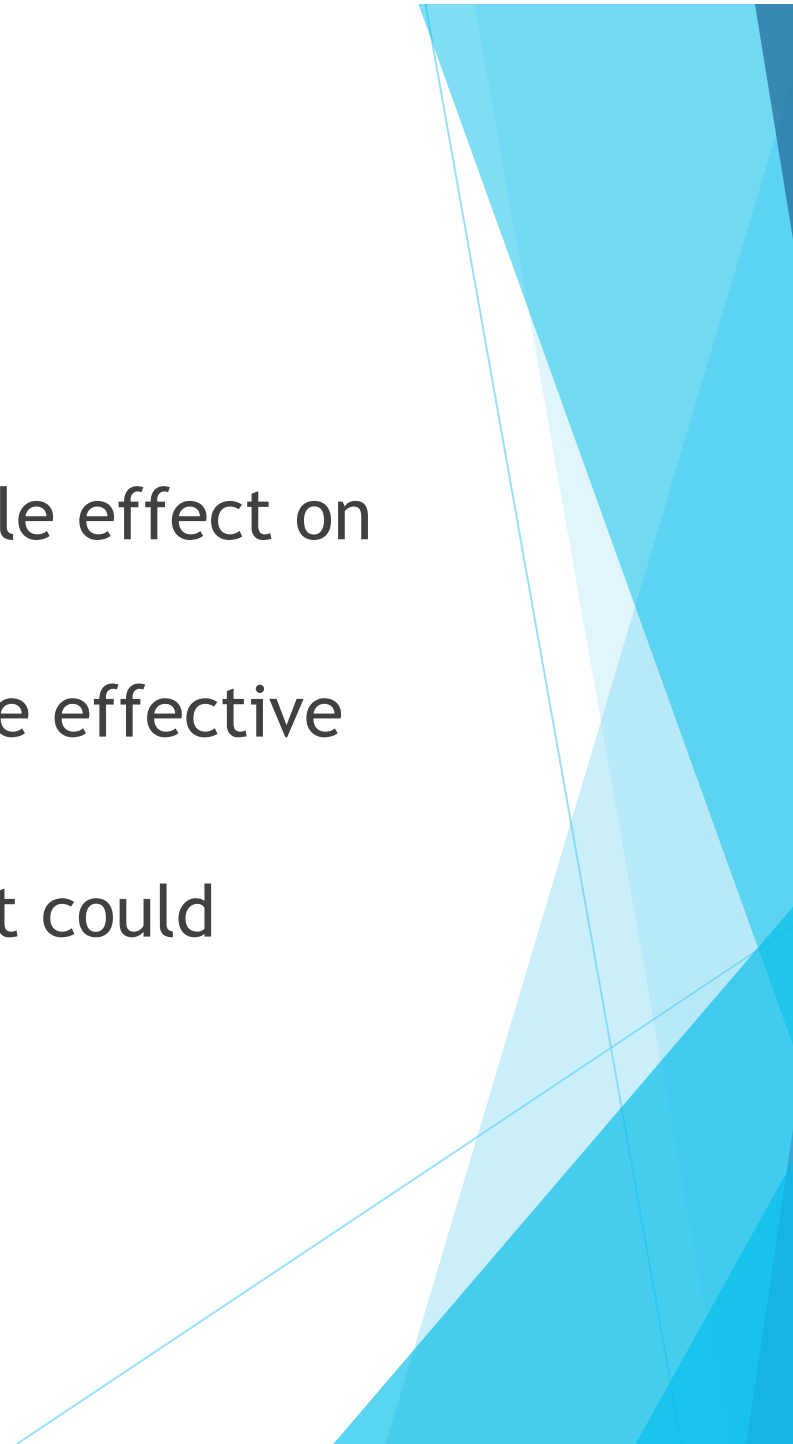


The Basic Questions

Does Operator Training have a measurable effect on SOC percentages over time?

Are some types of operator training more effective than others?

Are there known outside influencers that could affect SOC's?



Methodology

Look at SOCs over time 2008-2018 for all states territories.

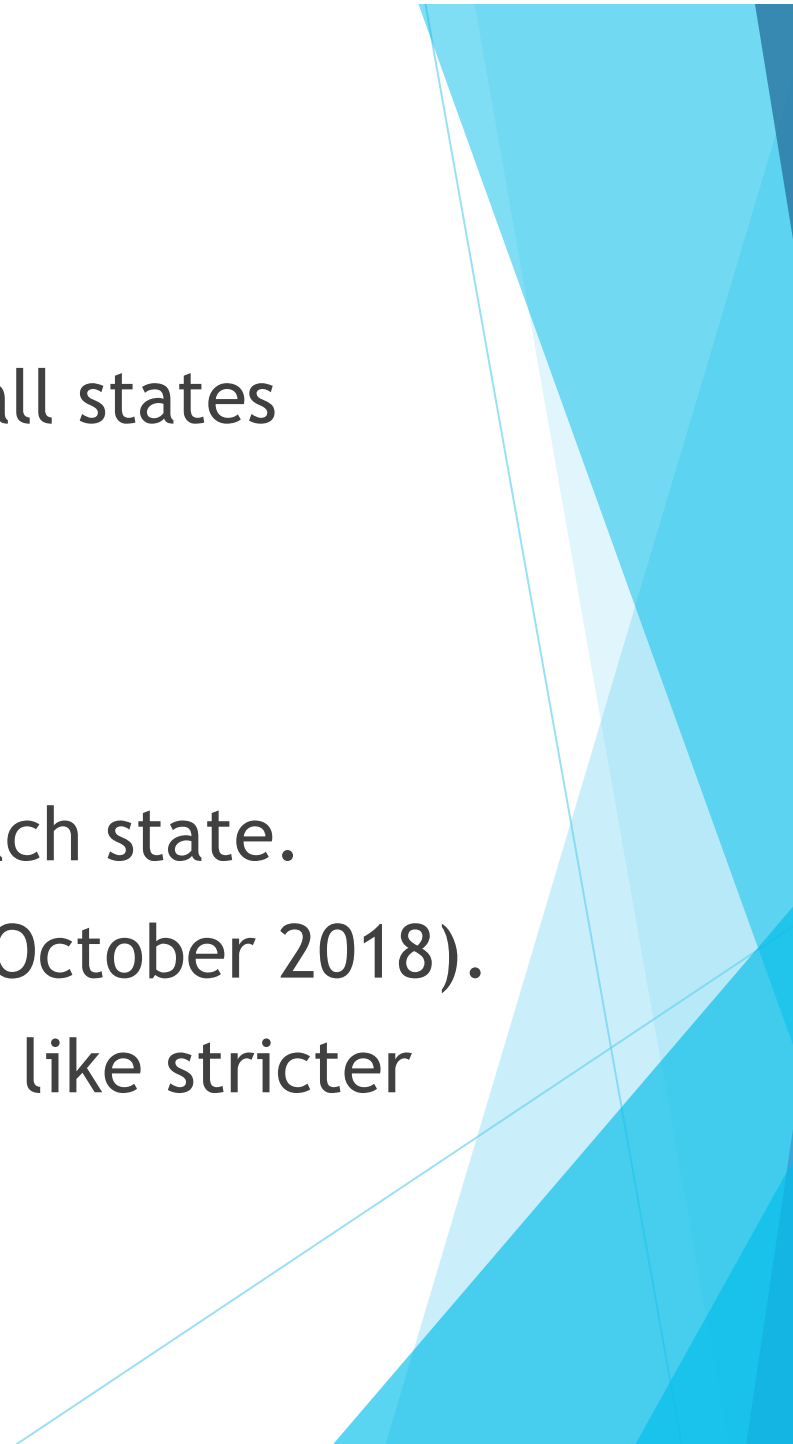
Graphed results.

Evaluated Combined RD and RP.

Inserted training completion date in each state.

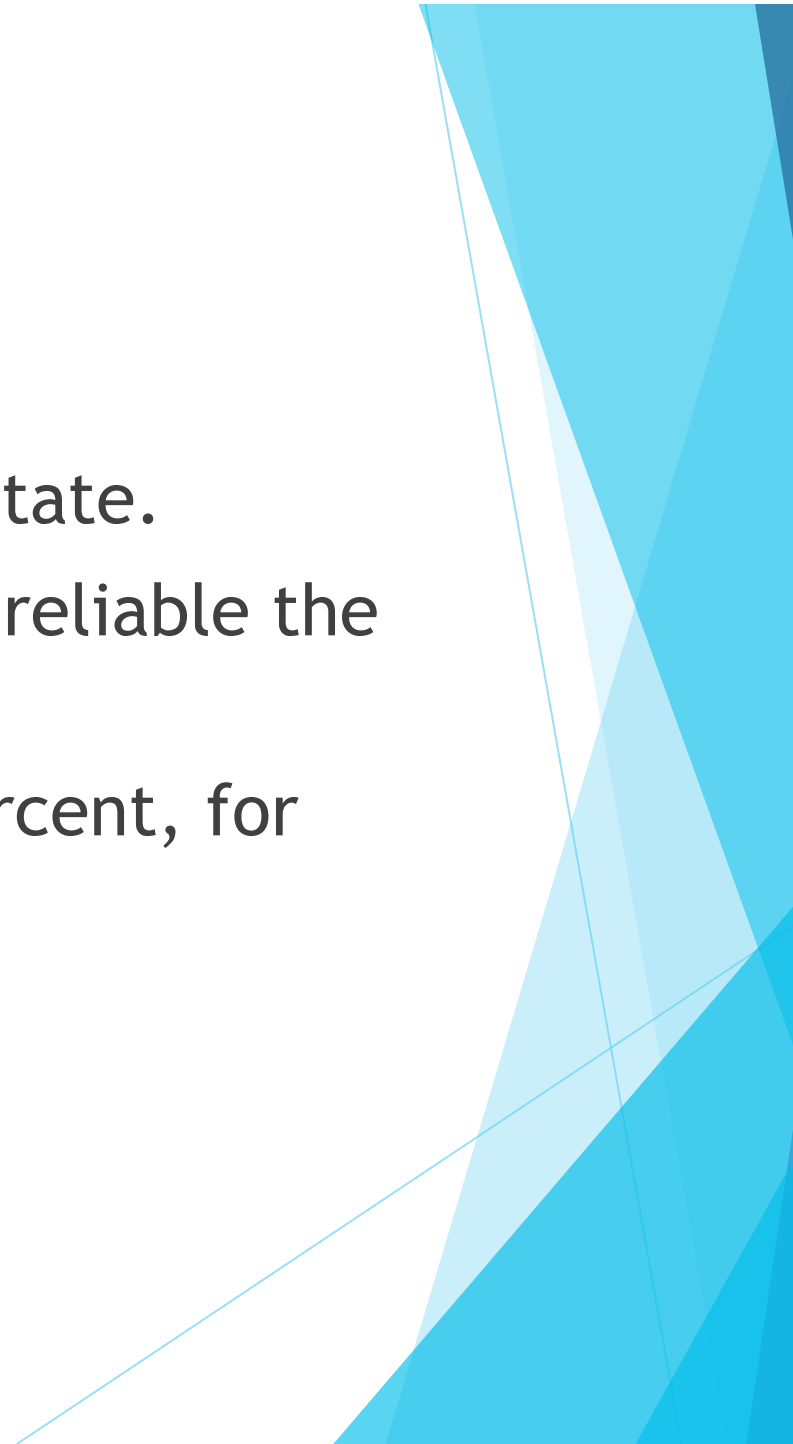
Indian Country not assessed (due date October 2018).

SOCs can be influenced by other things like stricter rules or stricter enforcement.



Assumptions

- ▶ SOC numbers *reasonably* accurate.
- ▶ Deadline date *reasonably* met in each state.
- ▶ The sooner training adopted, the more reliable the results (more data).
- ▶ Looked at percent change, not final percent, for improvement.

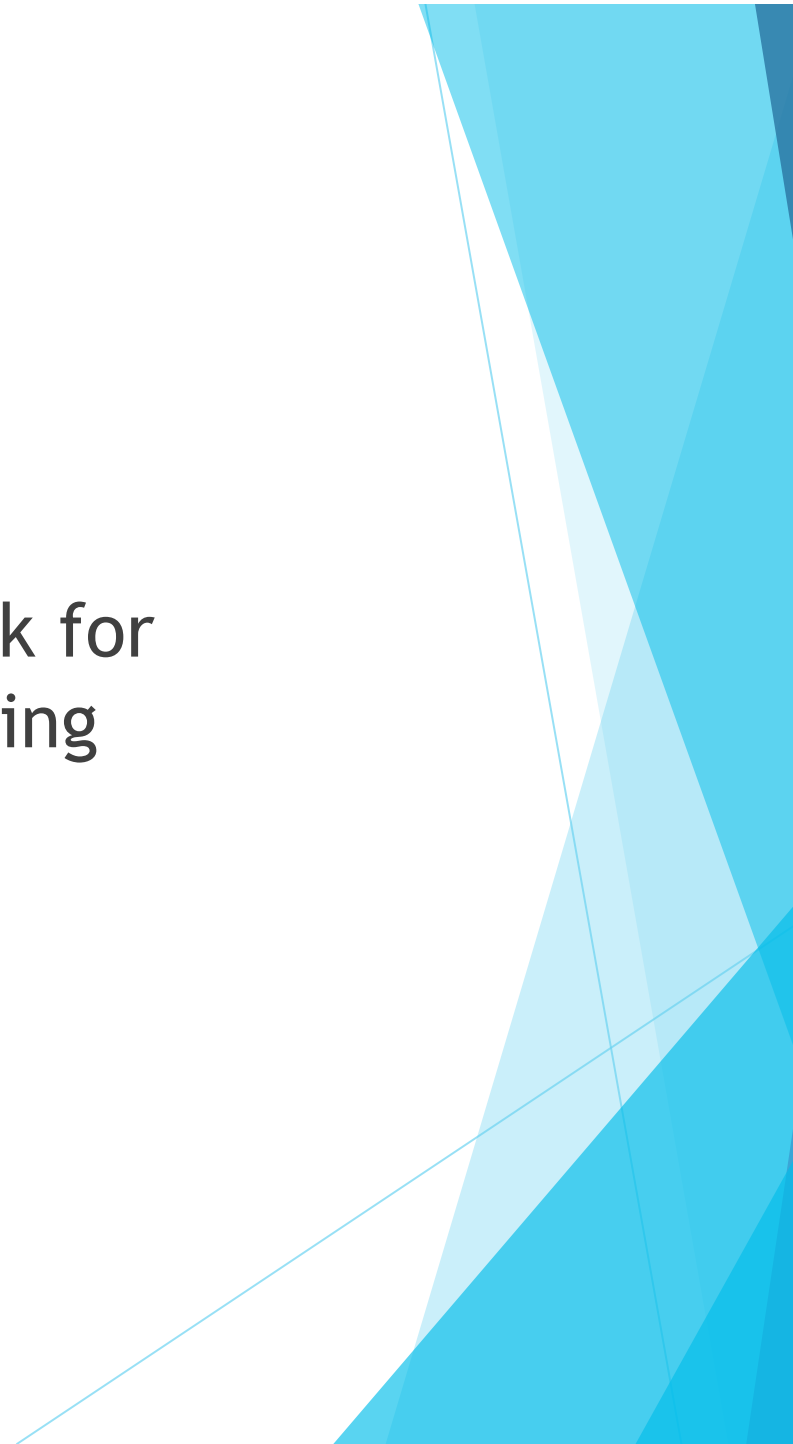


What's going to happen next?

Find your “Delegate” and sit together.

As we progress through states, we'll ask for opinions about SOCs numbers and training observations.

A few minutes per state please.

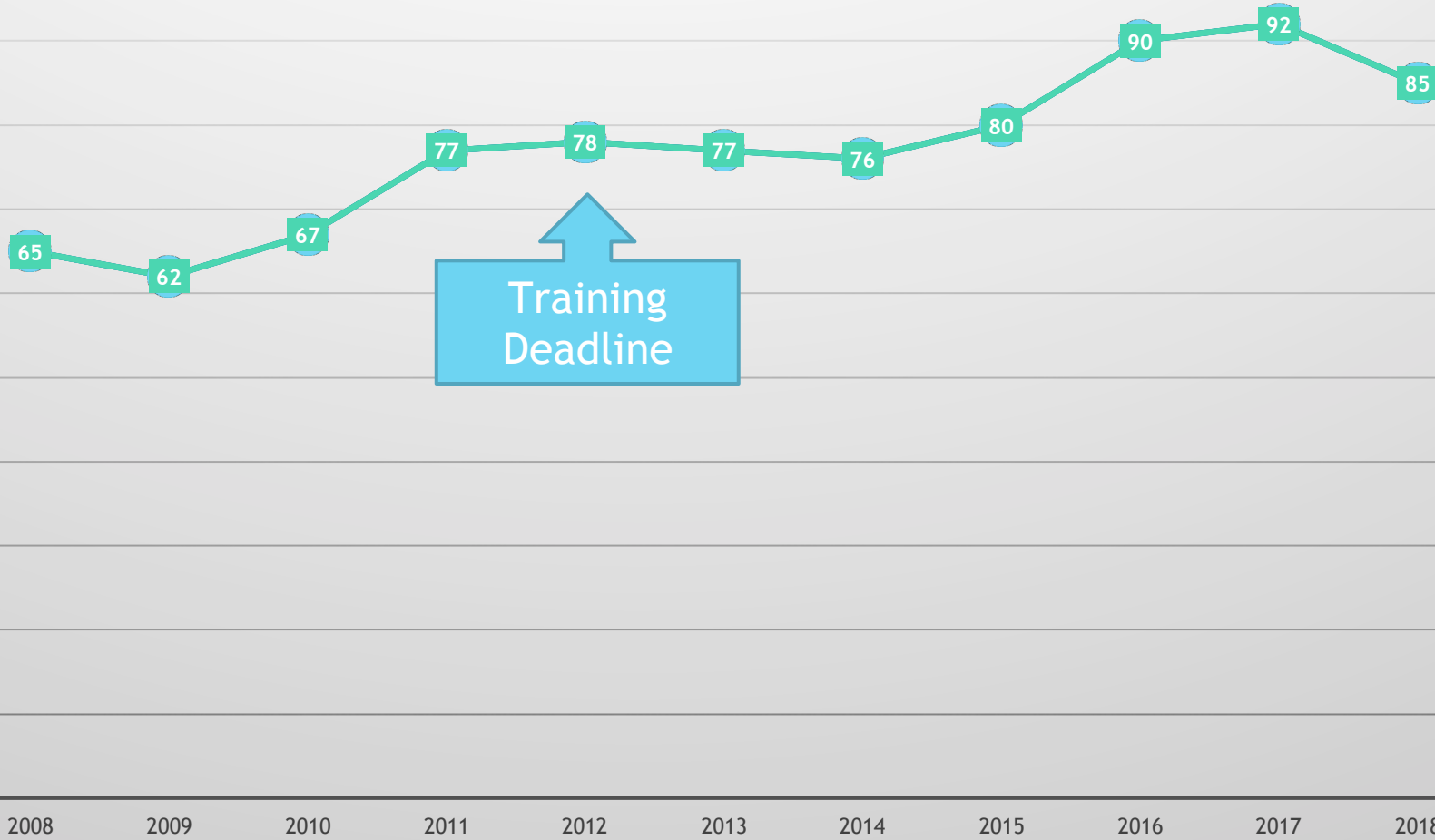




EPA Region 1

Connecticut, Massachusetts, Maine, New
Hampshire, Rhode Island, Vermont

CONNECTICUT SOC 2008-2018



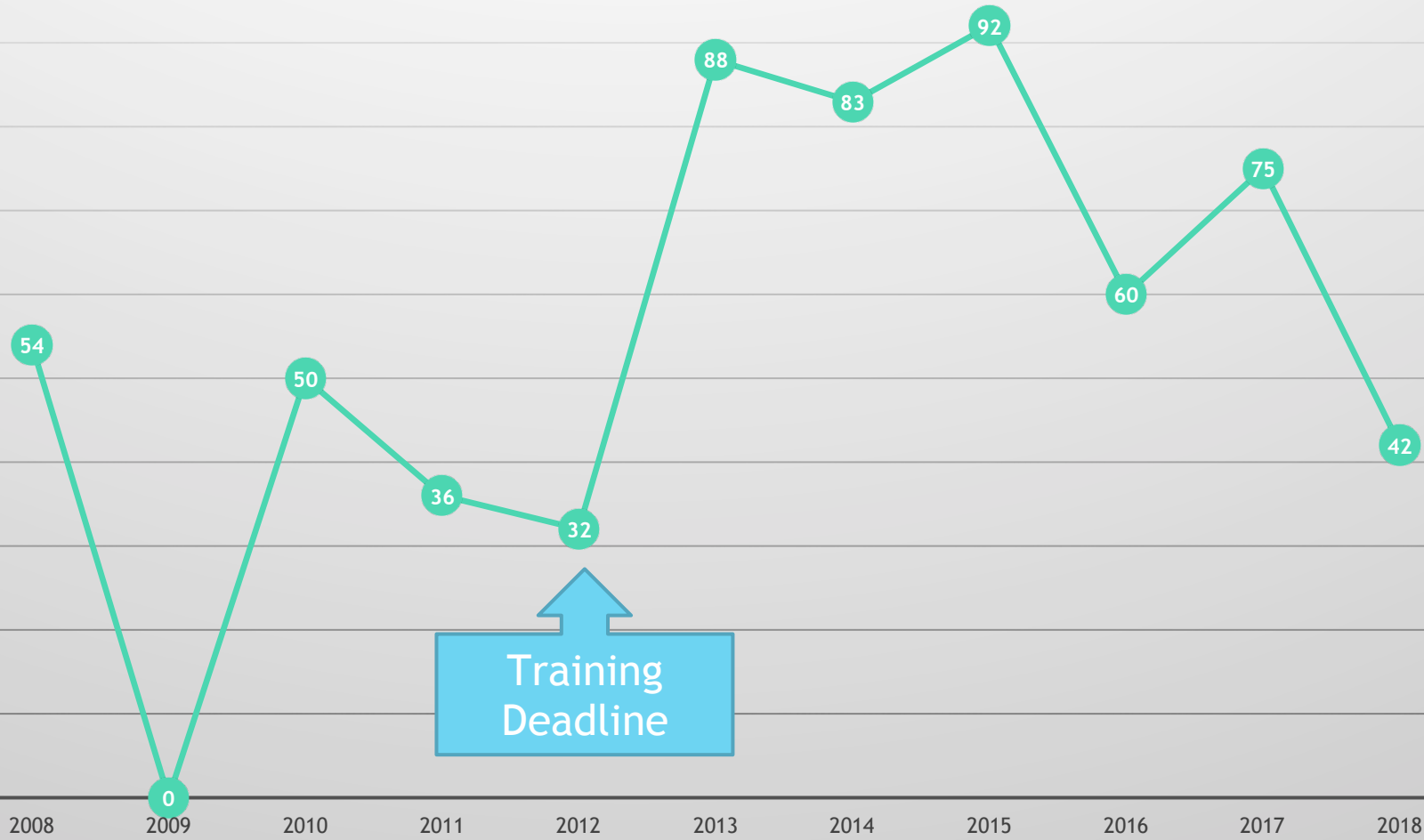
TOTAL
CHANGE
SOC
2008-20

+20%

SINCE
TRAINING
DEADLINE

+7%

MASSACHUSETTS SOC 2008-2018



Training
Deadline

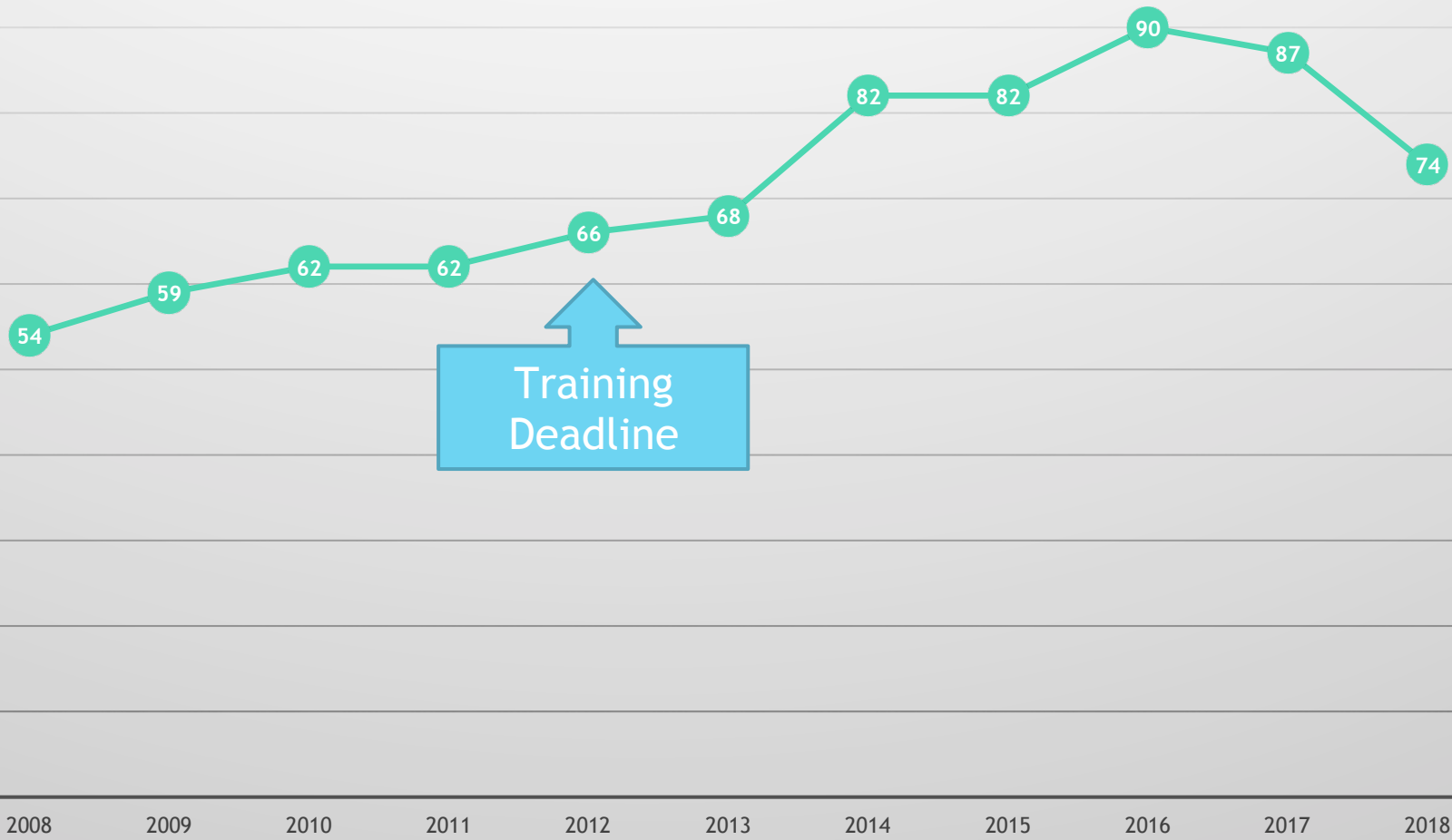
TOTAL
CHANGE
SOC
2008-20

-1%

SINCE
TRAINING
DEADLINE

+10%

MAINE SOC 2008-2018



Training
Deadline

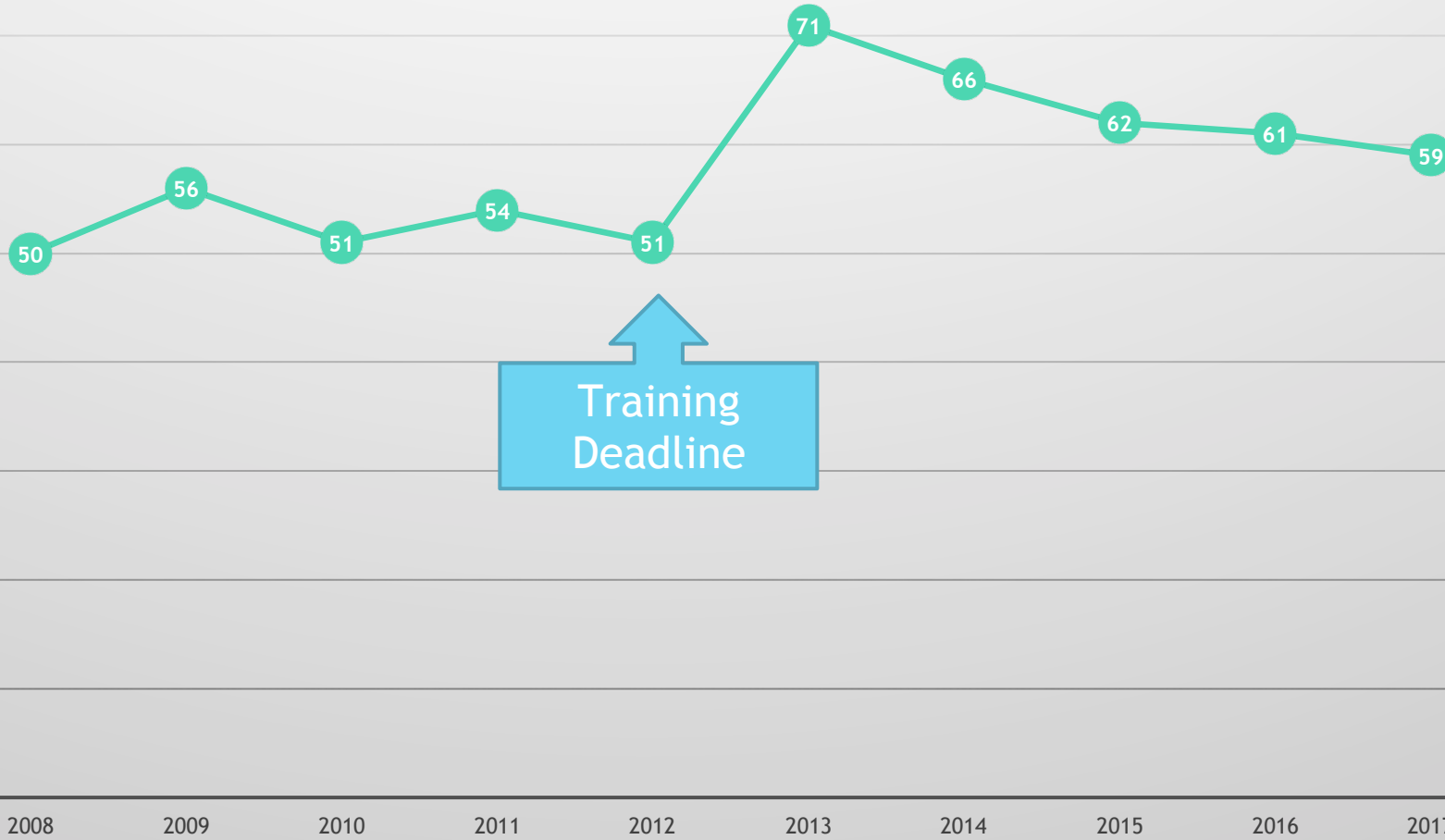
TOTAL
CHANGE
SOC
2008-20

+30%

SINCE
TRAINING
DEADLINE

+8%

NEW HAMPSHIRE SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+9%

SINCE
TRAINING
DEADLINE

+8%

RHODE ISLAND SOC 2008-2018



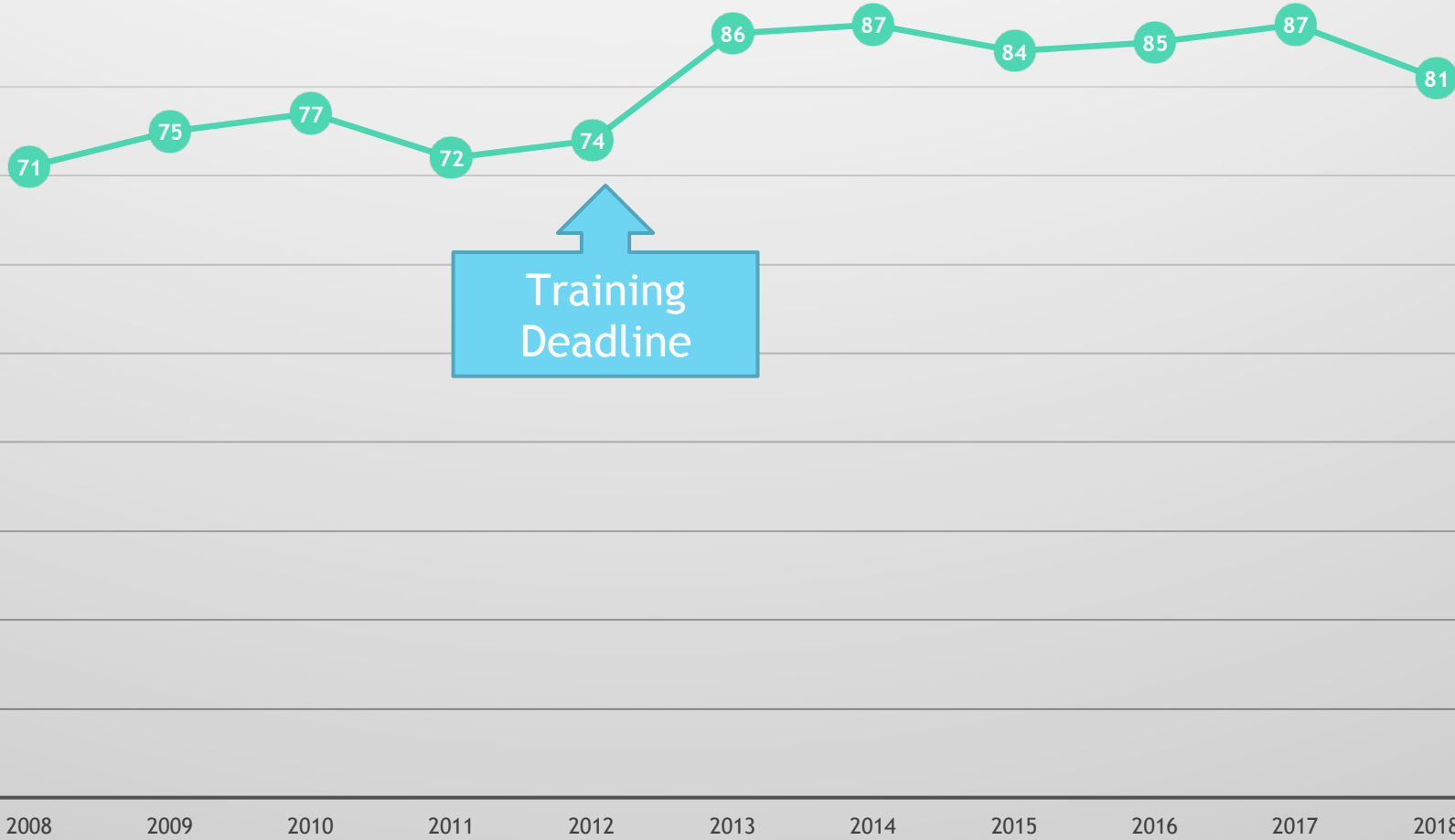
TOTAL
CHANGE
SOC
2008-20

-21%

SINCE
TRAINING
DEADLINE

-26%

VERMONT SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+10%

SINCE
TRAINING
DEADLINE

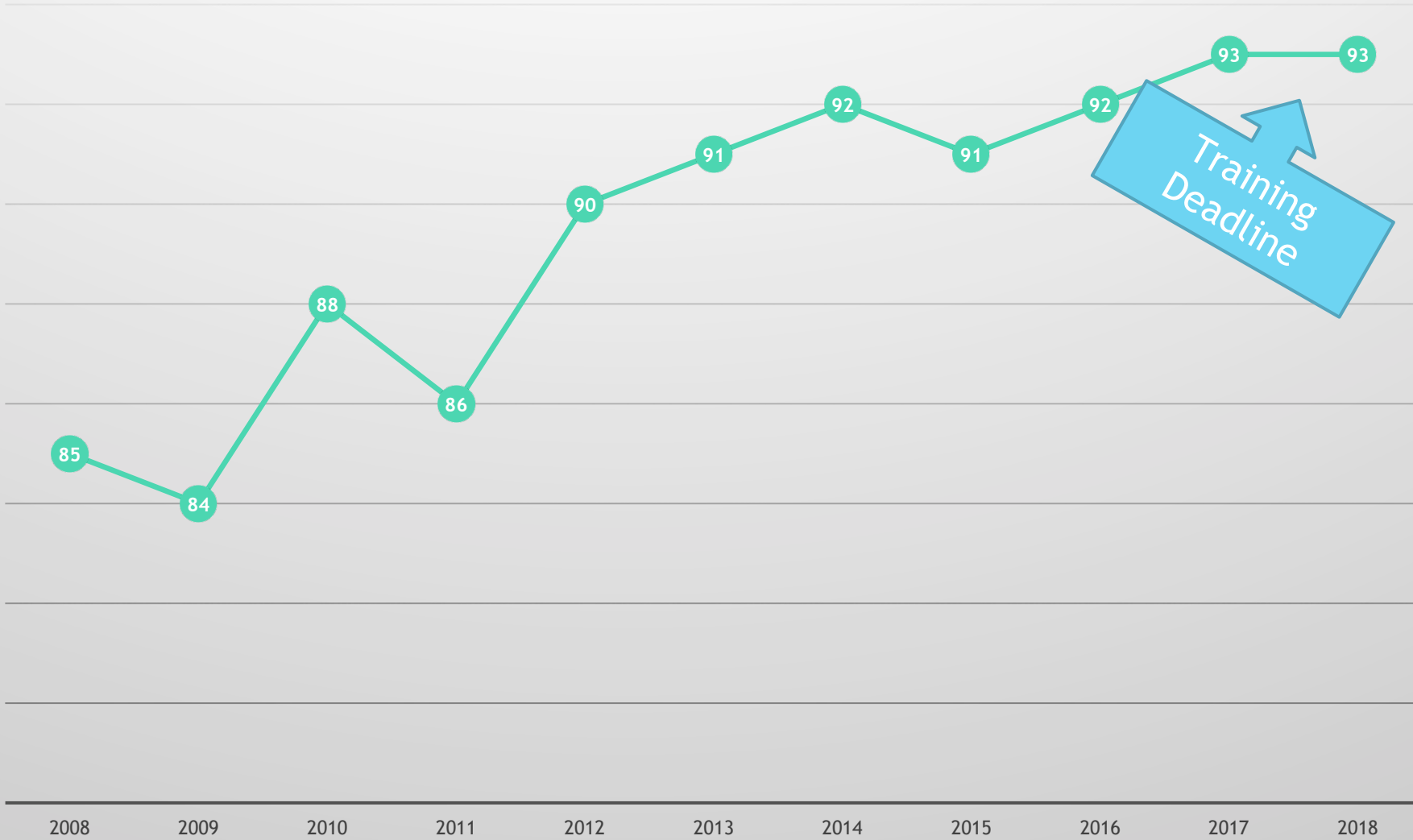
+7%



EPA Region 2

New Jersey, New York, Puerto Rico, US
Virgin Islands

NEW JERSEY SOC 2008-2018



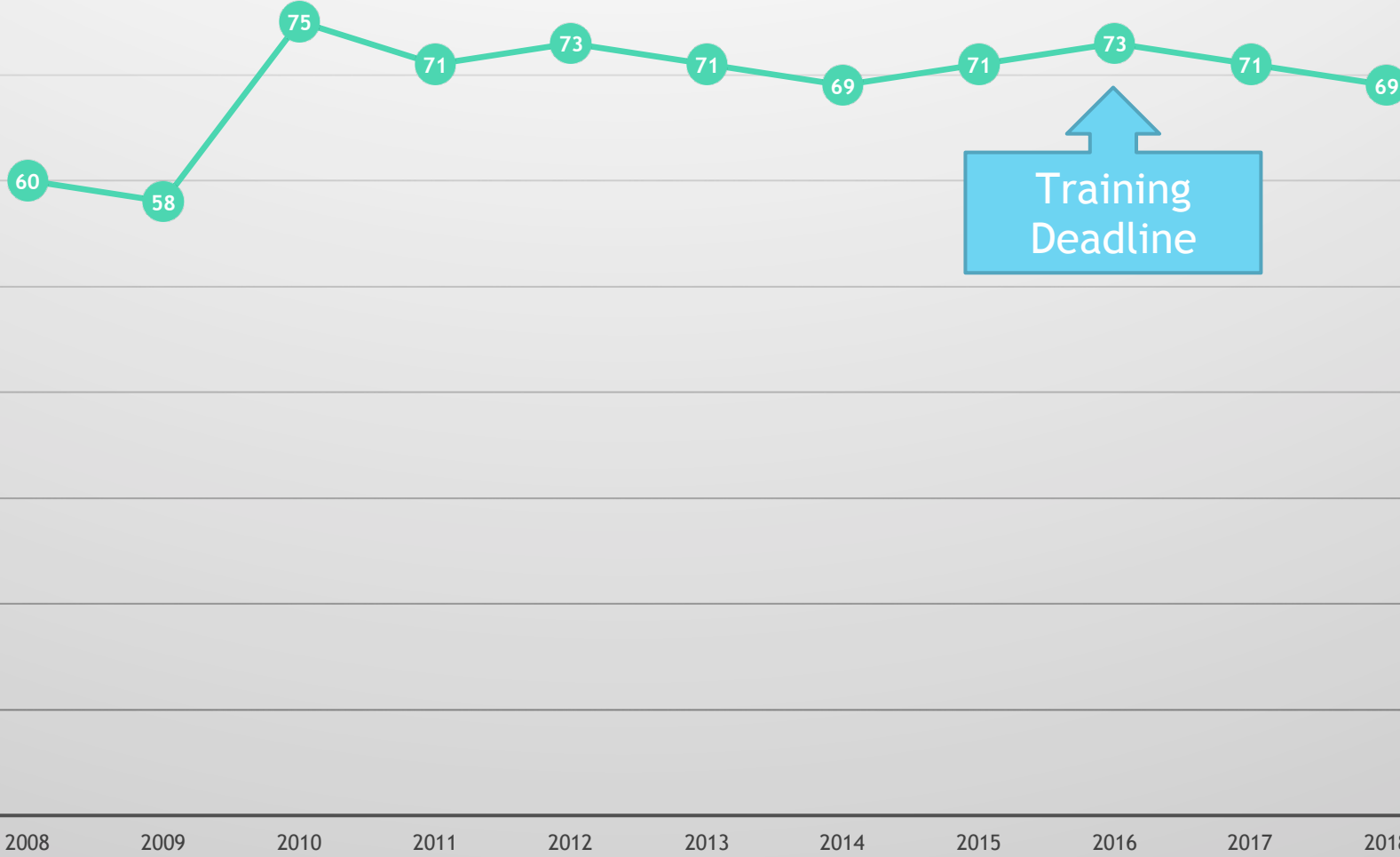
TOTAL
CHANGE
SOC
2008-20

+8%

SINCE
TRAINING
DEADLINE

0%

NEW YORK SOC 2008-2018



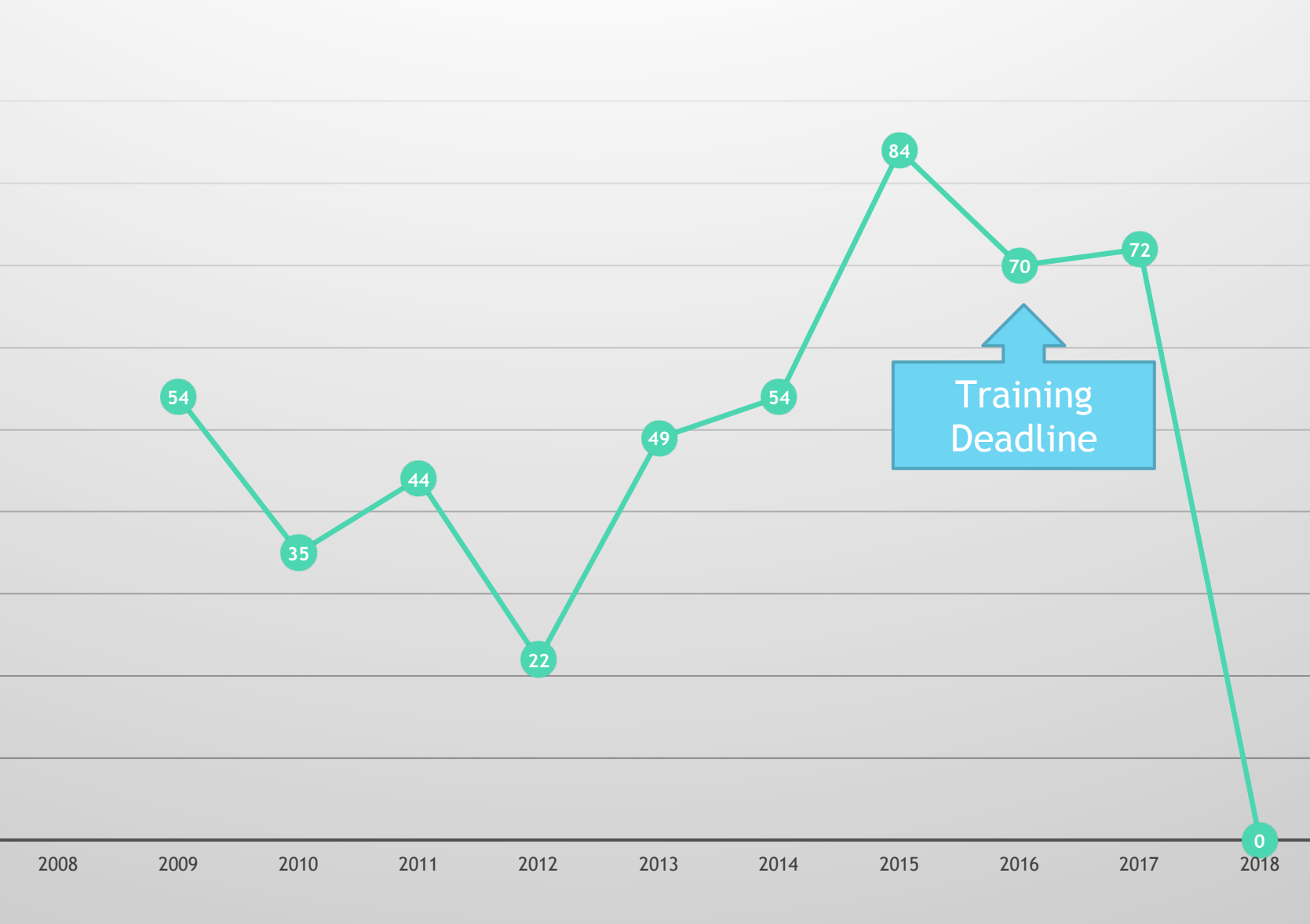
TOTAL
CHANGE
SOC
2008-20

+9%

SINCE
TRAINING
DEADLINE

+4%

PUERTO RICO SOC 2008-2018



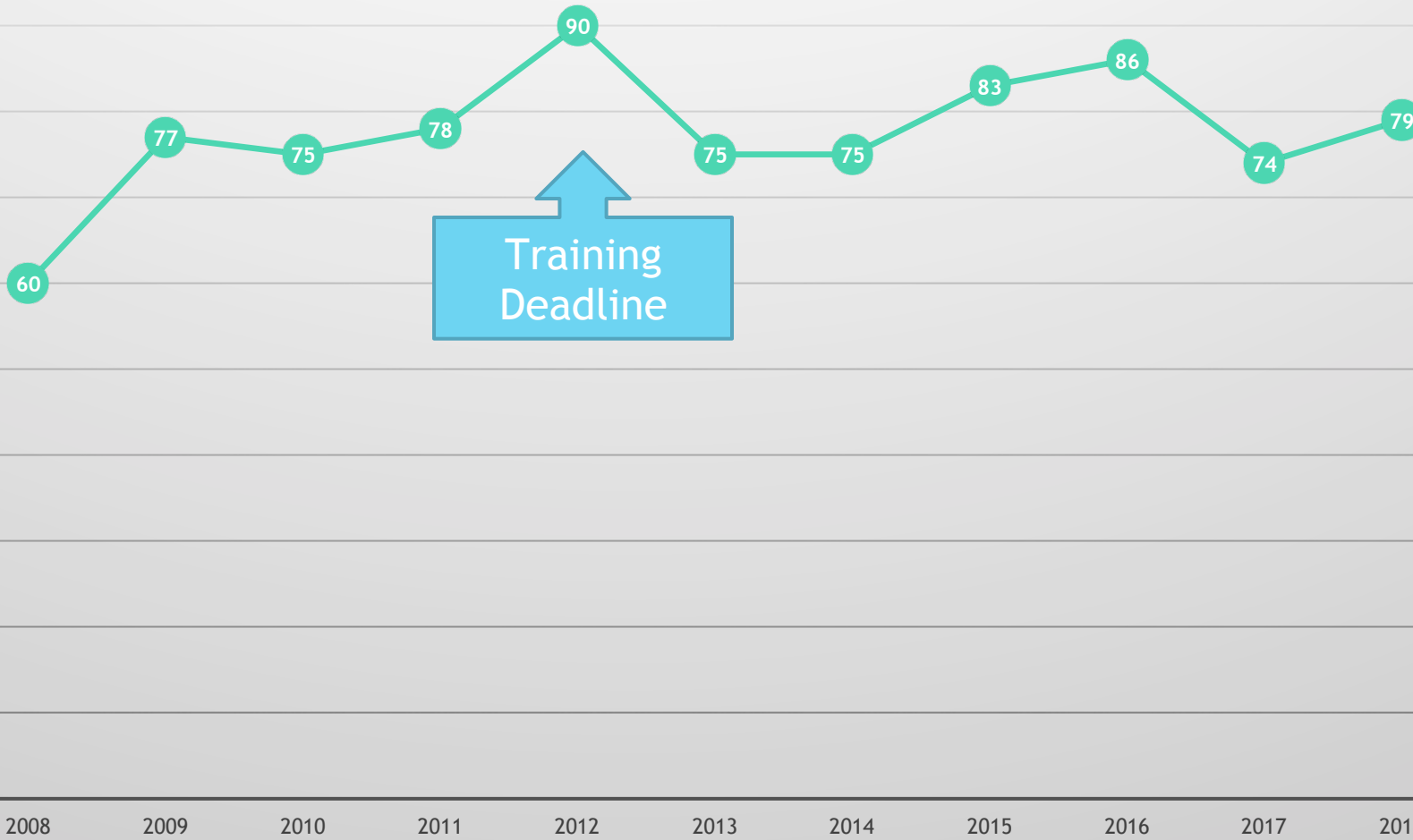
TOTAL
CHANGE
SOC
2008-20

+18%

SINCE
TRAINING
DEADLINE

2%

US VIRGIN ISLAND SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+19%

SINCE
TRAINING
DEADLINE

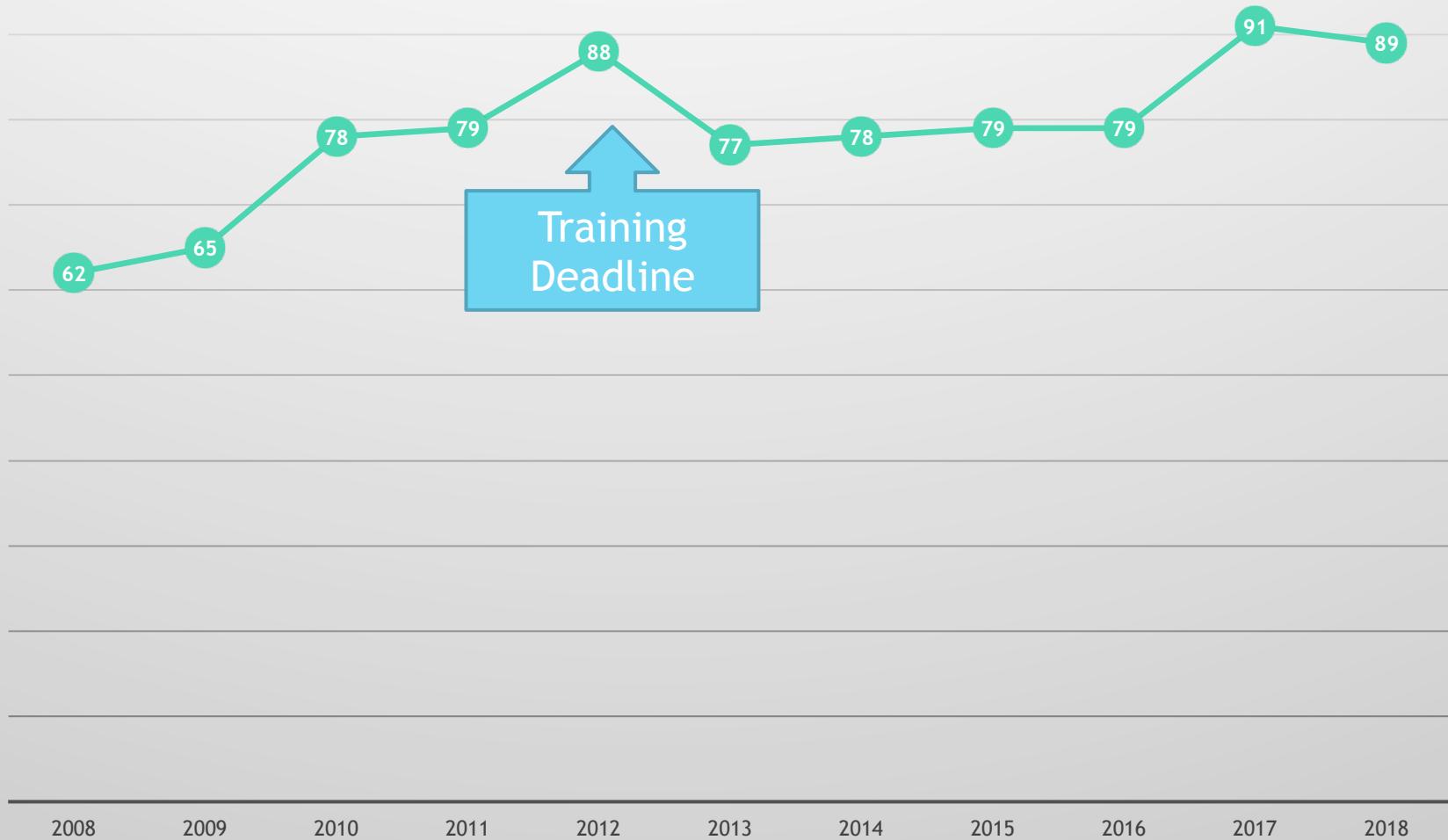
-11%

EPA Region 3

District of Columbia, Delaware,
Maryland, Pennsylvania, Virginia, West
Virginia



DISTRICT OF COLUMBIA SOC 2008-2018



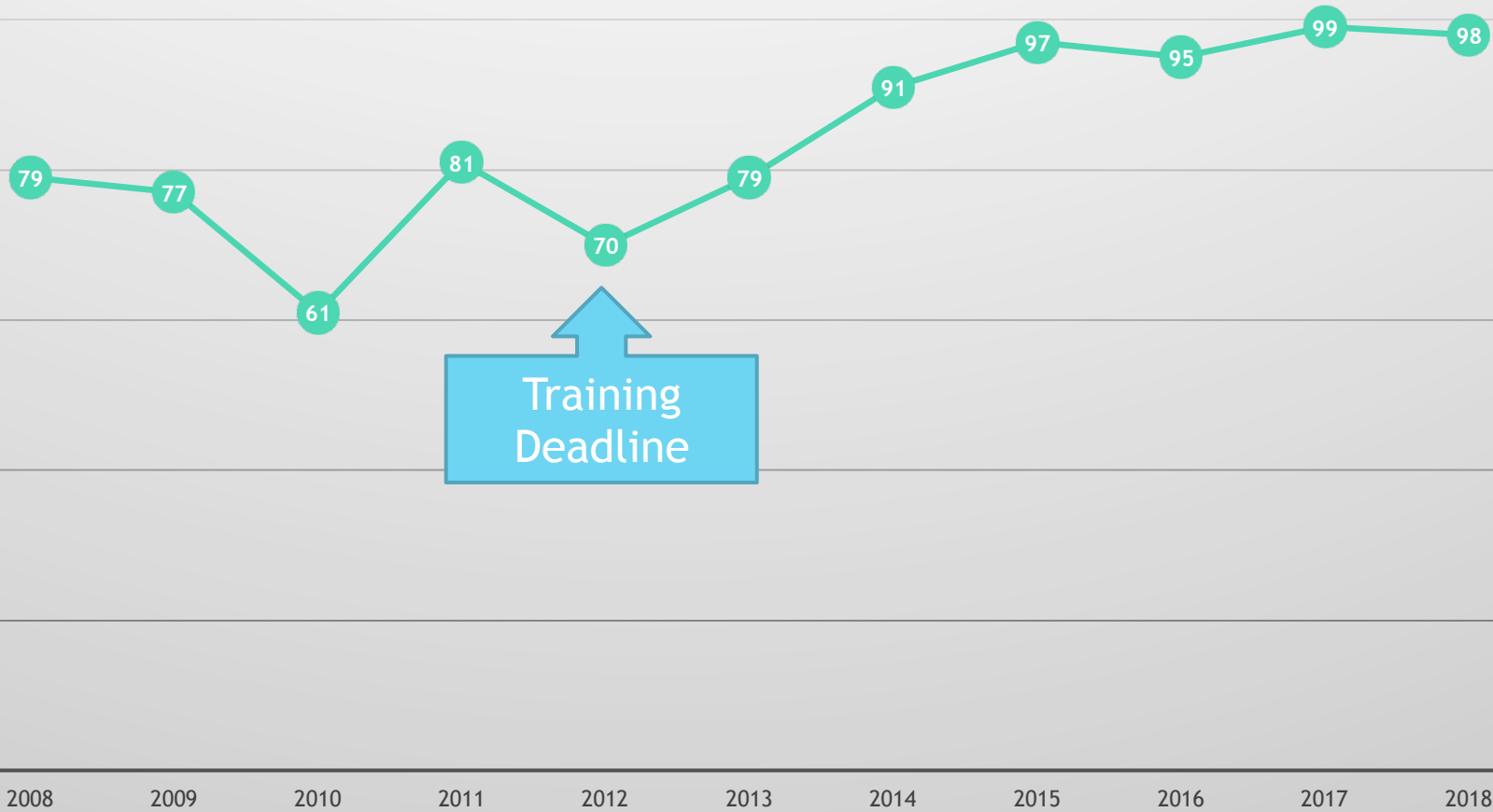
TOTAL
CHANGE
SOC
2008-20

+27%

SINCE
TRAINING
DEADLINE

+1%

DELAWARE SOC 2008-2018



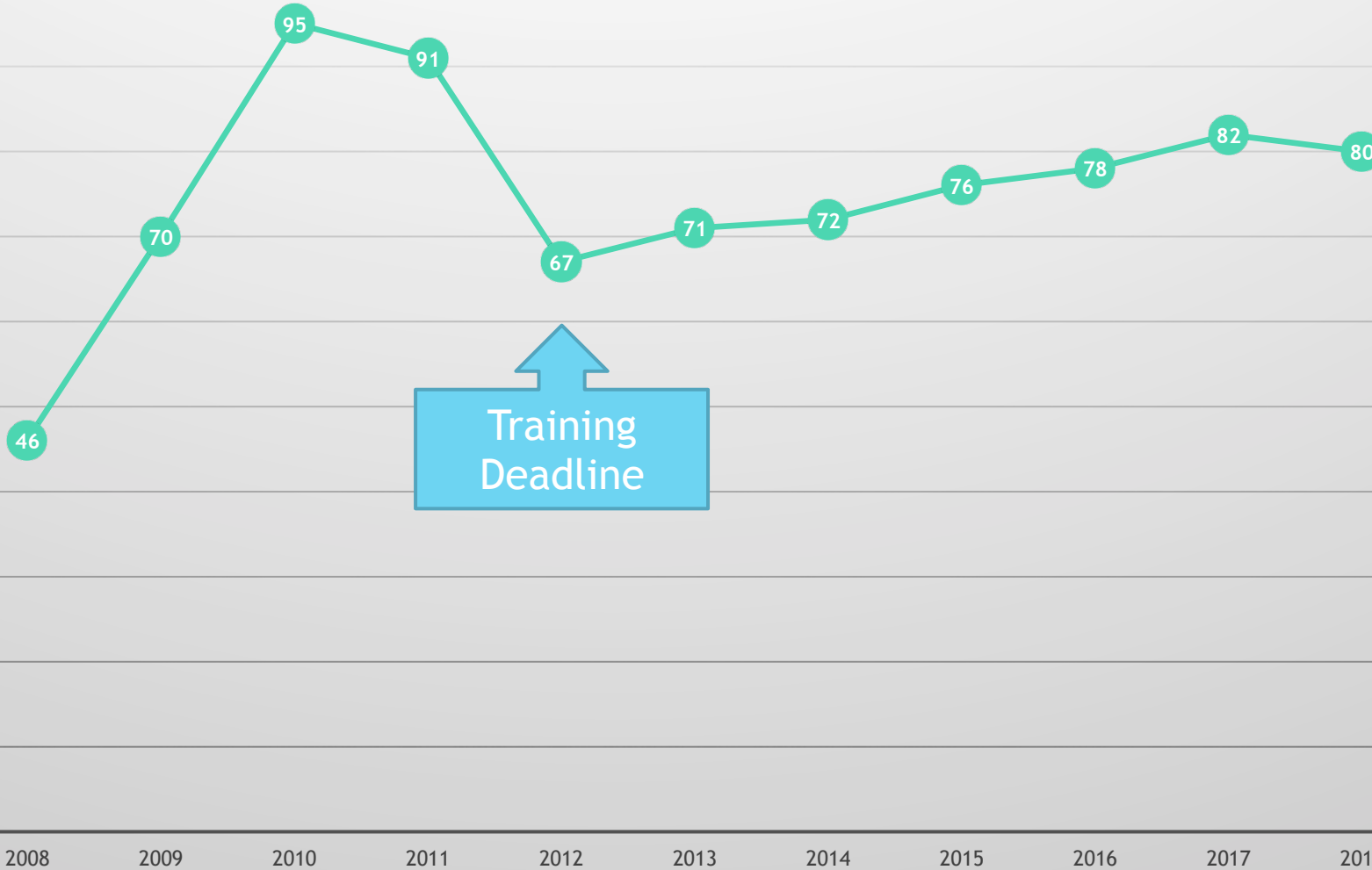
TOTAL
CHANGE
SOC
2008-20

+19%

SINCE
TRAINING
DEADLINE

+28%

MARYLAND SOC 2008-2018



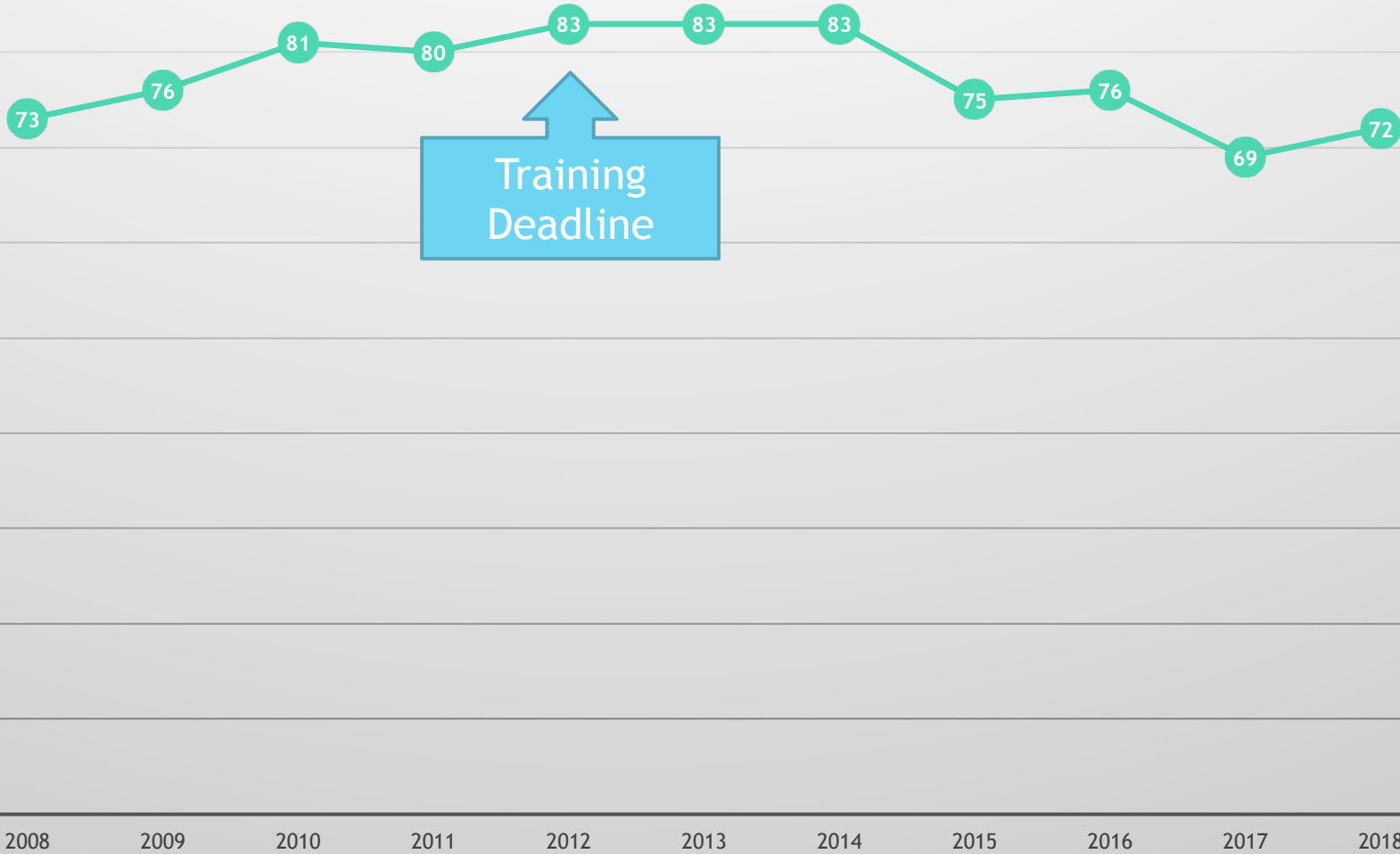
**TOTAL
CHANGE
SOC
2008-20**

+34%

**SINCE
TRAINING
DEADLINE**

+13%

PENNSYLVANIA SOC 2008-2018



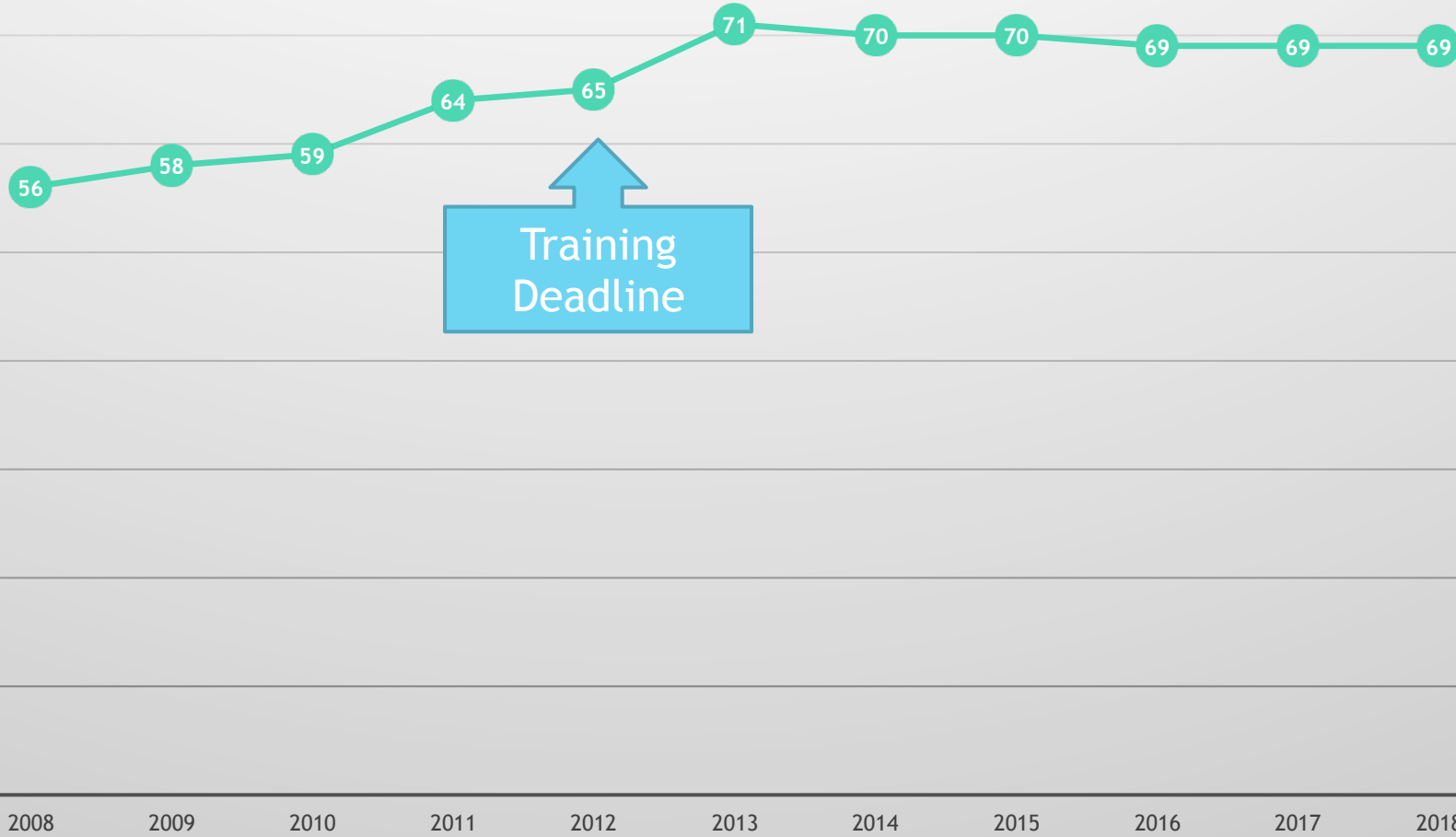
TOTAL
CHANGE
SOC
2008-20

-1%

SINCE
TRAINING
DEADLINE

-9%

VIRGINIA SOC 2008-2018



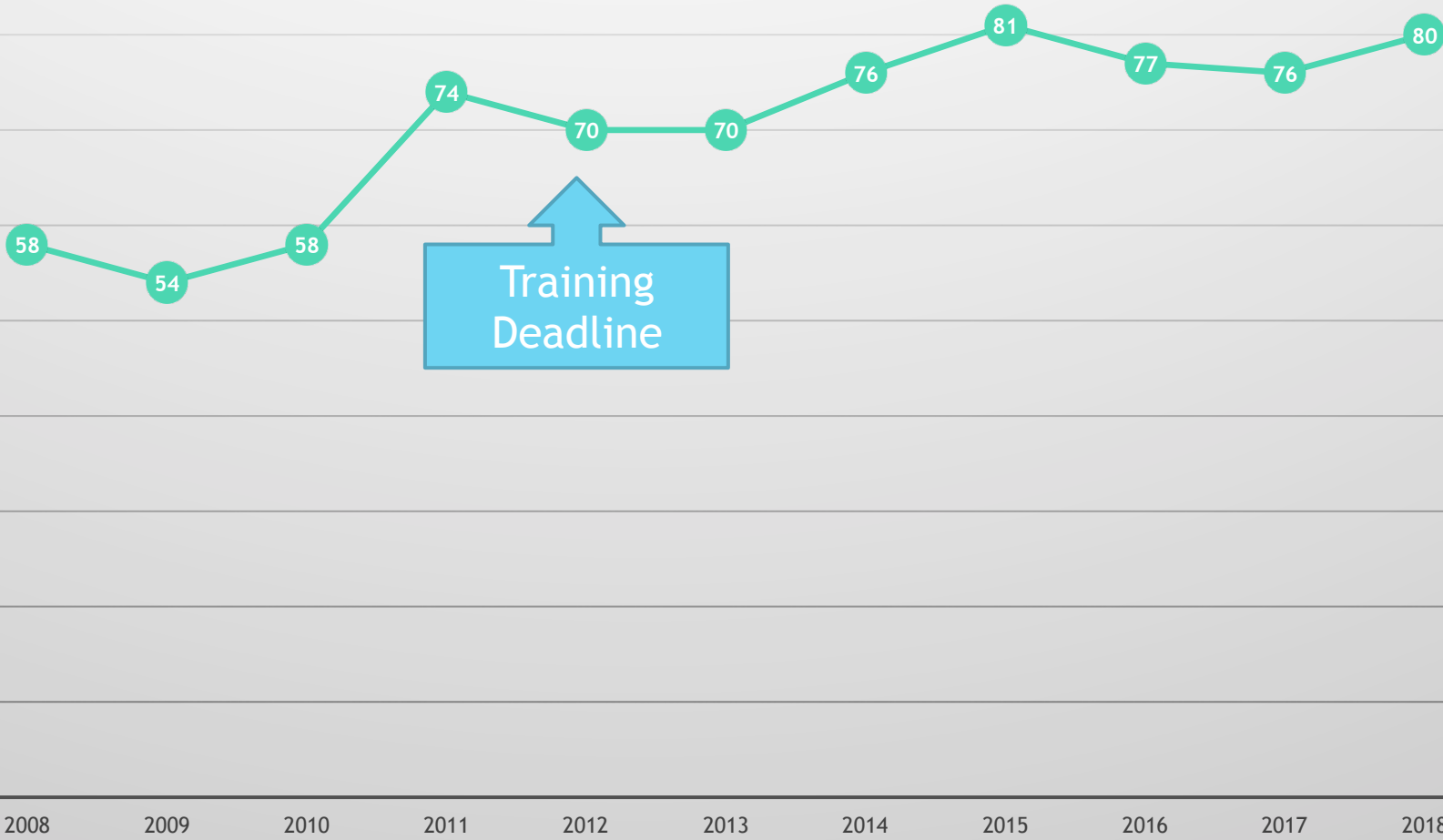
**TOTAL
CHANGE
SOC
2008-20**

+13%

**SINCE
TRAINING
DEADLINE**

+4%

WEST VIRGINIA SOC 2008-2018



**TOTAL
CHANGE
SOC
2008-20**

+22%

**SINCE
TRAINING
DEADLINE**

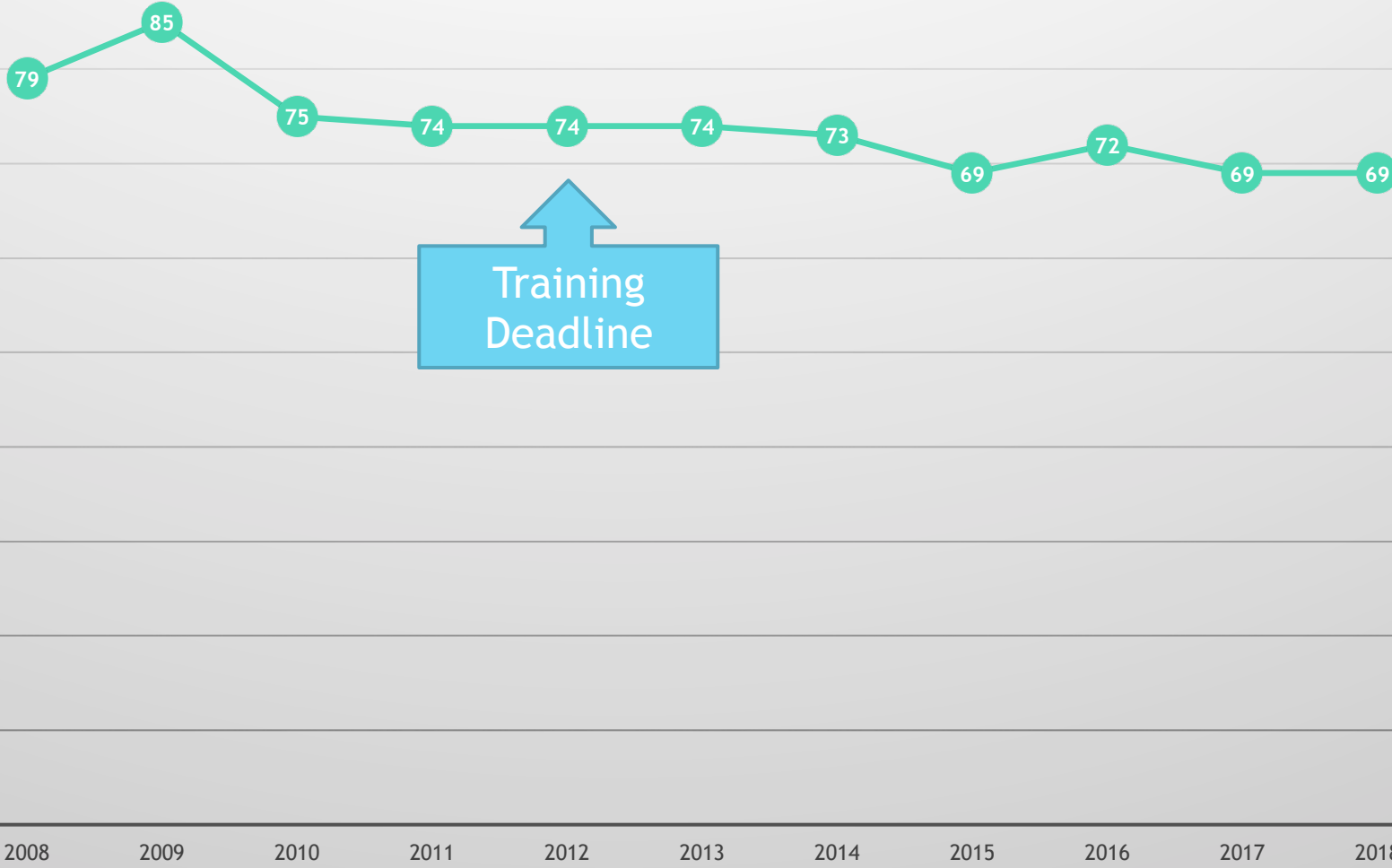
+10%



EPA Region 4

Alabama, Florida, Georgia, Kentucky,
Mississippi, North Carolina, South
Carolina, Tennessee

ALABAMA SOC 2008-2018



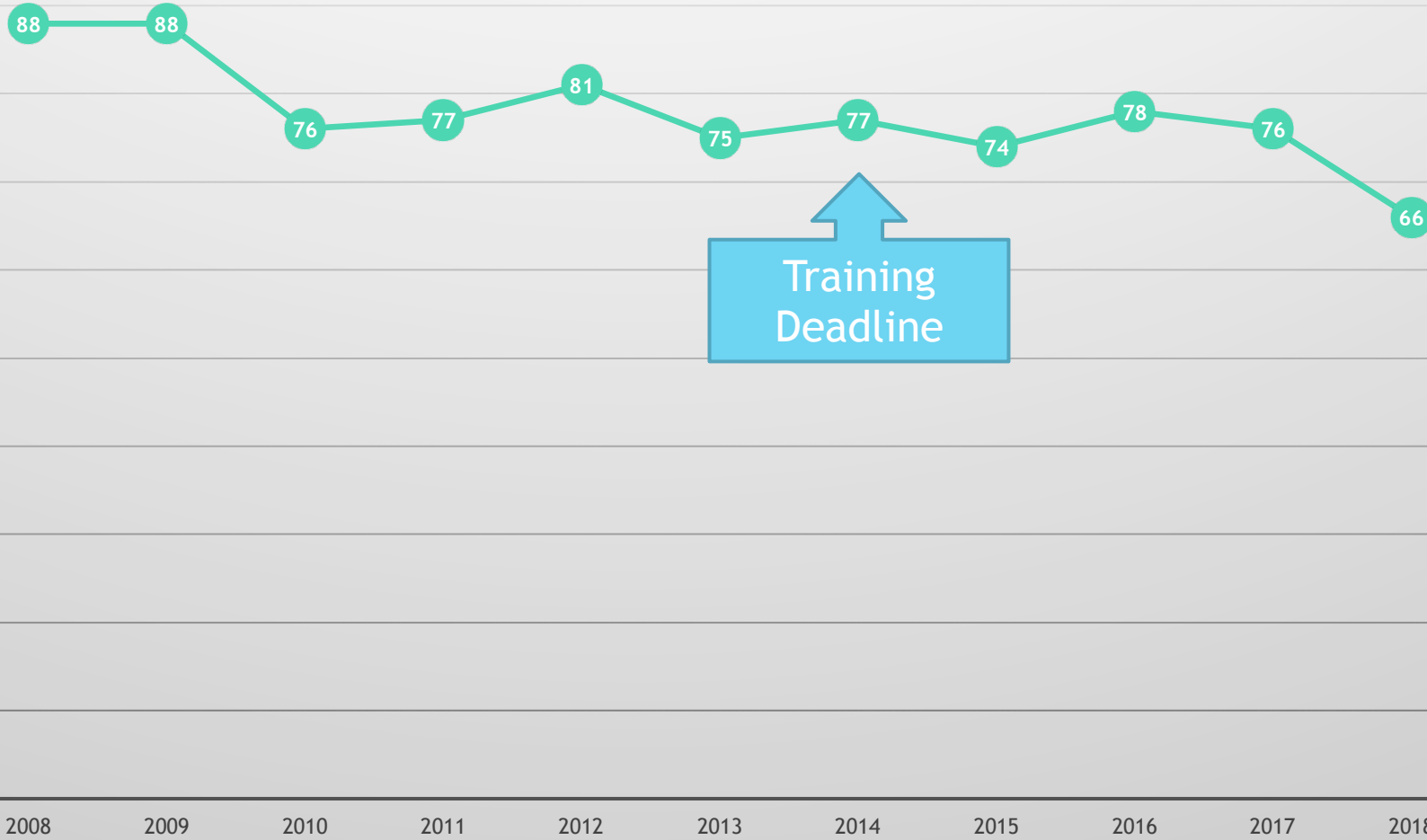
TOTAL
CHANGE
SOC
2008-20

-10%

SINCE
TRAINING
DEADLINE

-5%

FLORIDA SOC 2008-2018



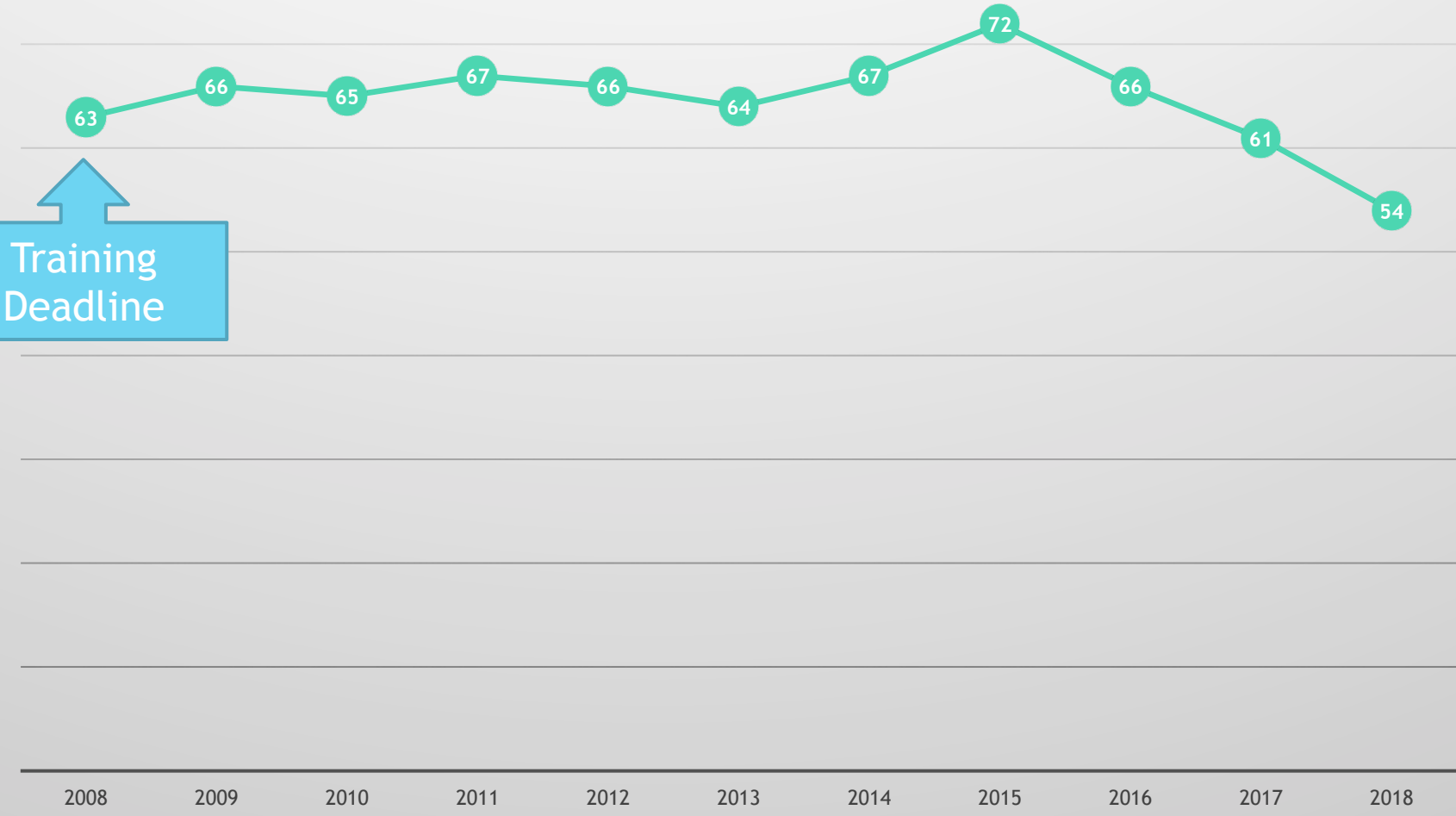
TOTAL
CHANGE
SOC
2008-20

-22%

SINCE
TRAINING
DEADLINE

-11%

GEORGIA SOC 2008-2018



Training
Deadline

TOTAL
CHANGE
SOC
2008-20

-9%

SINCE
TRAINING
DEADLINE

-9%

KENTUCKY SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+25%

SINCE
TRAINING
DEADLINE

+5%

MISSISSIPPI SOC 2008-2018



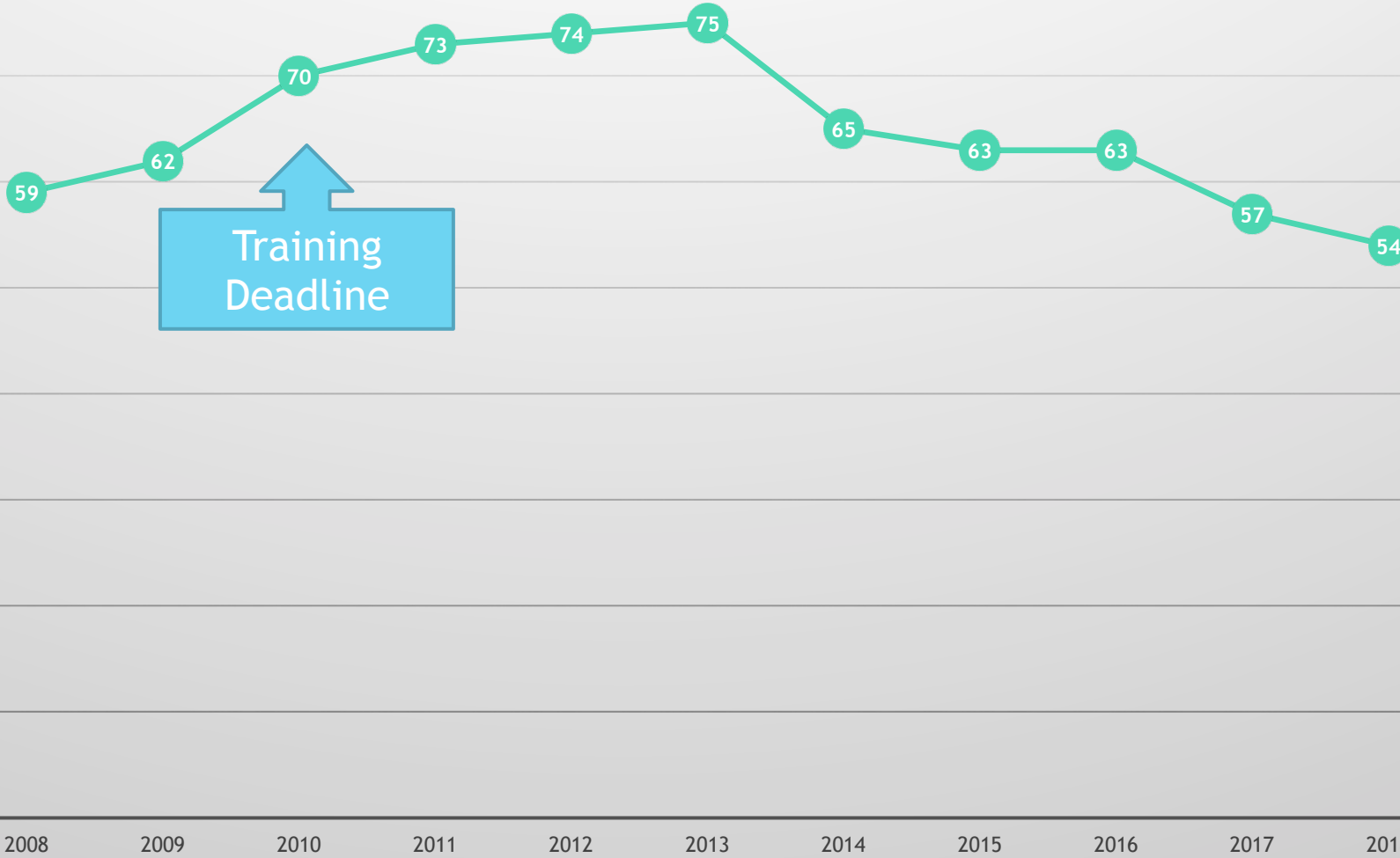
TOTAL
CHANGE
SOC
2008-20

-4%

SINCE
TRAINING
DEADLINE

-3%

NORTH CAROLINA SOC 2008-2018



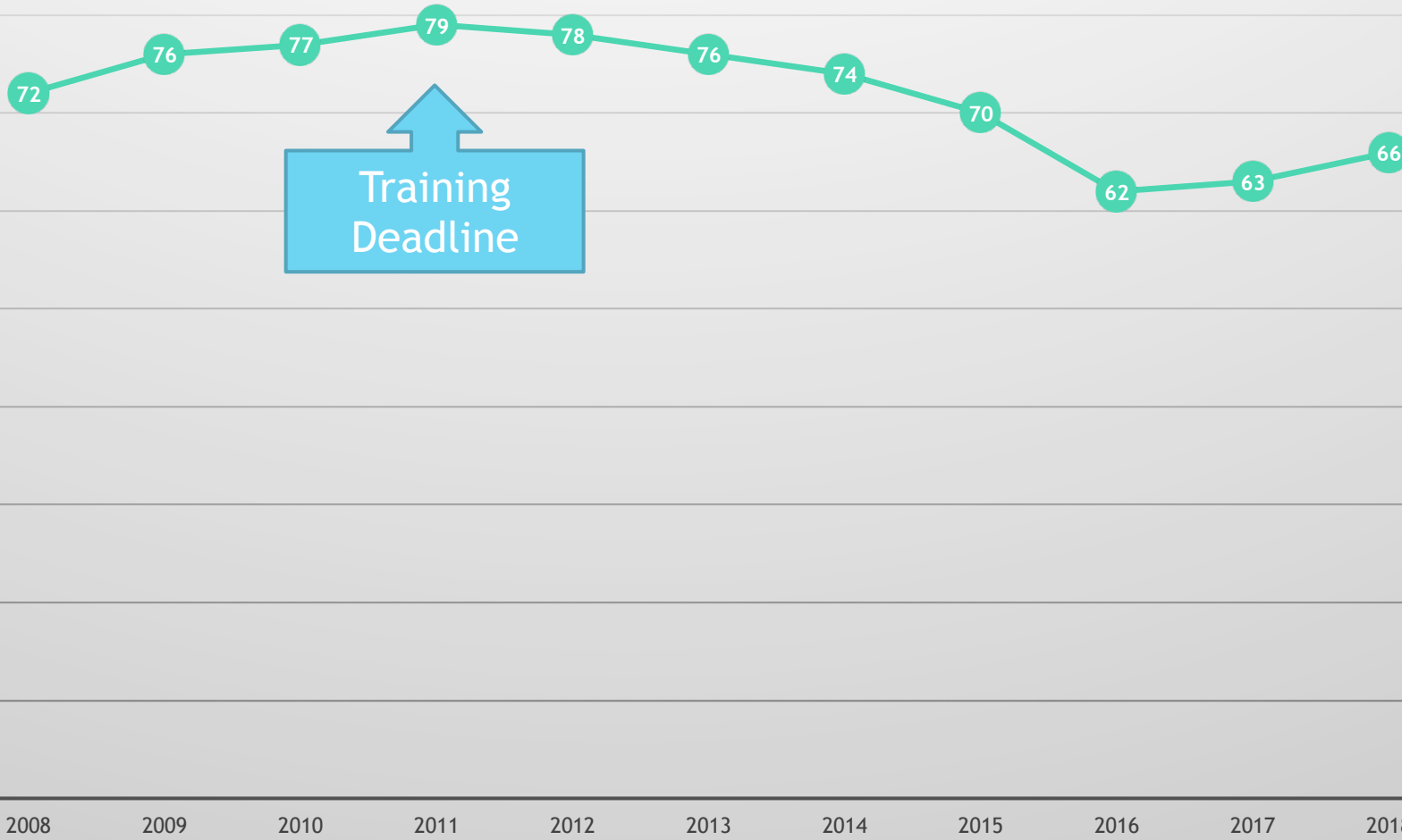
TOTAL
CHANGE
SOC
2008-2018

-4%

SINCE
TRAINING
DEADLINE

-16%

SOUTH CAROLINA SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

-6%

SINCE
TRAINING
DEADLINE

-13%

TENNESSEE SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

-2%

SINCE
TRAINING
DEADLINE

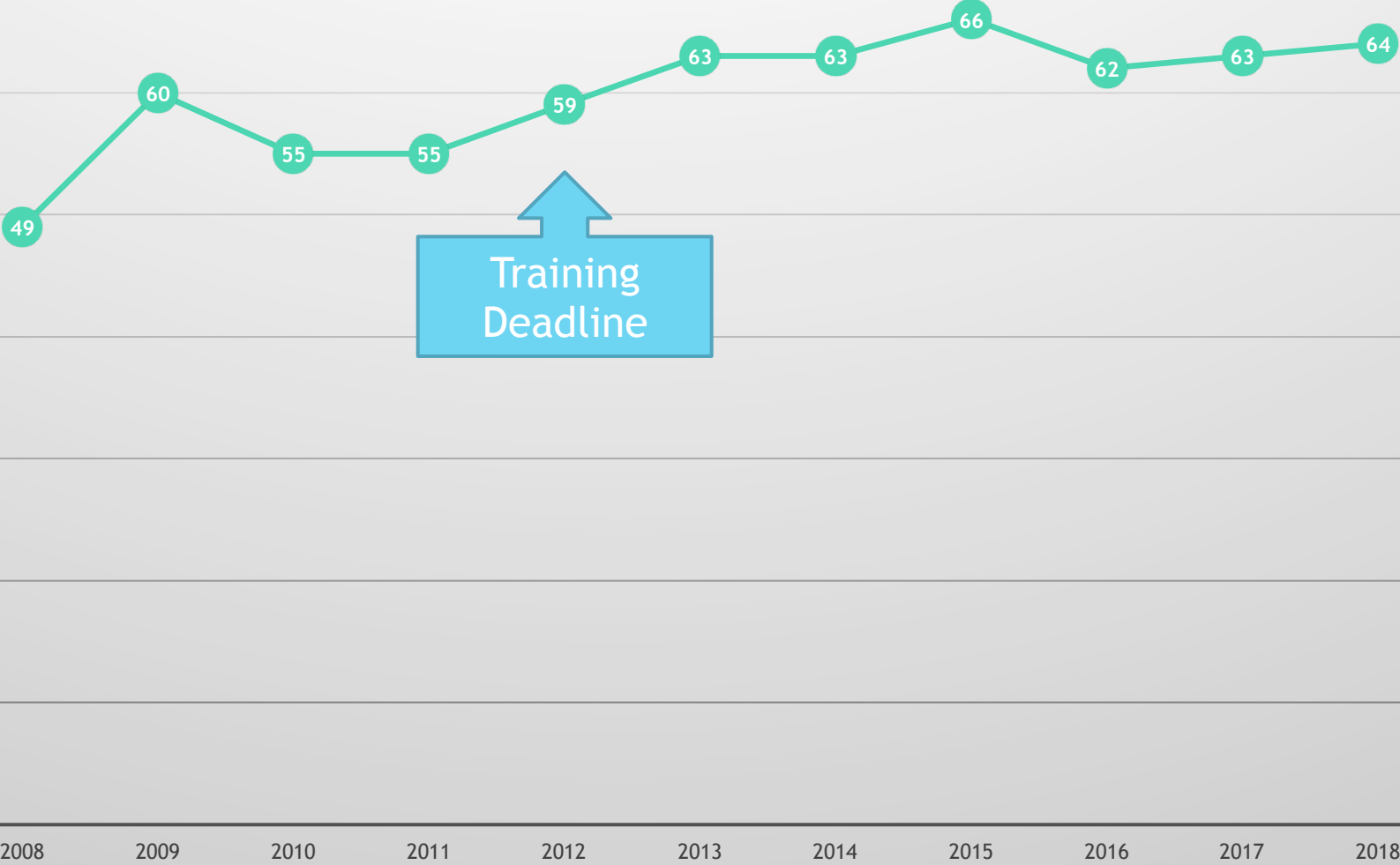
-5%



EPA Region 5

Illinois, Indiana, Michigan, Minnesota,
Ohio, Wisconsin

ILLINOIS SOC 2008-2018



Training Deadline

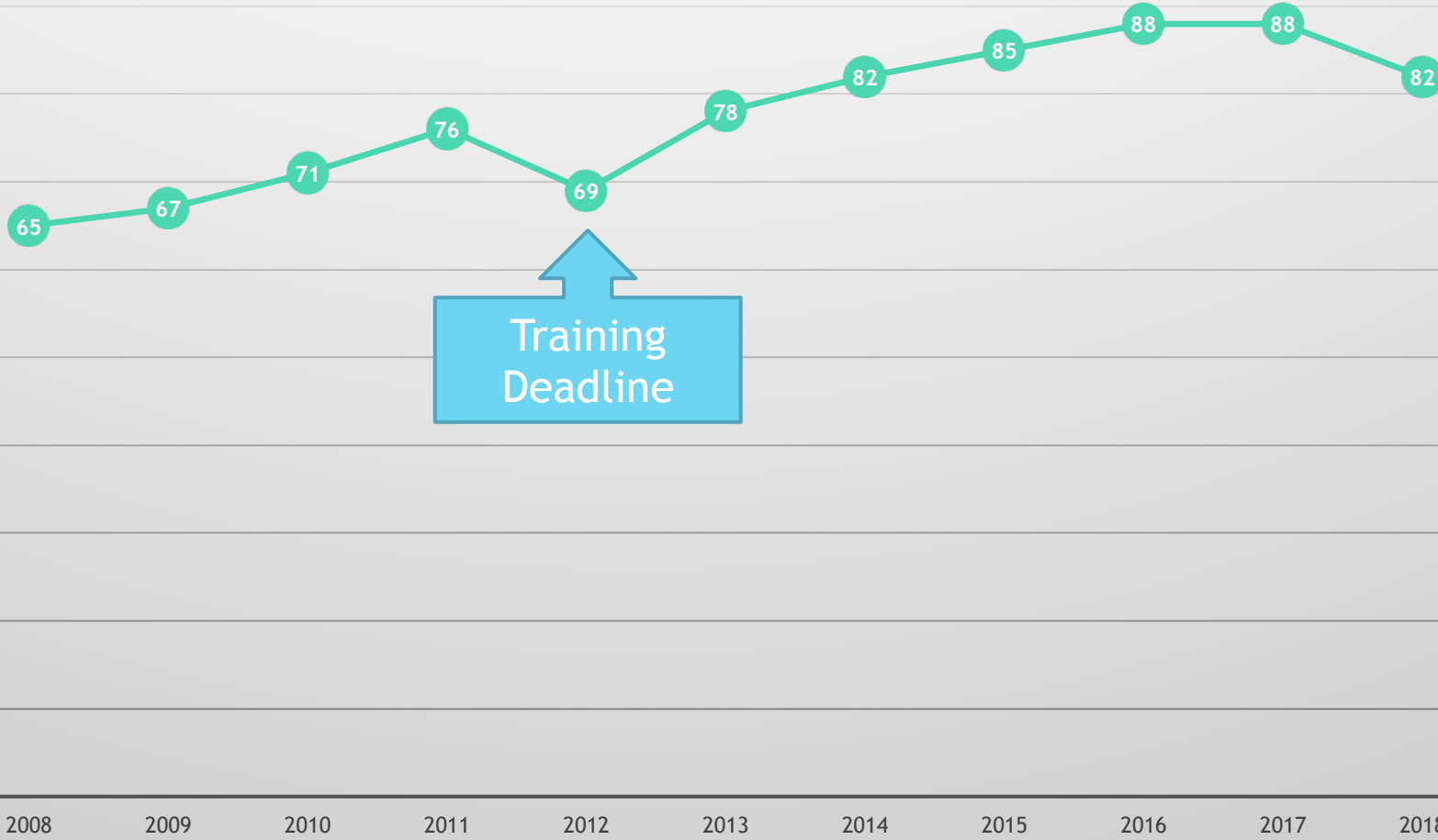
TOTAL
CHANGE
SOC
2008-20

+15%

SINCE
TRAINING
DEADLINE

+5%

INDIANA SOC 2008-2018



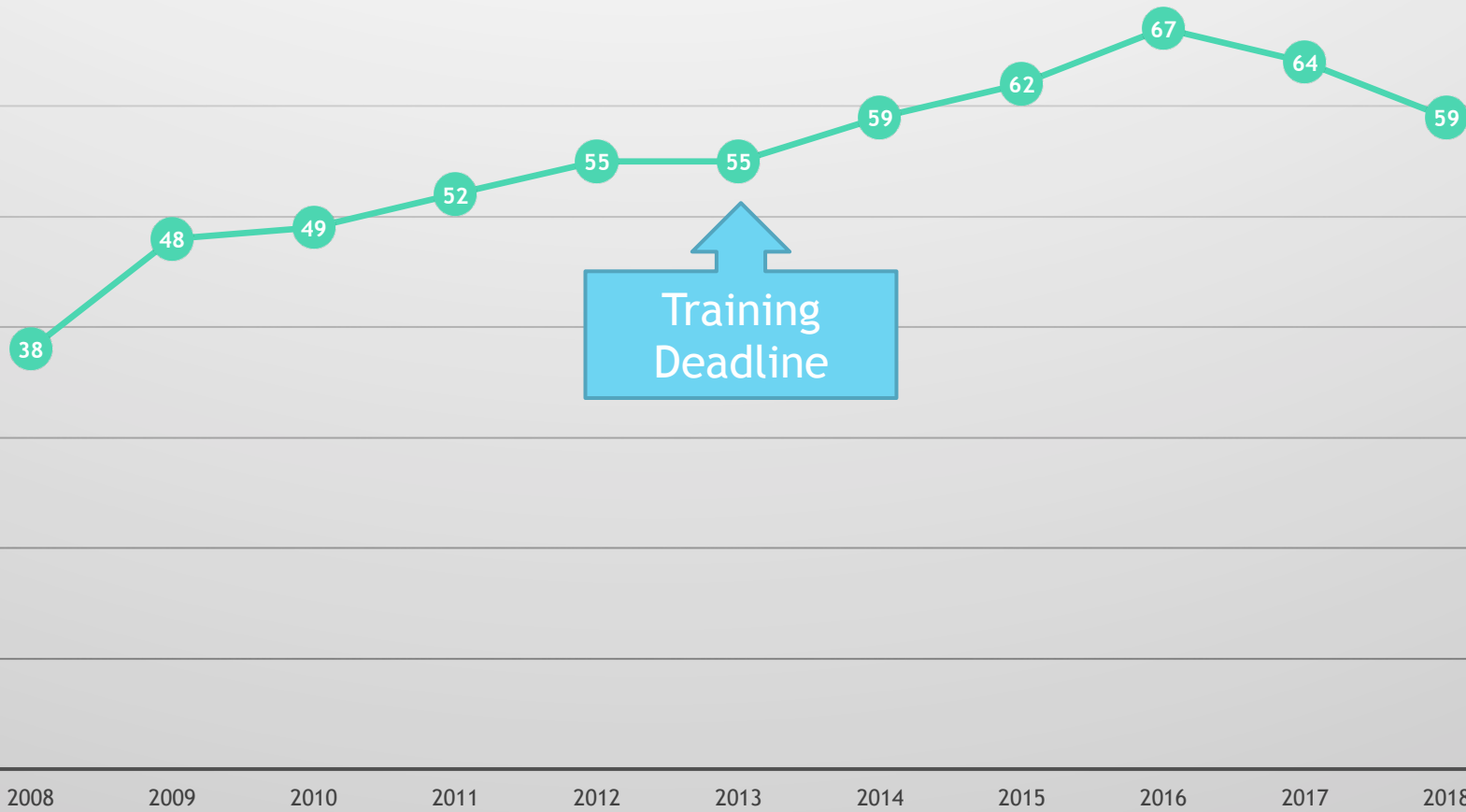
TOTAL
CHANGE
SOC
2008-20

+17%

SINCE
TRAINING
DEADLINE

+13%

MICHIGAN SOC 2008-2018



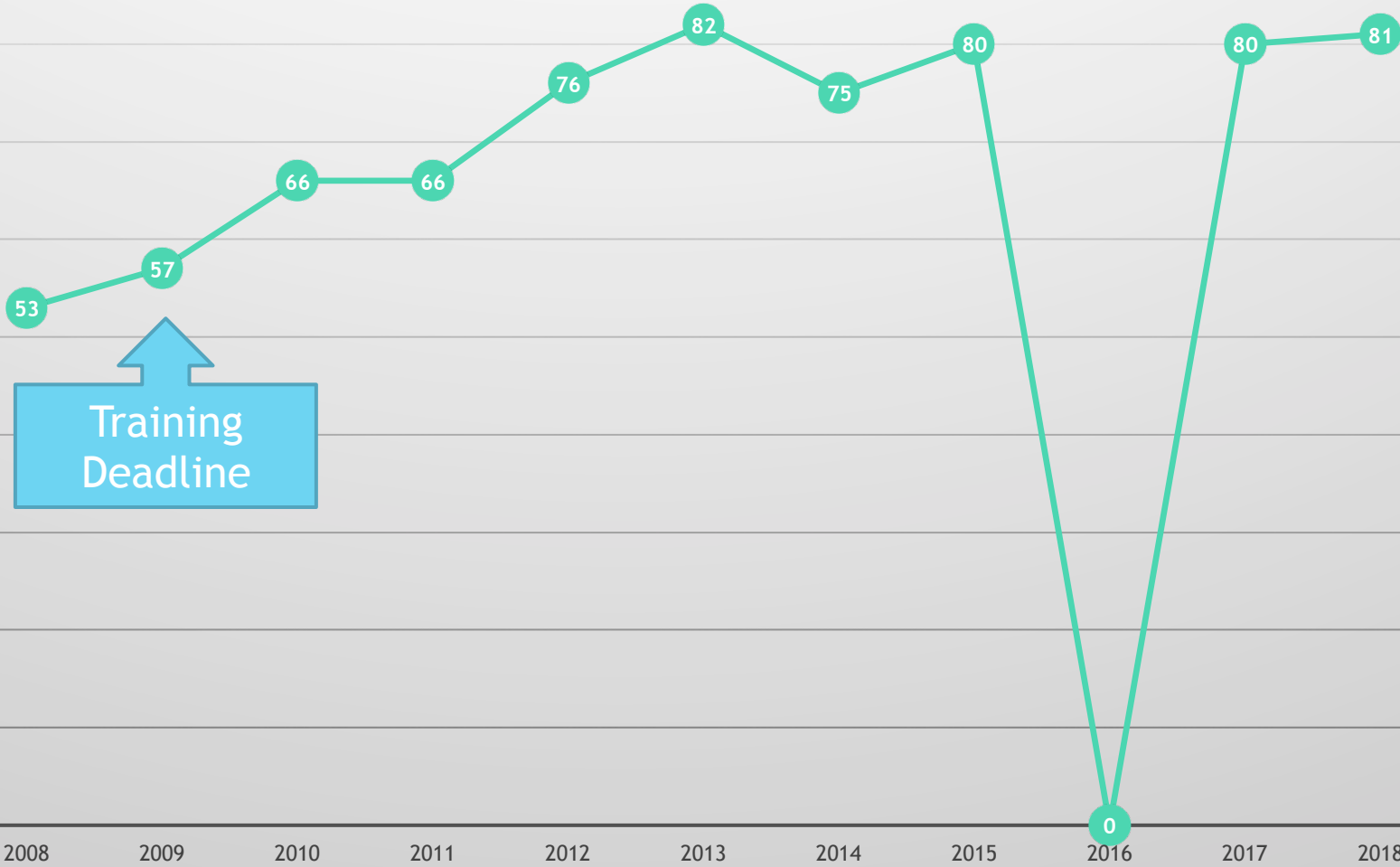
TOTAL
CHANGE
SOC
2008-20

+21%

SINCE
TRAINING
DEADLINE

+4%

MINNESOTA SOC 2008-2018



Training
Deadline

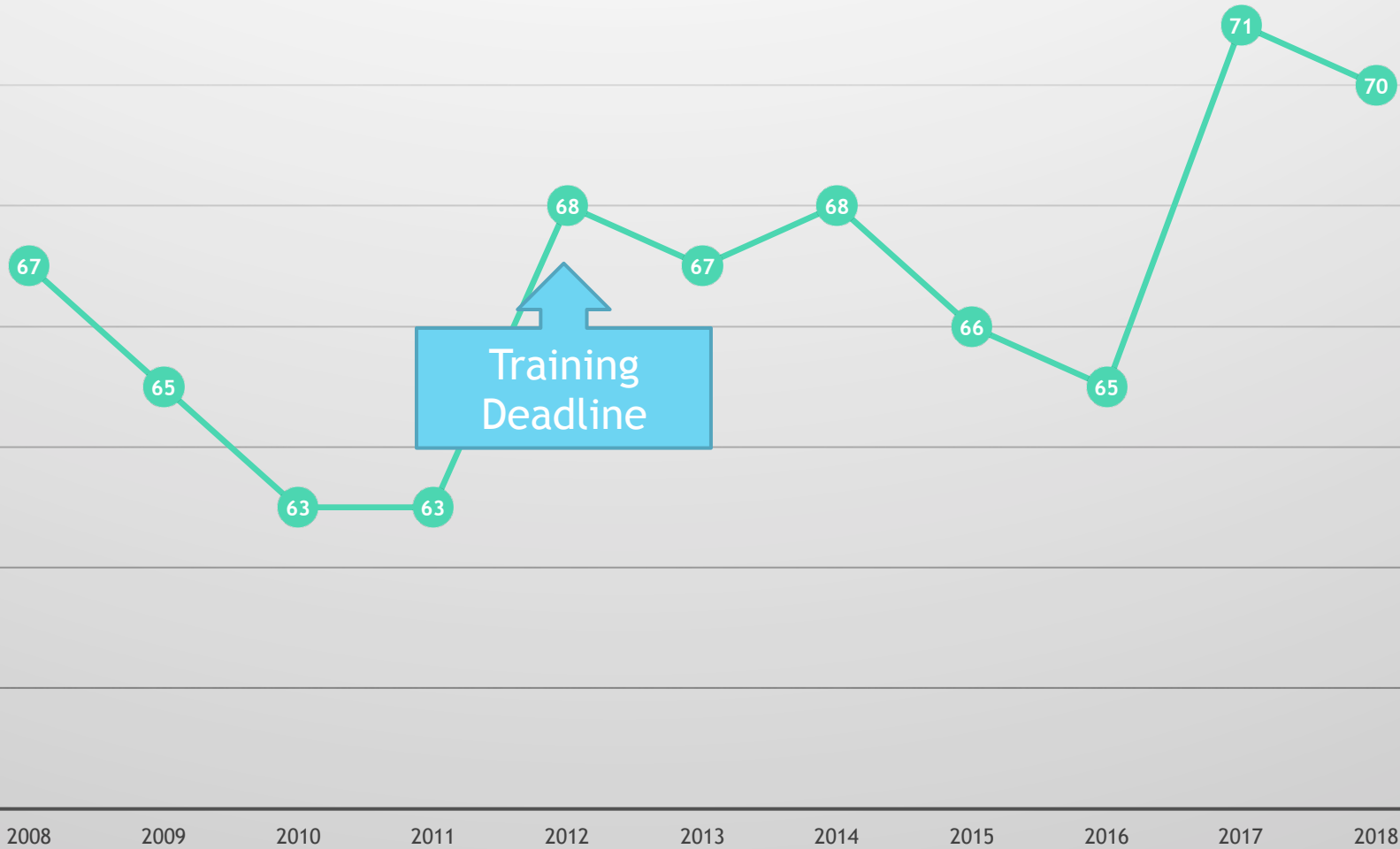
TOTAL
CHANGE
SOC
2008-2018

+28%

SINCE
TRAINING
DEADLINE

+24%

OHIO SOC 2008-2018



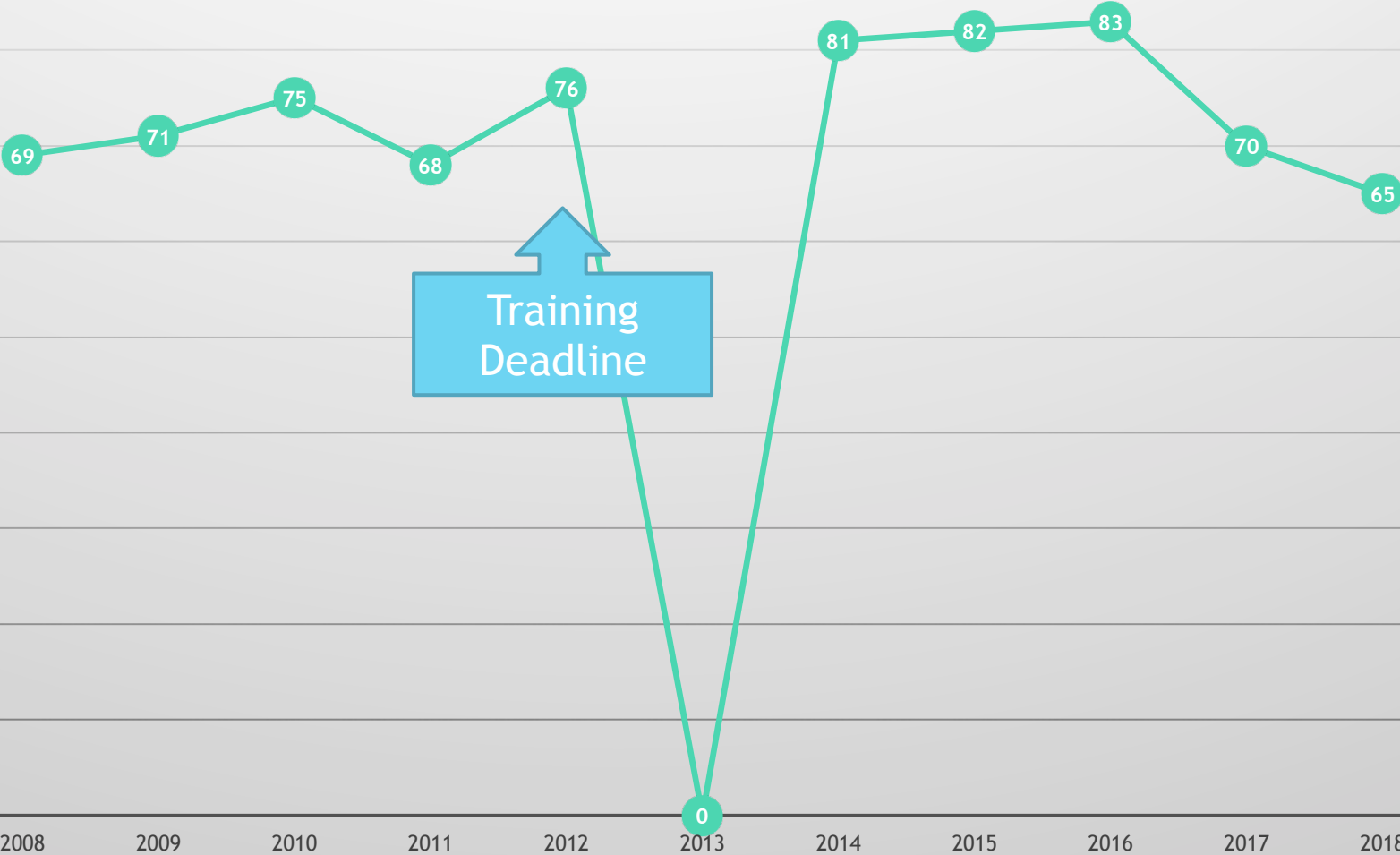
TOTAL
CHANGE
SOC
2008-20

+3%

SINCE
TRAINING
DEADLINE

+2%

WISCONSIN SOC 2008-2018



Training
Deadline

TOTAL
CHANGE
SOC
2008-20

-4%

SINCE
TRAINING
DEADLINE

-11%



EPA Region 6

Arkansas, Louisiana, New Mexico,
Oklahoma, Texas

ARKANSAS SOC 2008-2018



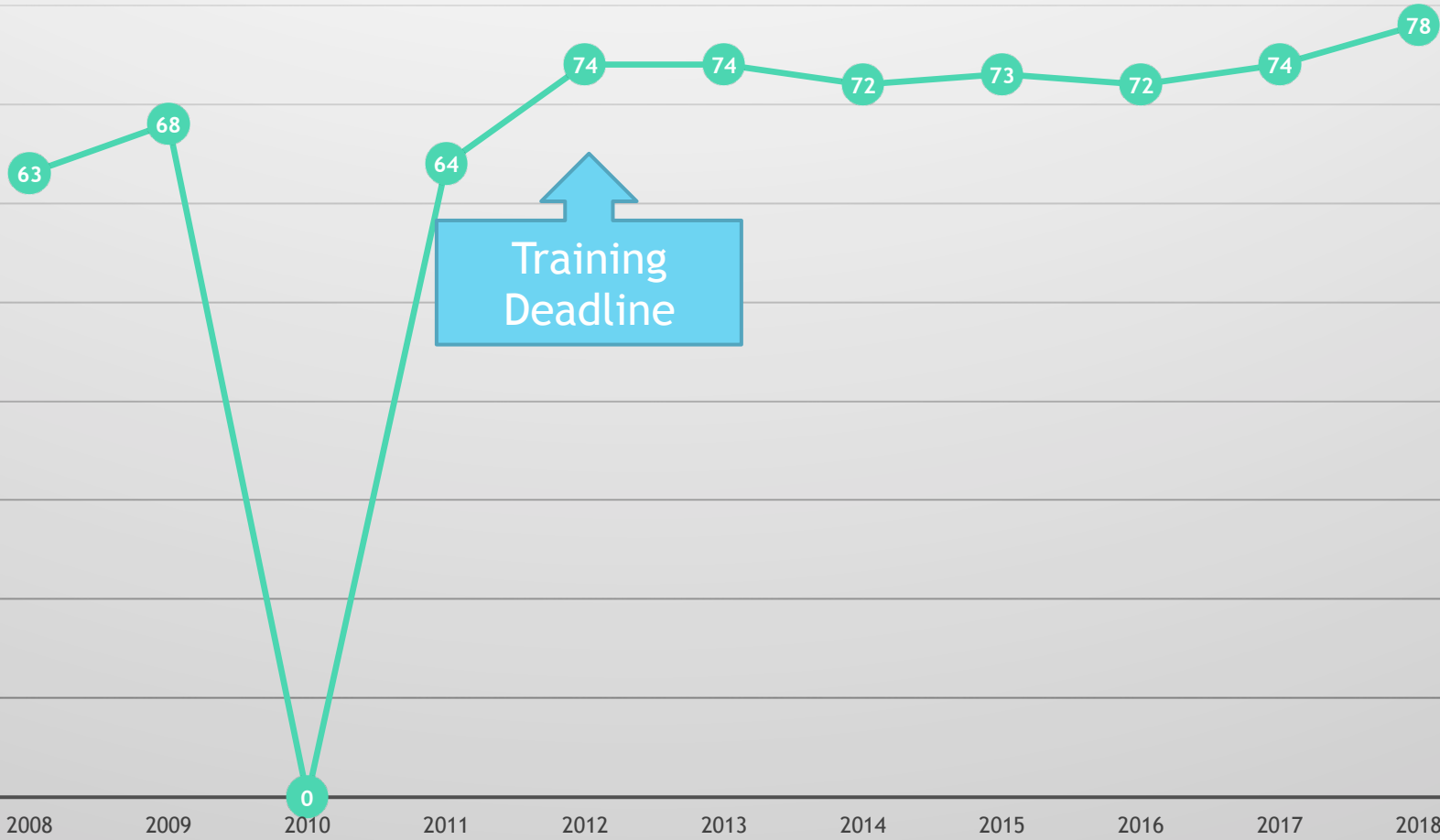
TOTAL
CHANGE
SOC
2008-20

+18%

SINCE
TRAINING
DEADLINE

+13%

LOUISIANA SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+15%

SINCE
TRAINING
DEADLINE

+4%

NEW MEXICO SOC 2008-2018



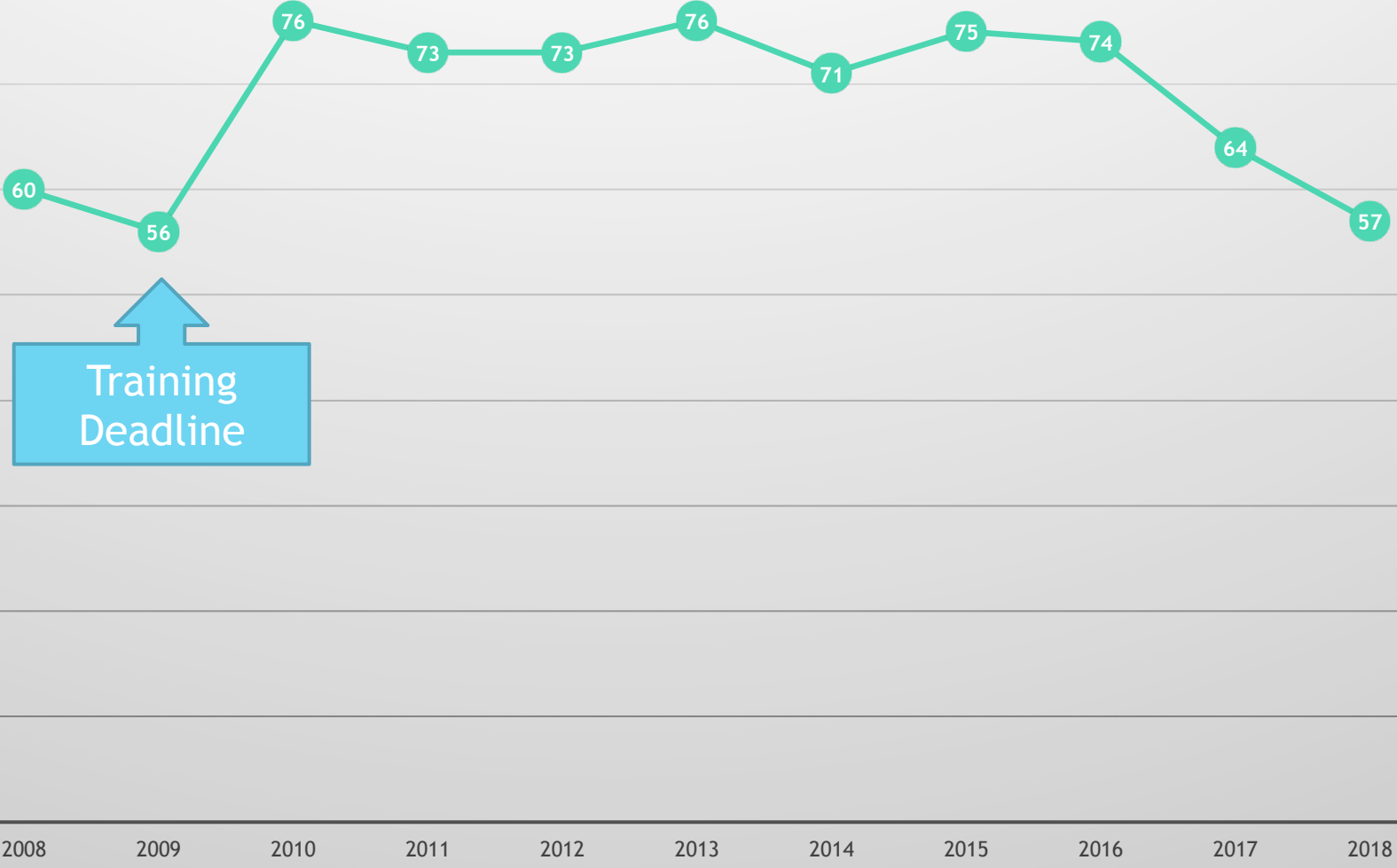
TOTAL
CHANGE
SOC
2008-20

+9%

SINCE
TRAINING
DEADLINE

+9%

OKLAHOMA SOC 2008-2018



Training
Deadline

TOTAL
CHANGE
SOC
2008-20

+17%

SINCE
TRAINING
DEADLINE

+11%

TEXAS SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+15%

SINCE
TRAINING
DEADLINE

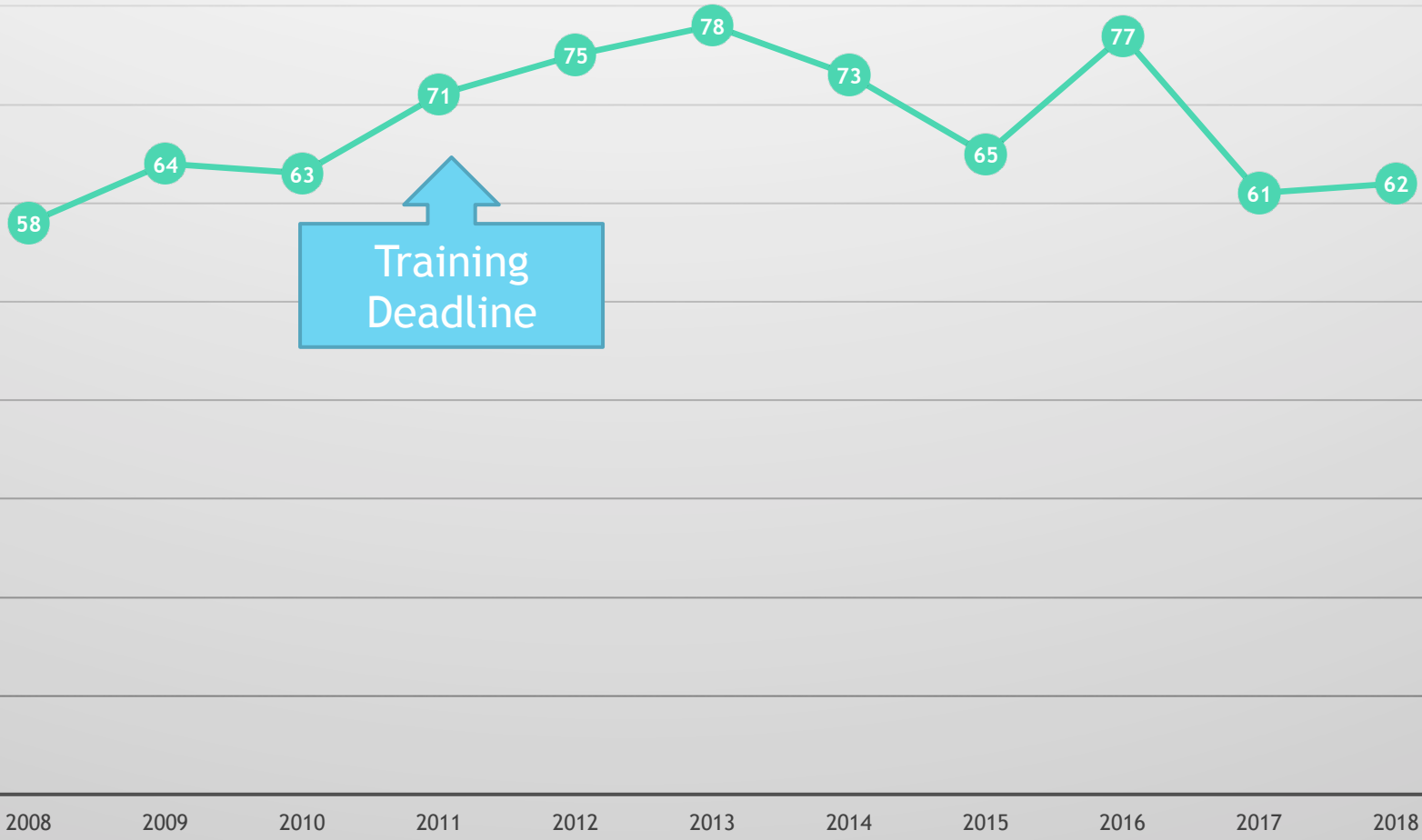
+5%

EPA Region 7

Iowa, Kansas, Missouri, Nebraska



IOWA SOC 2008-2018



Training
Deadline

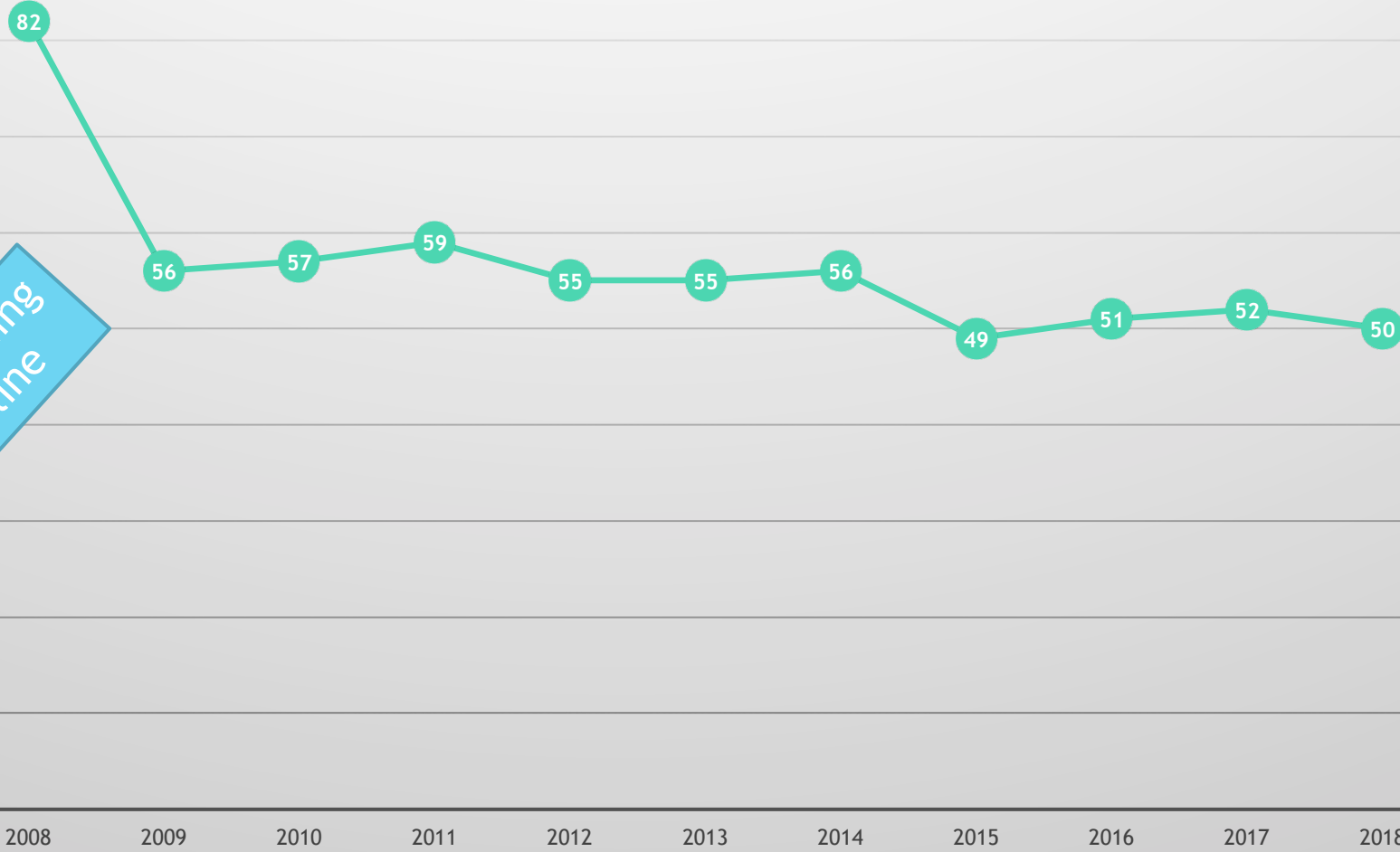
TOTAL
CHANGE
SOC
2008-20

+4%

SINCE
TRAINING
DEADLINE

-9%

KANSAS SOC 2008-2018



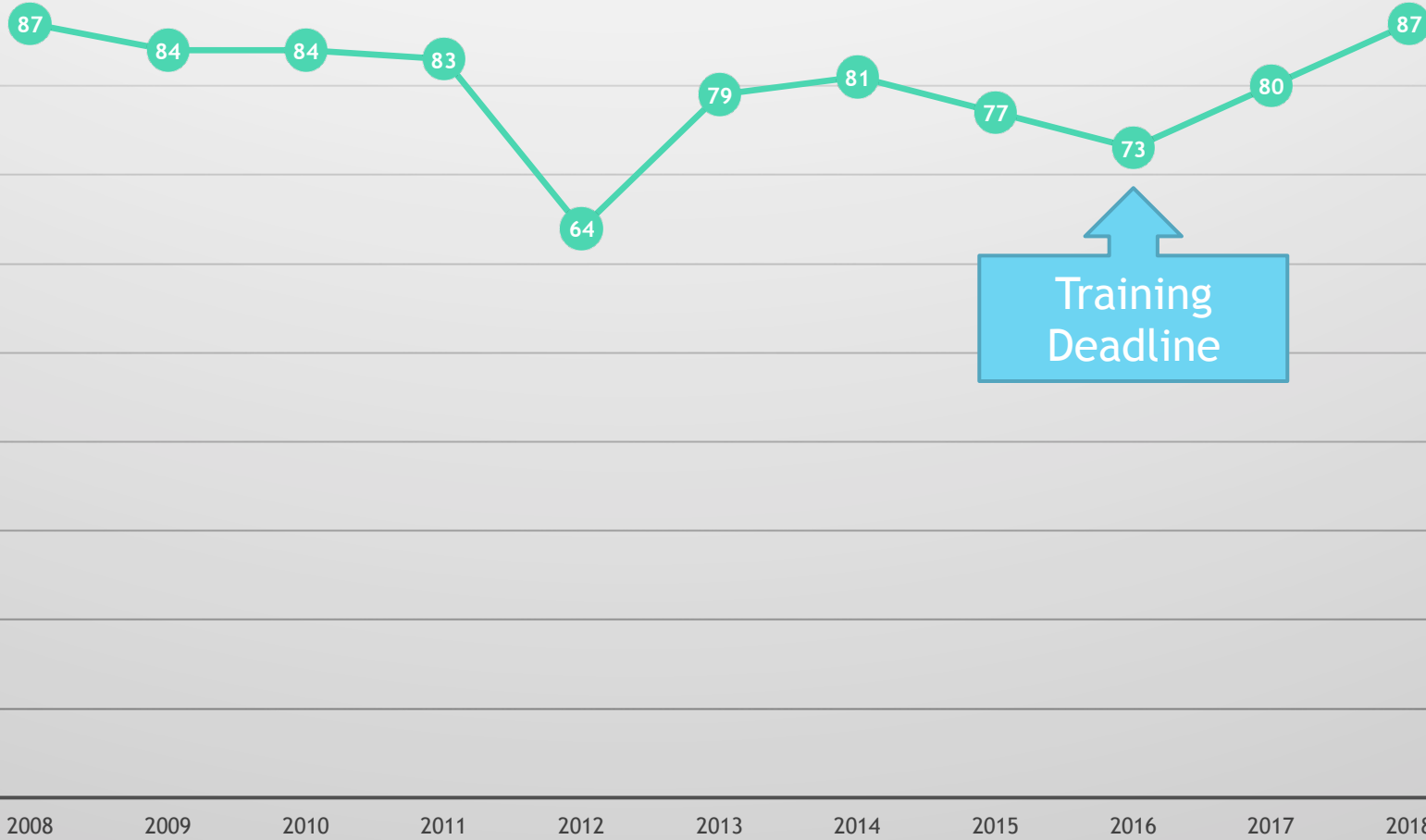
TOTAL
CHANGE
SOC
2008-20

-32%

SINCE
TRAINING
DEADLINE

-32%

MISSOURI SOC 2008-2018



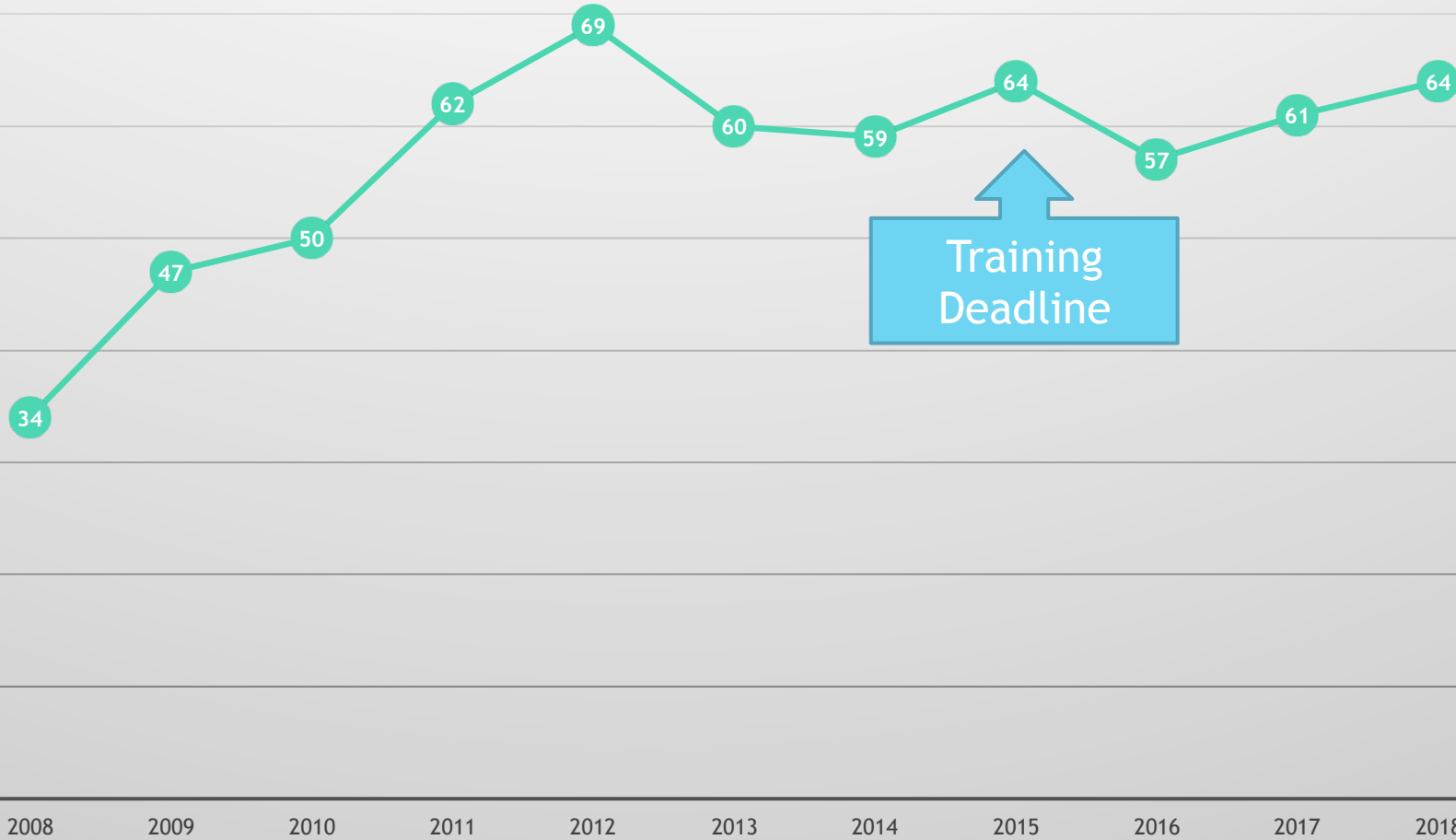
TOTAL
CHANGE
SOC
2008-20

0%

SINCE
TRAINING
DEADLINE

+15%

NEBRASKA SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+30%

SINCE
TRAINING
DEADLINE

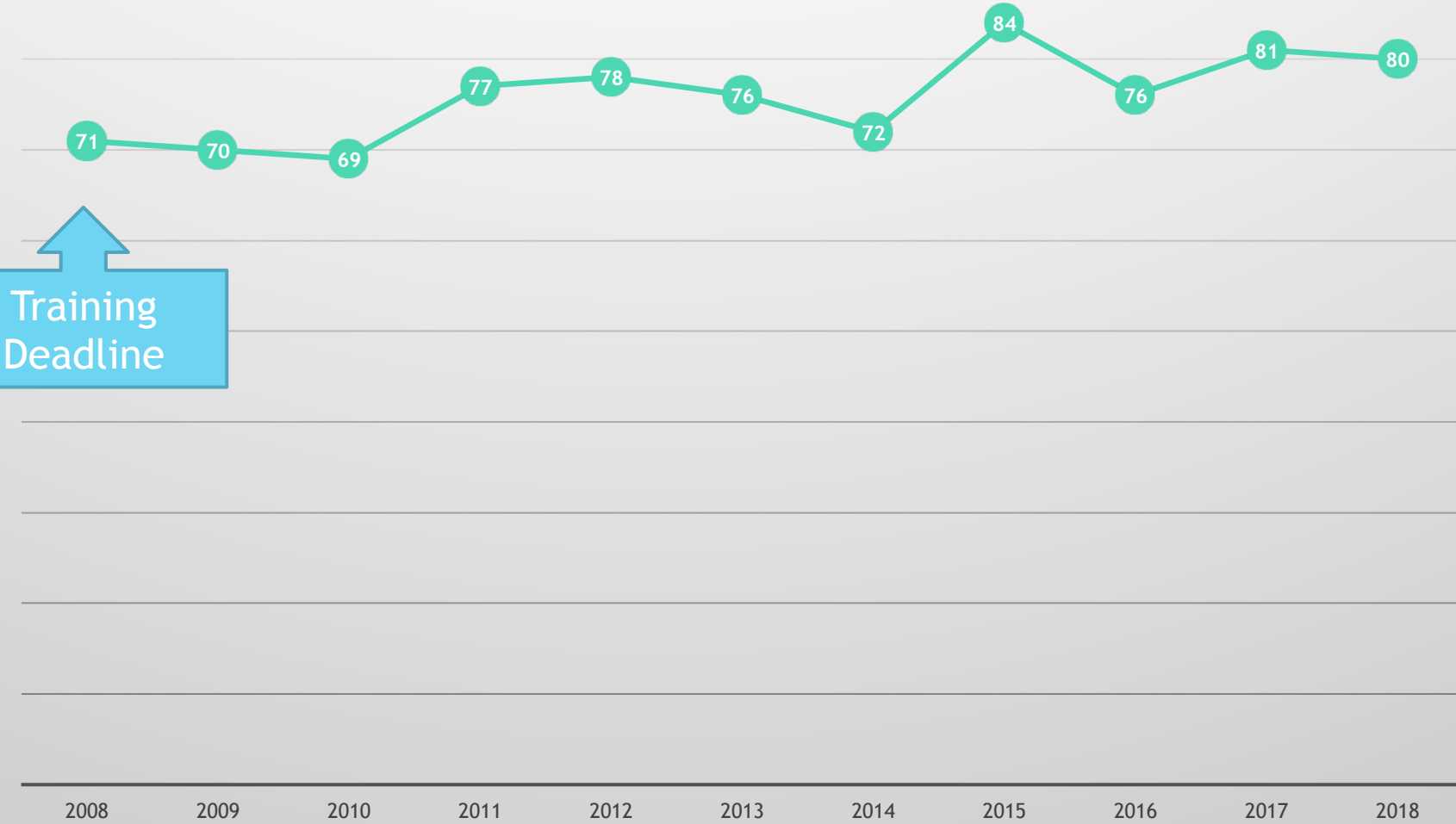
0%



EPA Region 8

Colorado, Montana, North Dakota, South
Dakota, Utah, Wyoming

COLORADO SOC 2008-2018



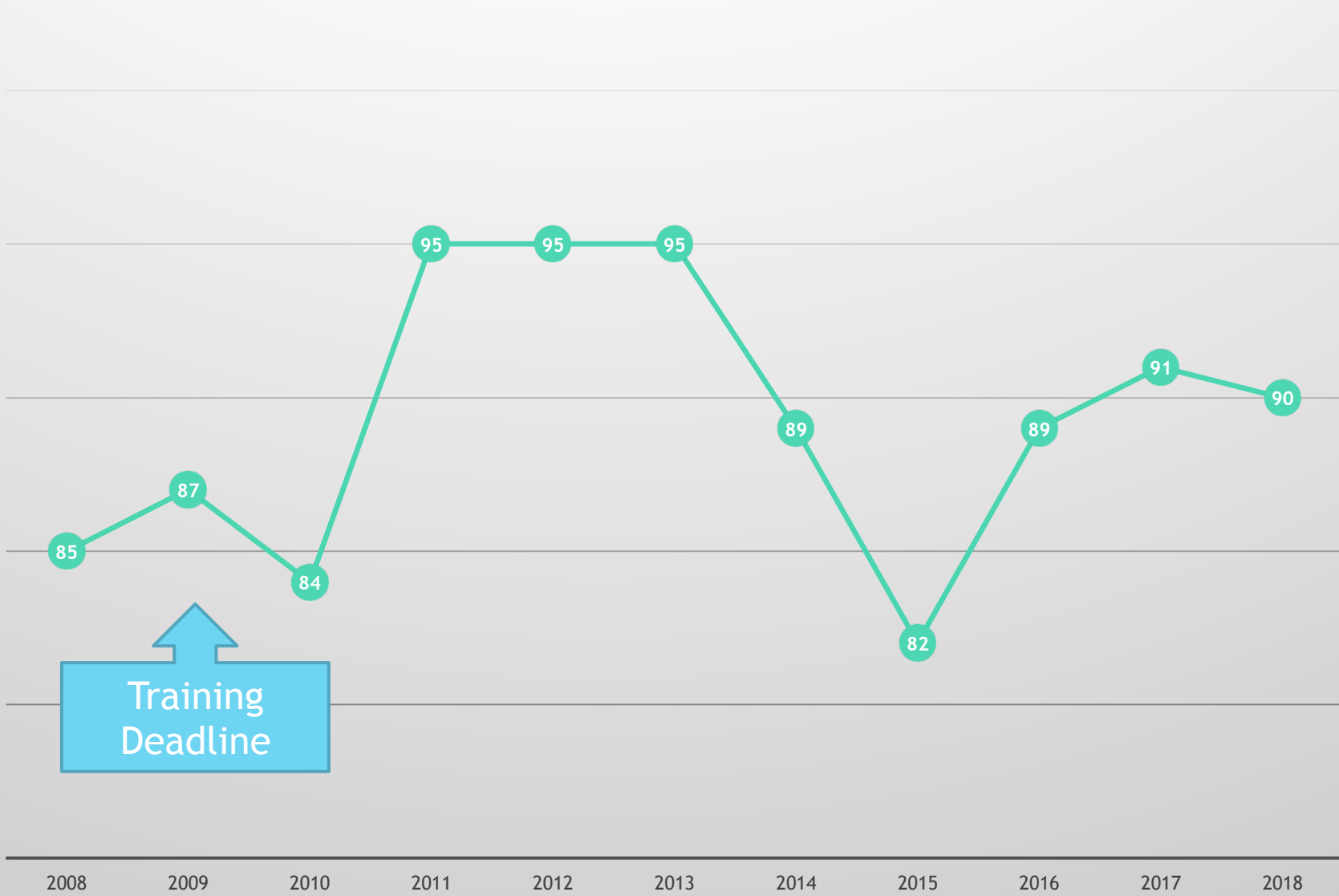
TOTAL
CHANGE
SOC
2008-20

+9%

SINCE
TRAINING
DEADLINE

+9%

MONTANA SOC 2008-2018



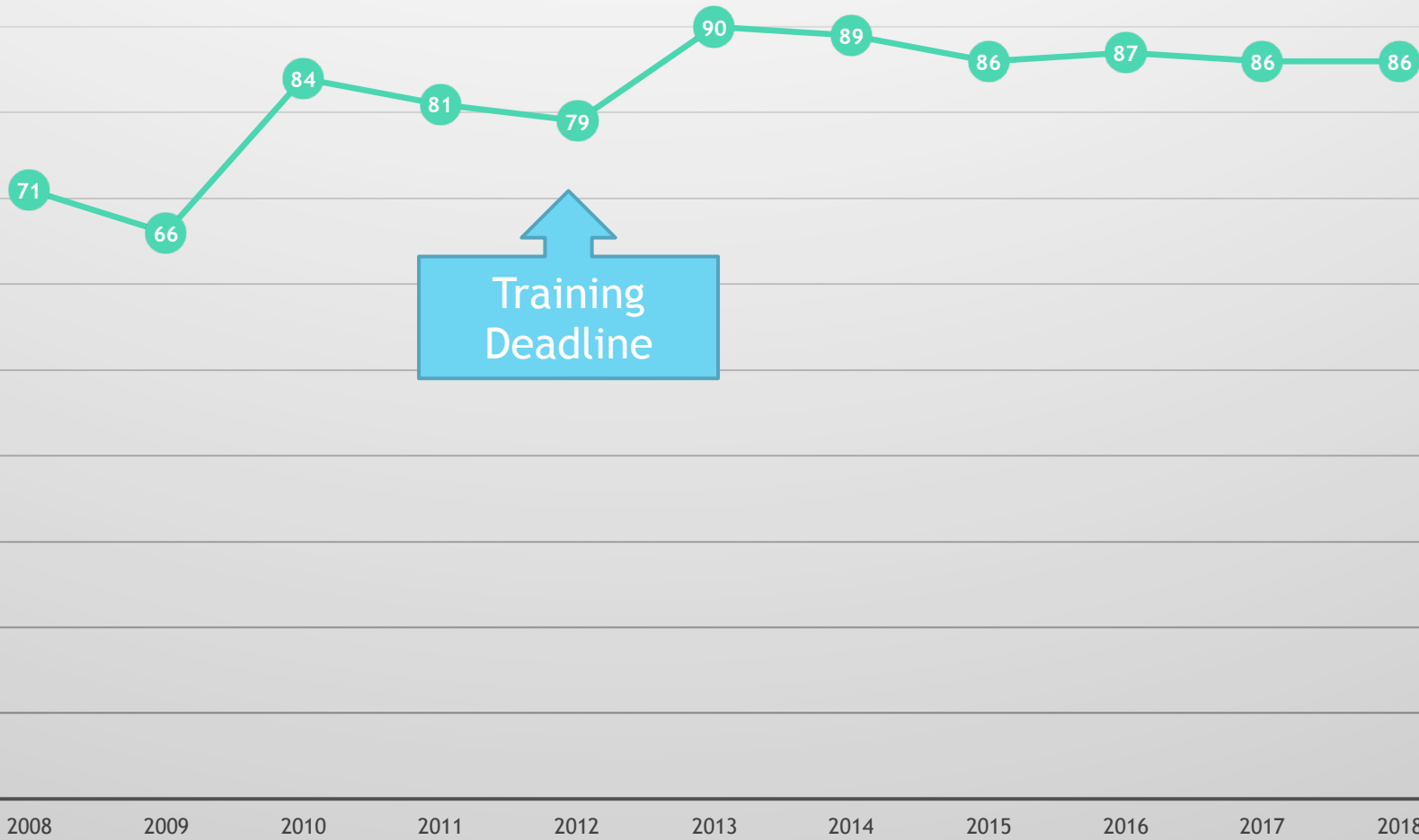
TOTAL
CHANGE
SOC
2008-20

+5%

SINCE
TRAINING
DEADLINE

+3%

NORTH DAKOTA SOC 2008-2018



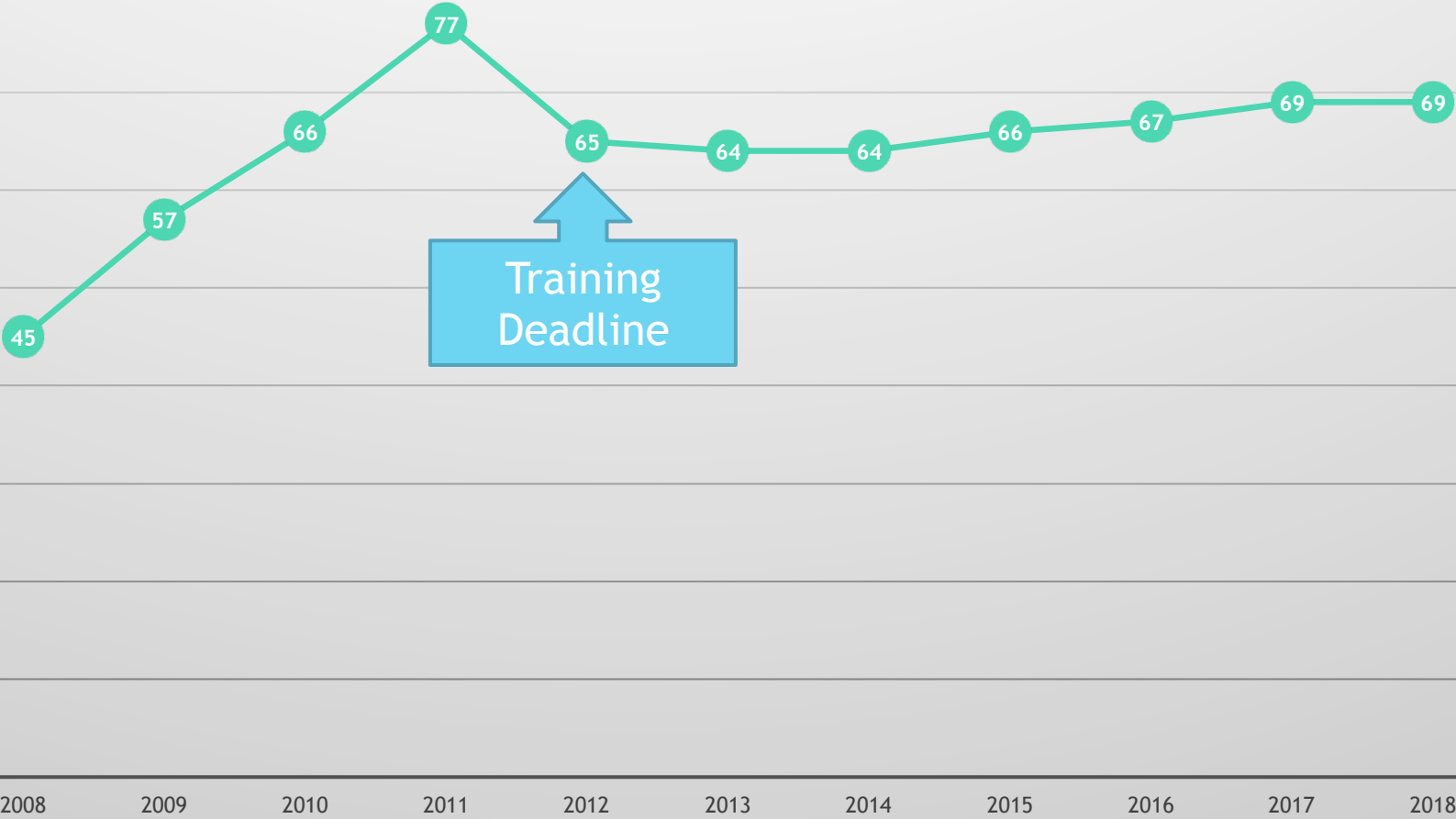
TOTAL
CHANGE
SOC
2008-20

+15%

SINCE
TRAINING
DEADLINE

+7%

SOUTH DAKOTA SOC 2008-2018



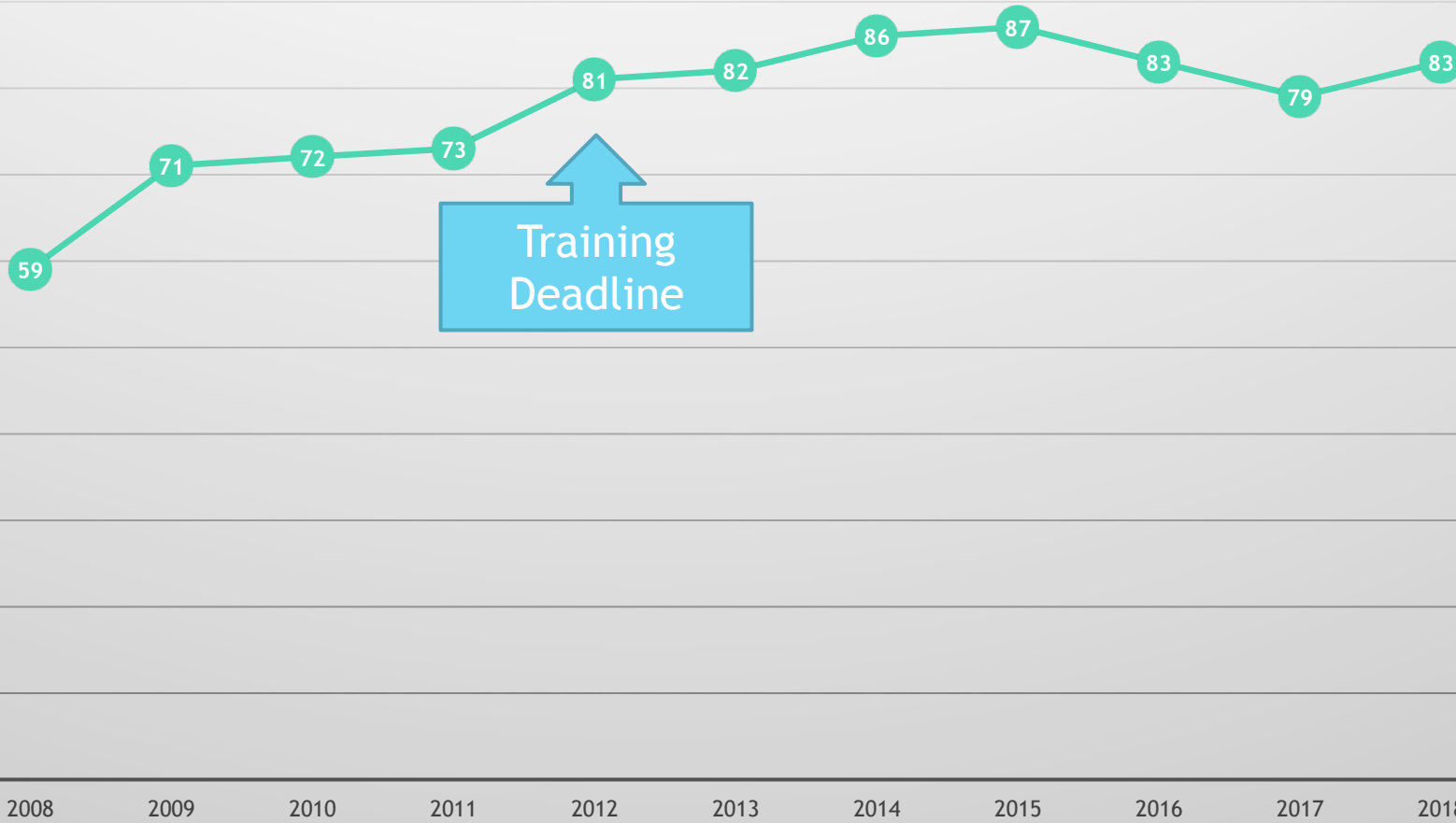
TOTAL
CHANGE
SOC
2008-20

+24%

SINCE
TRAINING
DEADLINE

+4%

UTAH SOC 2008-2018



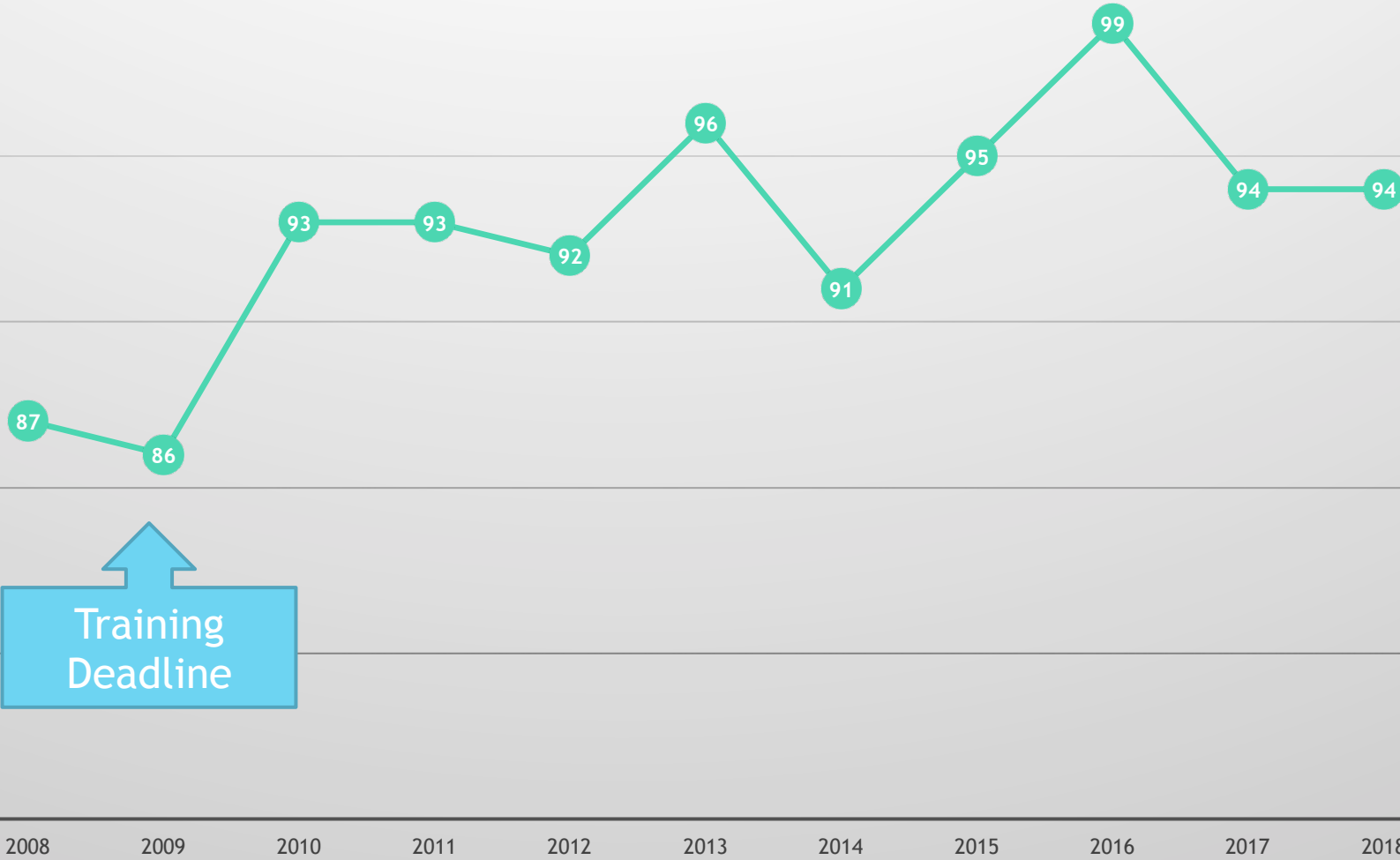
TOTAL
CHANGE
SOC
2008-20

+24%

SINCE
TRAINING
DEADLINE

+2%

WYOMING SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+7%

SINCE
TRAINING
DEADLINE

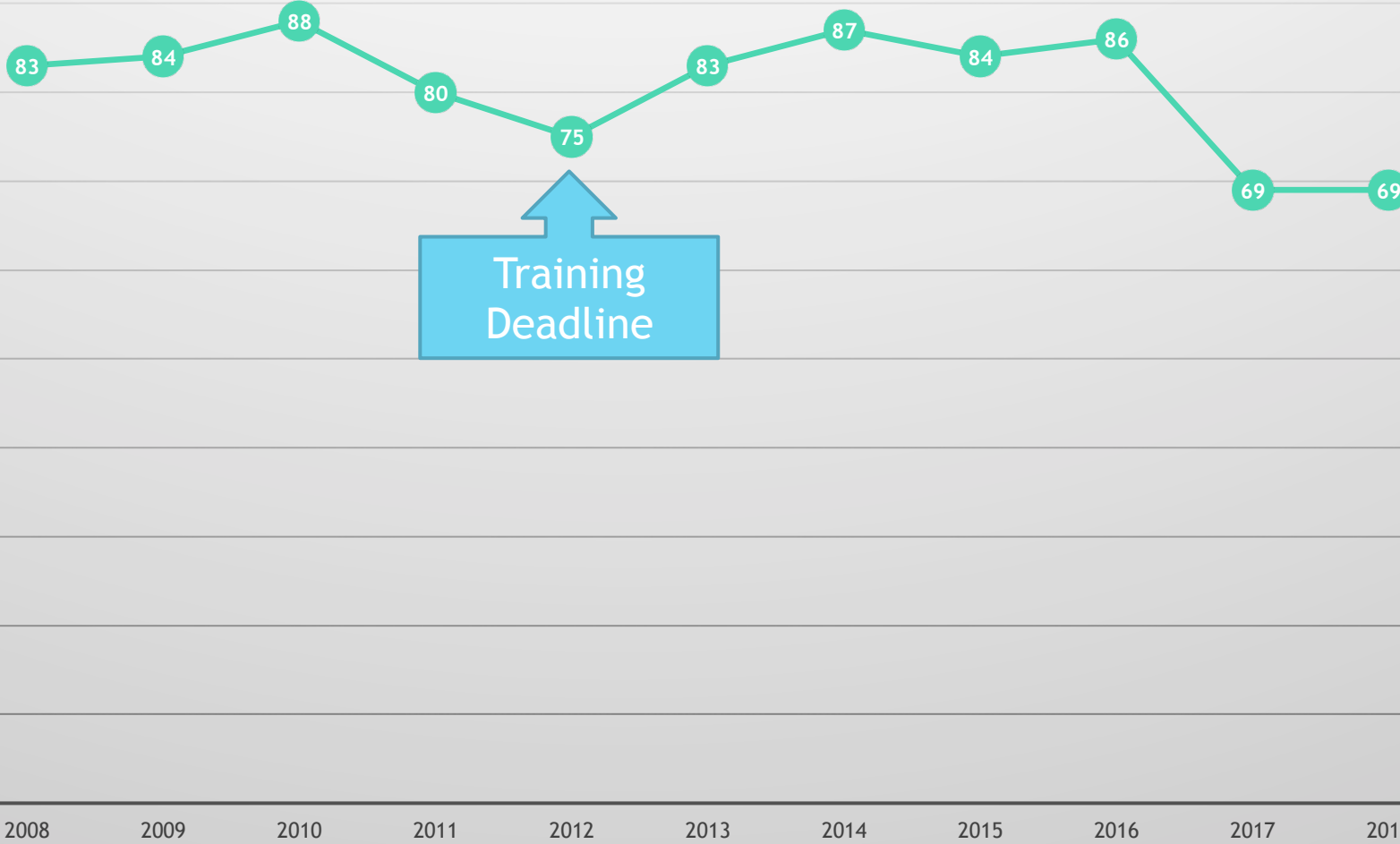
+6%



EPA Region 9

American Samoa, Arizona, California,
Guam, Hawaii, CNMI, Nevada

ARIZONA SOC 2008-2018



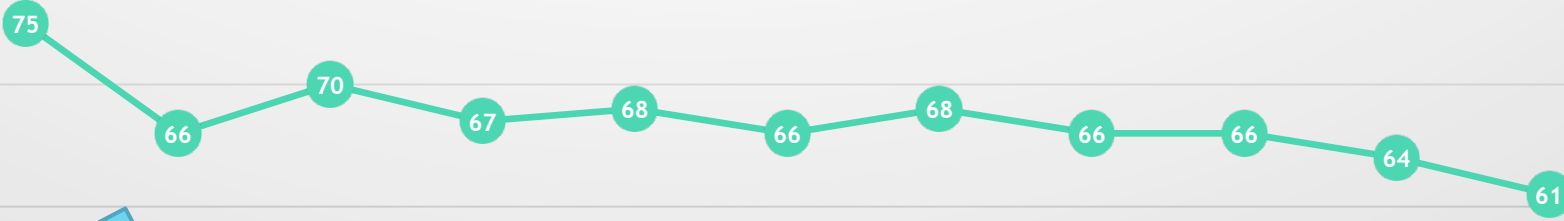
TOTAL
CHANGE
SOC
2008-20

-14%

SINCE
TRAINING
DEADLINE

-6%

CALIFRONIA SOC 2008-2018



04 Training Deadline

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

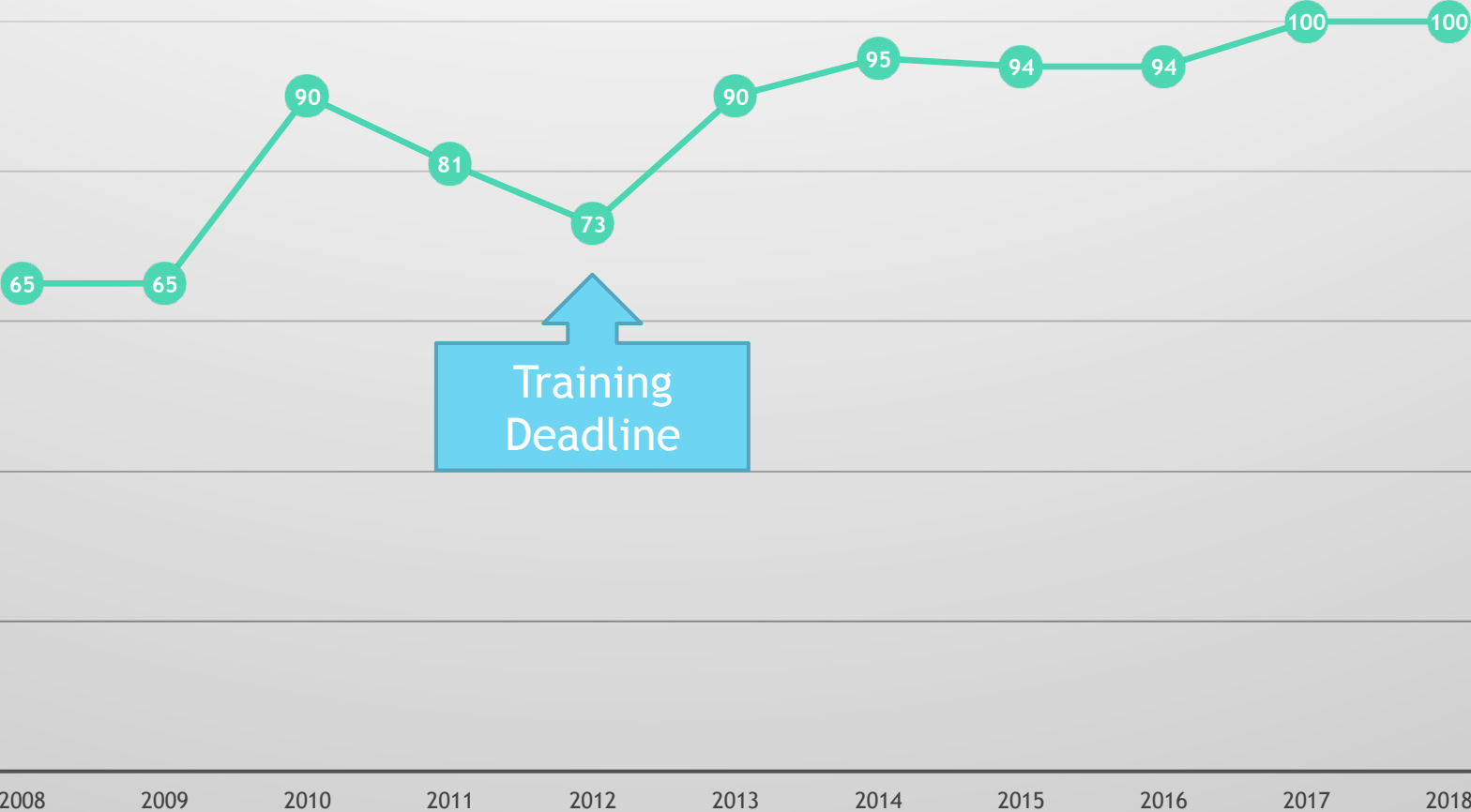
TOTAL
CHANGE
SOC
2008-20

+20%

SINCE
TRAINING
DEADLINE

+7%

GUAM SOC 2008-2018



Training
Deadline

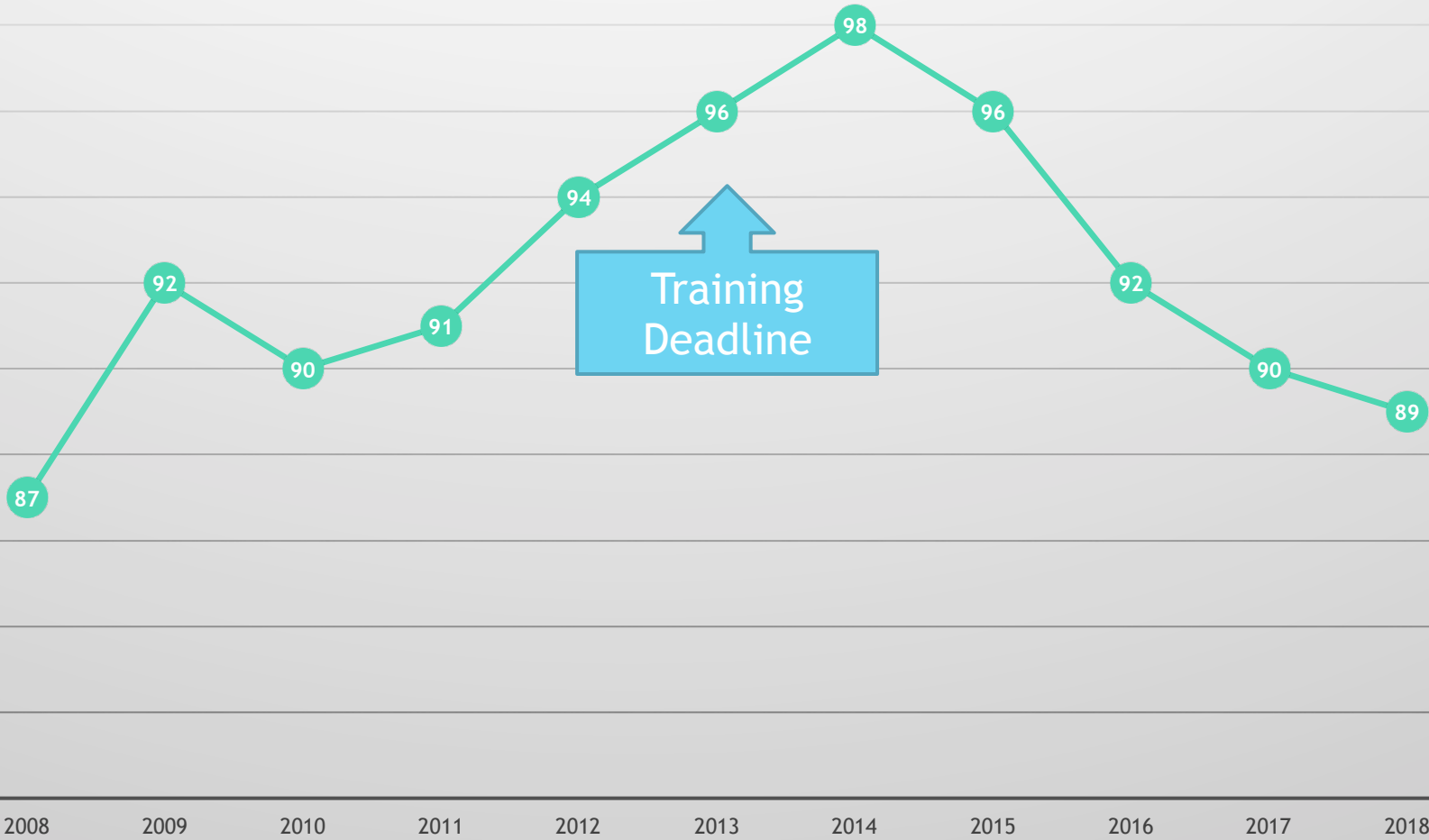
TOTAL
CHANGE
SOC
2008-20

+35%

SINCE
TRAINING
DEADLINE

+27%

HAWAII SOC 2008-2018



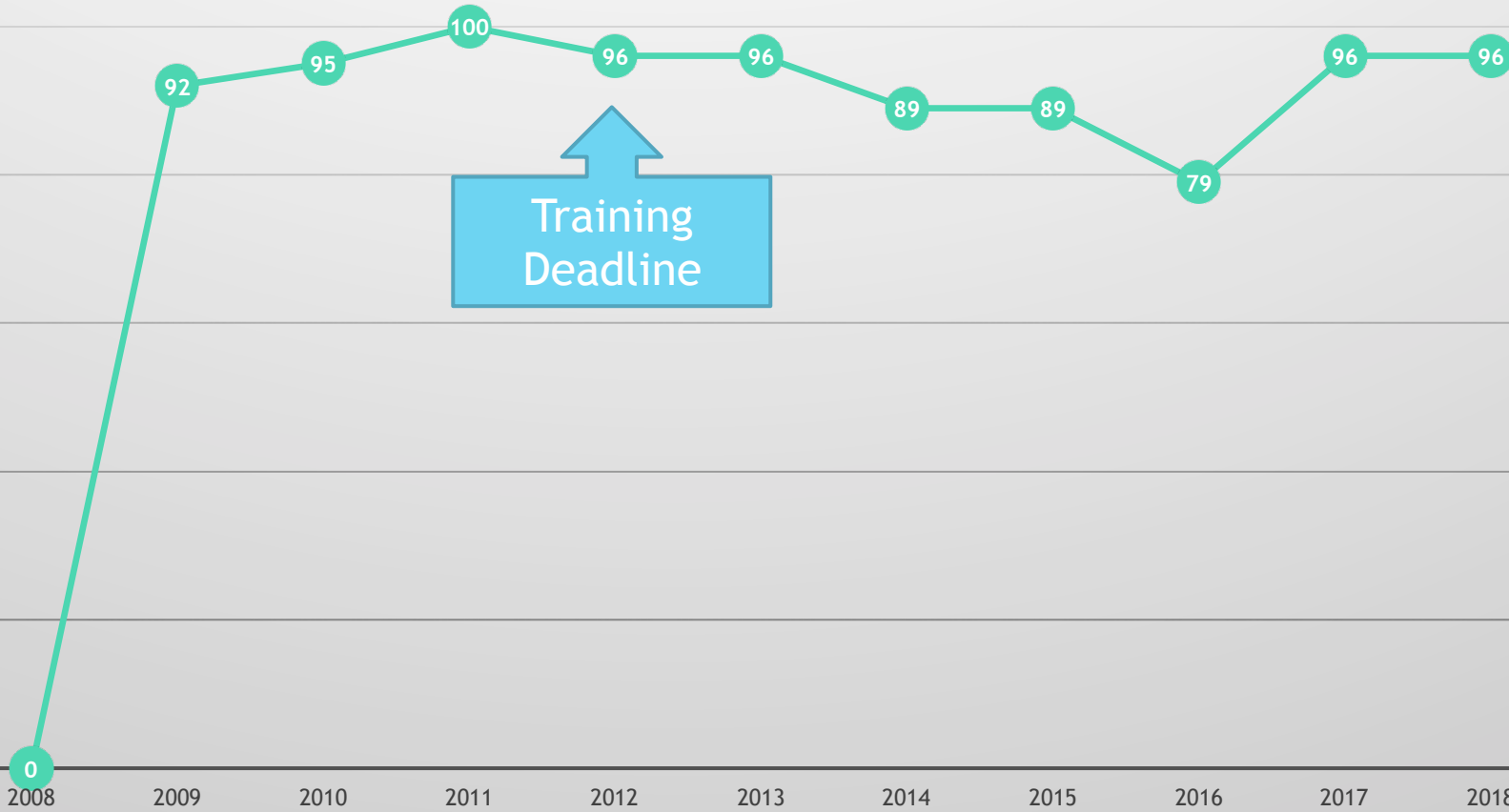
TOTAL
CHANGE
SOC
2008-20

+2%

SINCE
TRAINING
DEADLINE

-7%

CMNI SOC 2008-2018



Training
Deadline

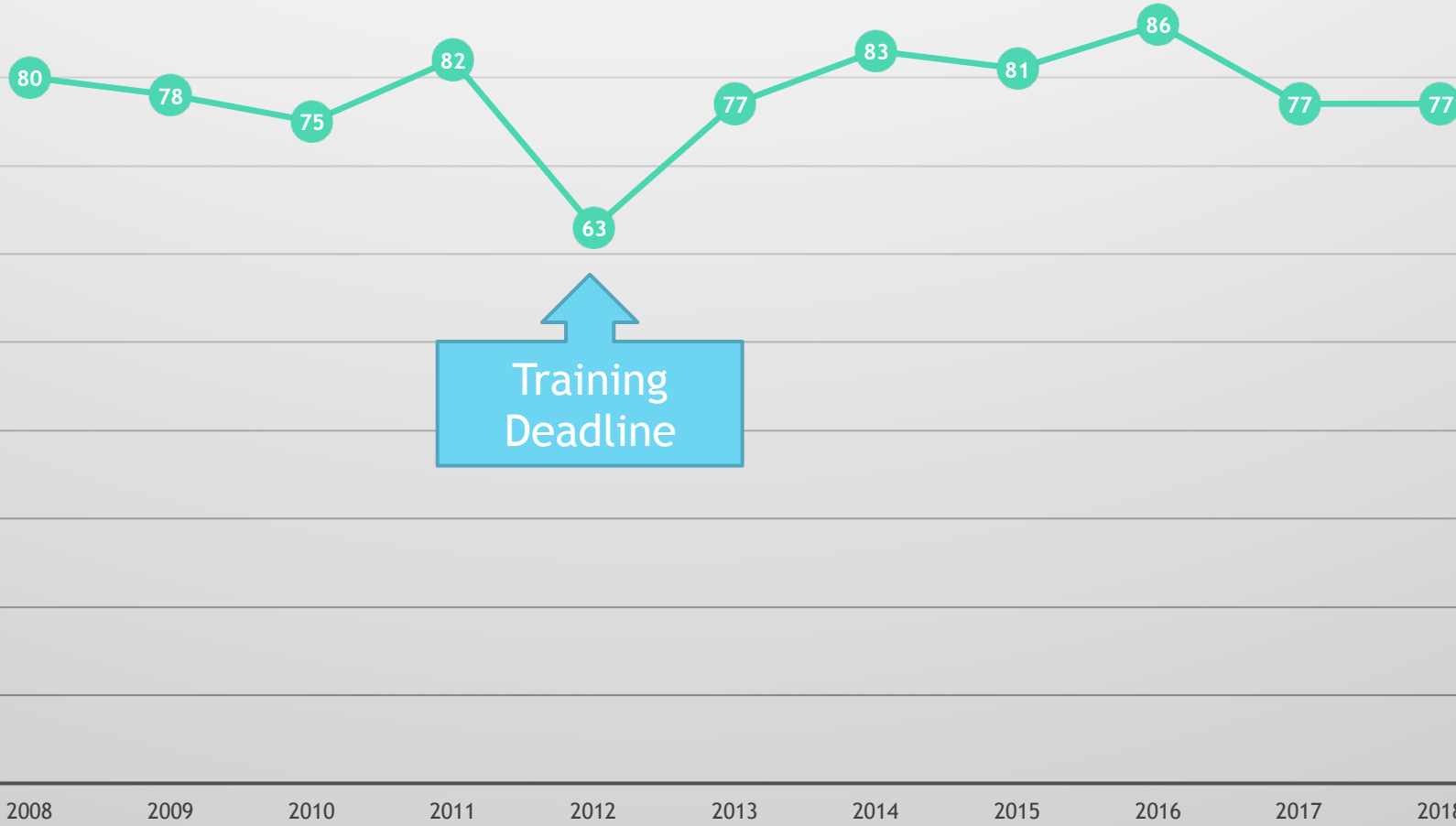
TOTAL
CHANGE
SOC
2008-20

+4%

SINCE
TRAINING
DEADLINE

+0%

NEVADA SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

-3%

SINCE
TRAINING
DEADLINE

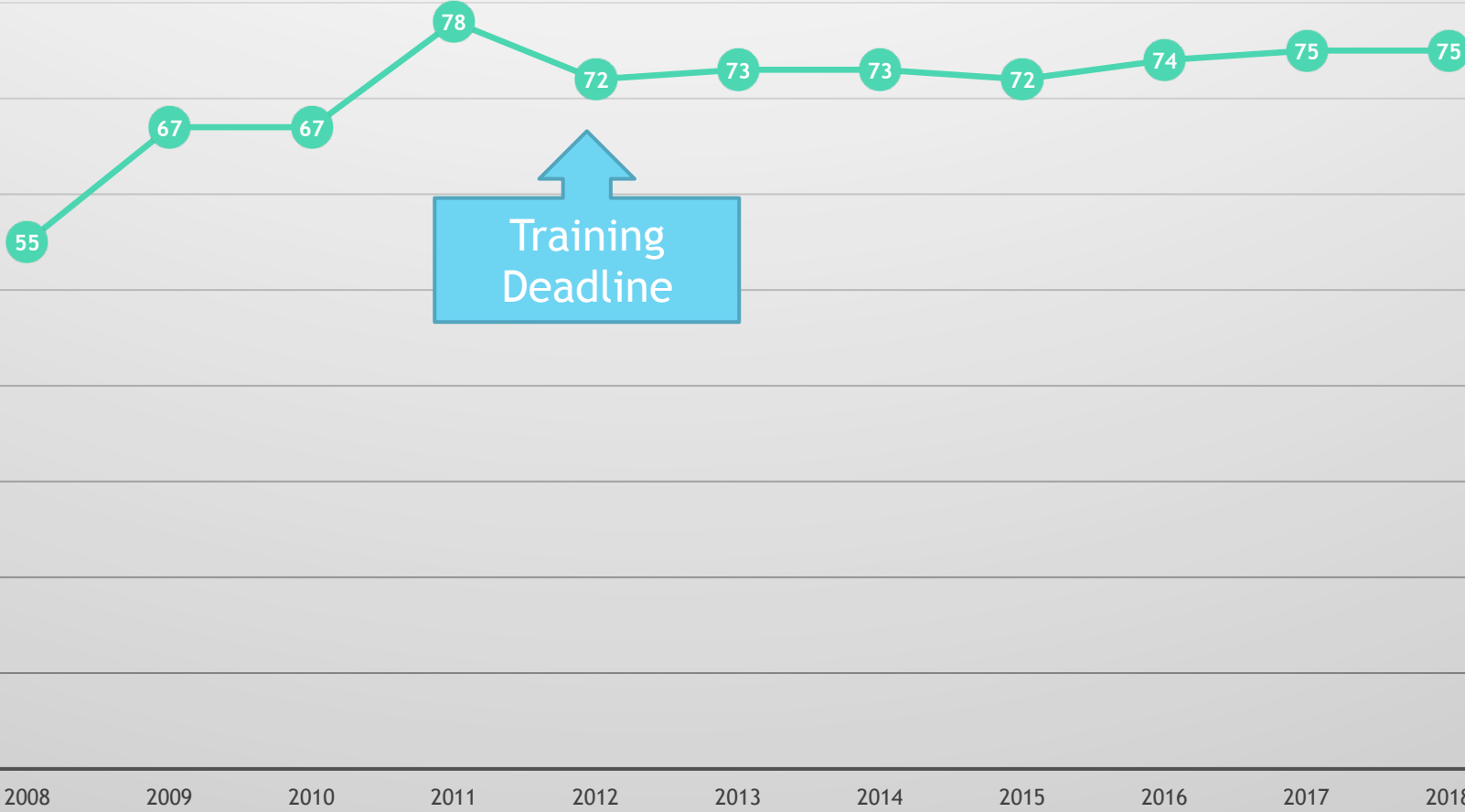
+14%

EPA Region 10

Alaska, Idaho, Oregon, Washington



ALASKA SOC 2008-2018



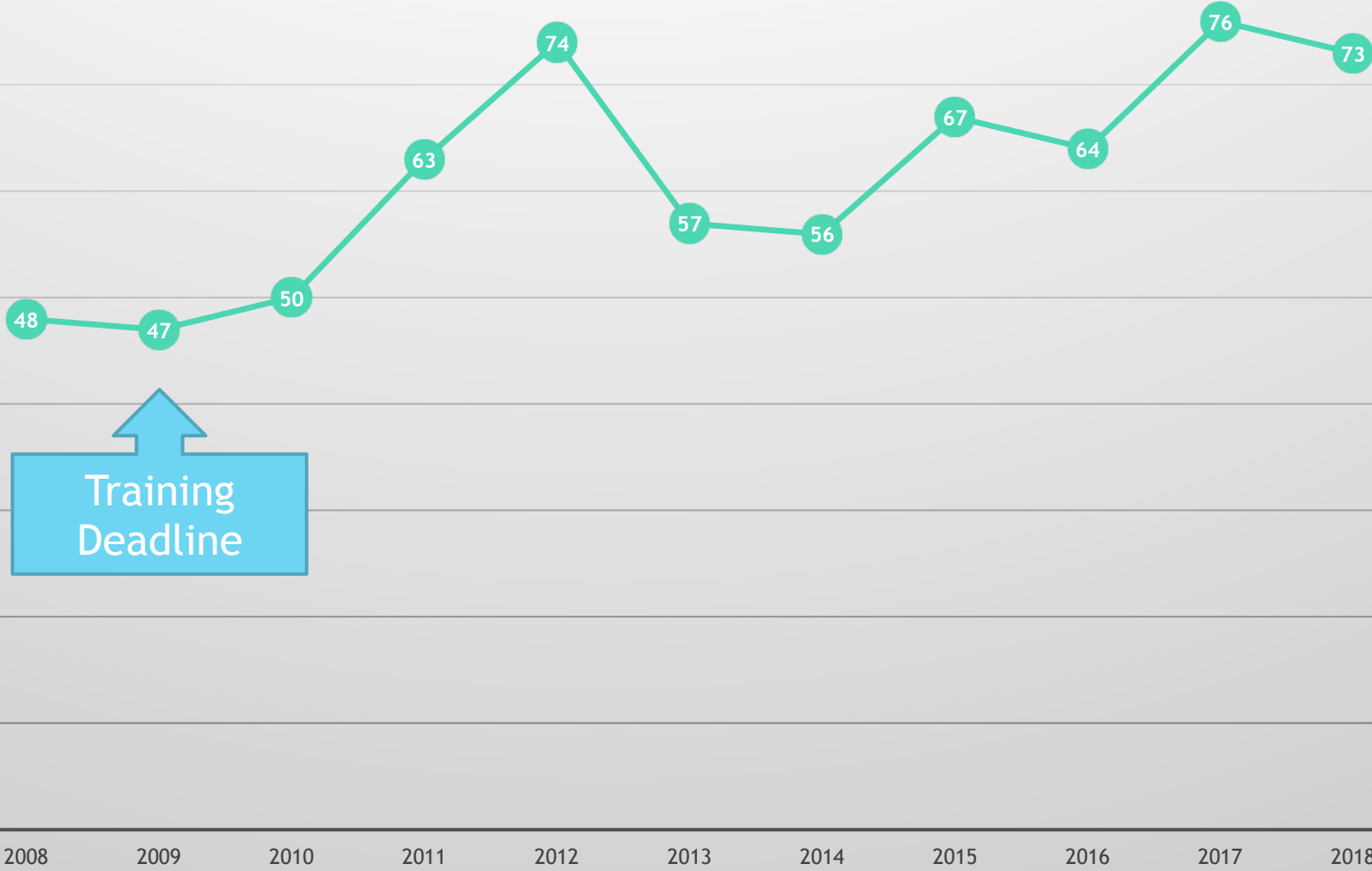
**TOTAL
CHANGE
SOC
2008-20**

+20%

**SINCE
TRAINING
DEADLINE**

+3%

IDAHO SOC 2008-2018



Training
Deadline

TOTAL
CHANGE
SOC
2008-20

+25%

SINCE
TRAINING
DEADLINE

+26%

OREGON SOC 2008-2018



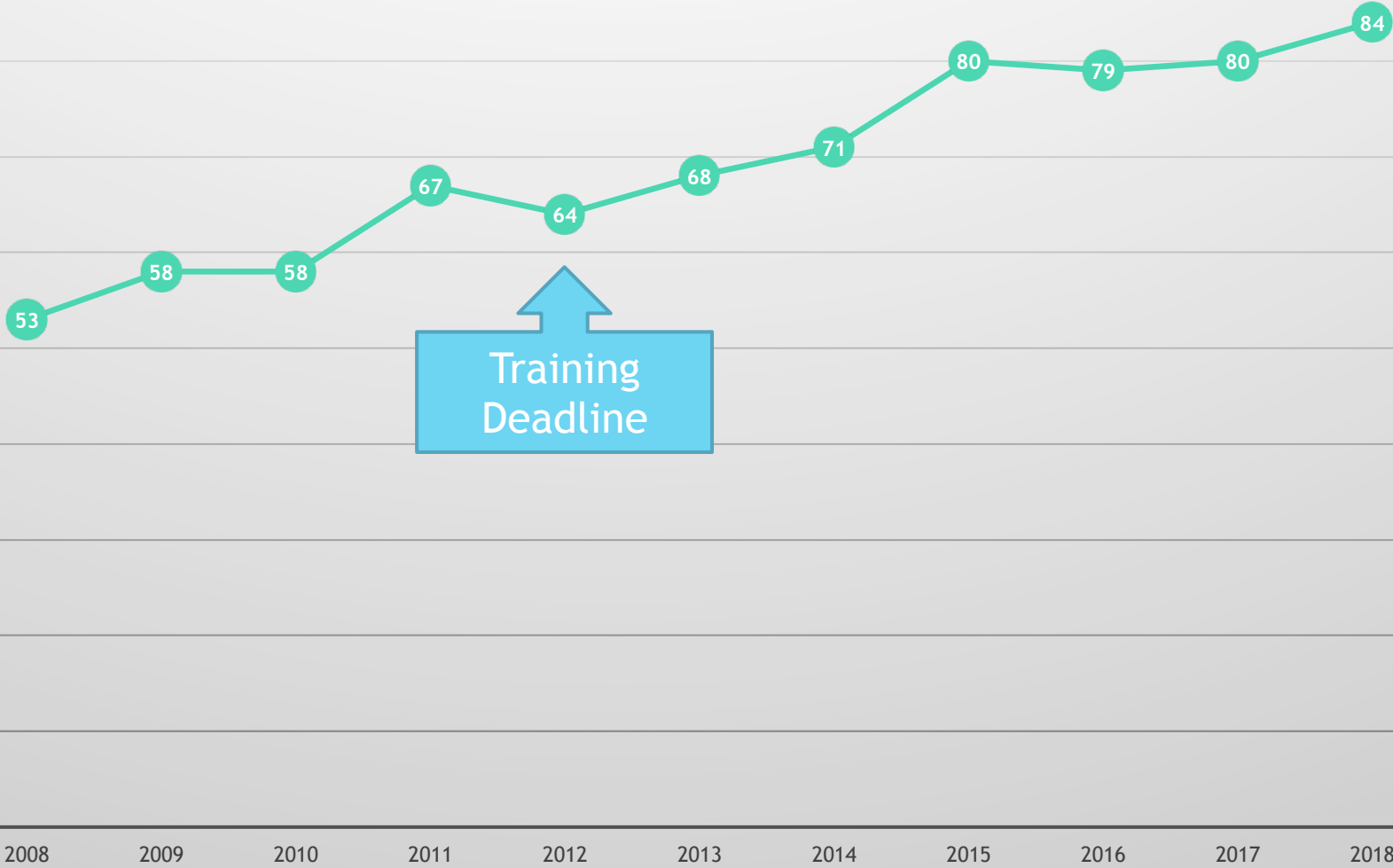
TOTAL
CHANGE
SOC
2008-20

+3%

SINCE
TRAINING
DEADLINE

+3%

WASHINGTON SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+32%

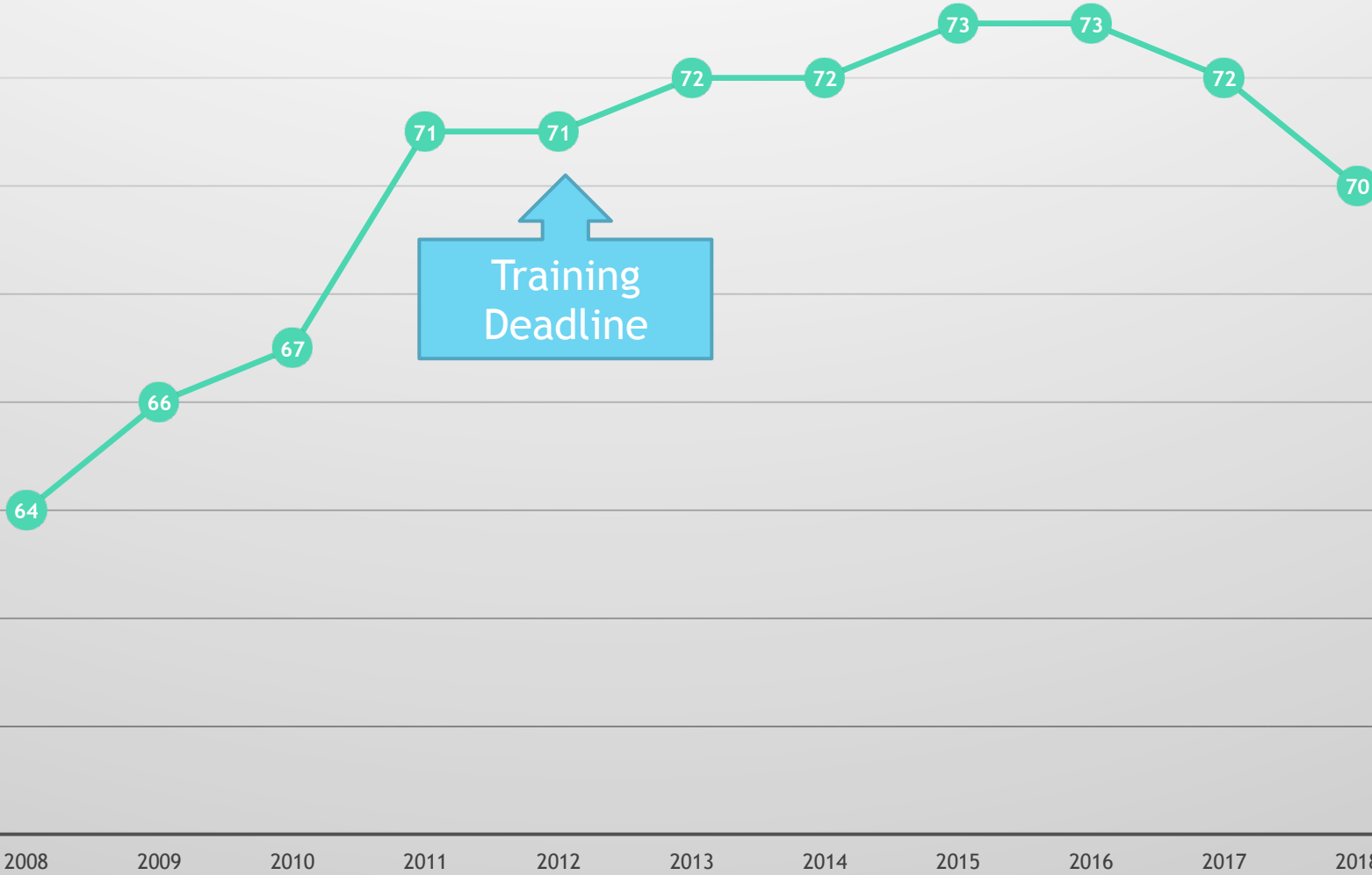
SINCE
TRAINING
DEADLINE

+20%

NATIONWIDE....

An abstract graphic on the right side of the page, consisting of several overlapping, semi-transparent blue triangles and polygons of various shades, creating a dynamic, layered effect.

National SOC 2008-2018



TOTAL
CHANGE
SOC
2008-20

+6%

SINCE
TRAINING
DEADLINE

-1%

o What Did We Find?

Slight upward compliance(1-9%)

Some upward compliance (10-19%)

Significant upward compliance (20+%)

States with downward compliance (zero or less)

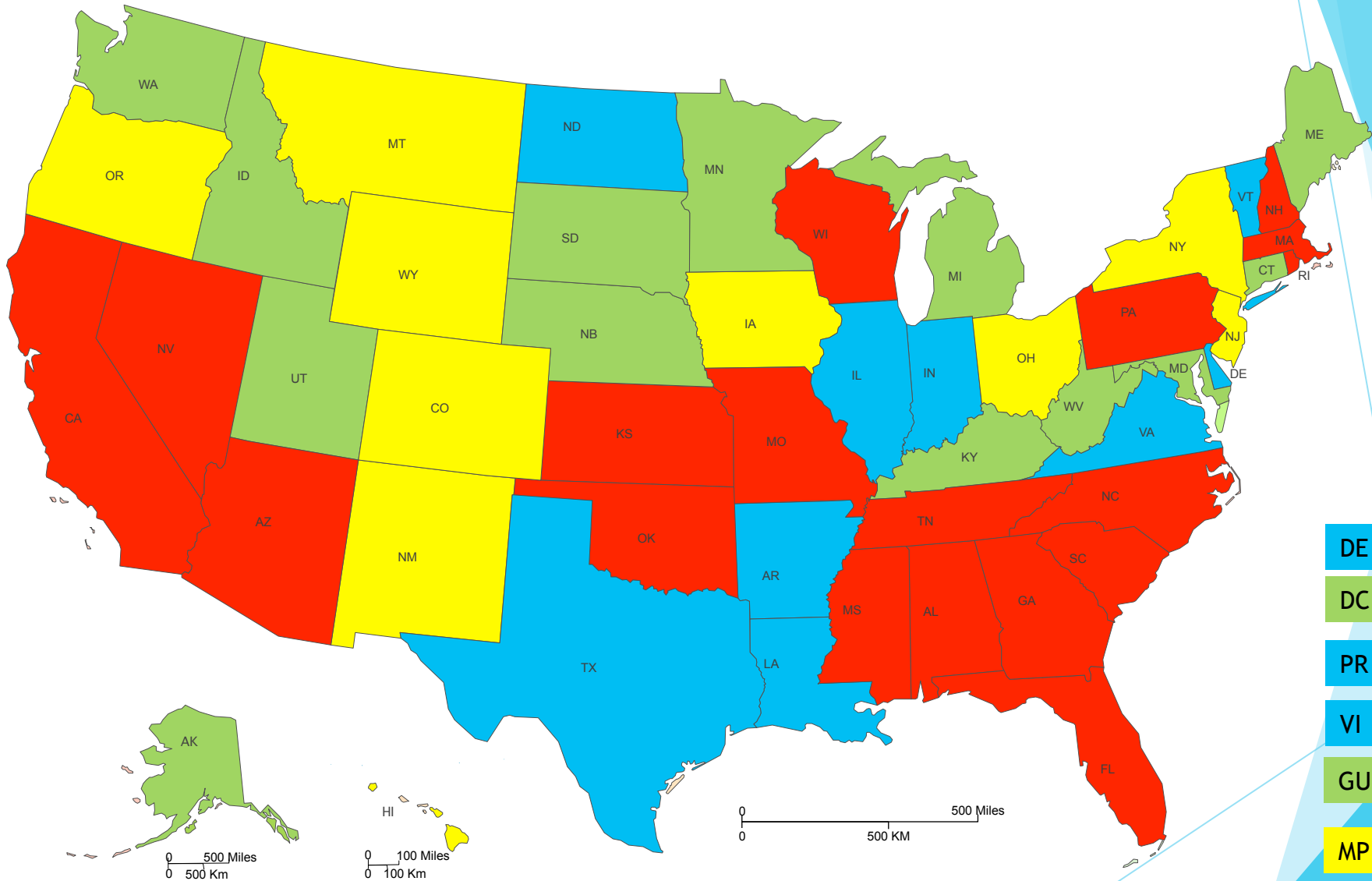


0 or less % SOC

1-9% SOC

10-19% SOC

20+% SOC



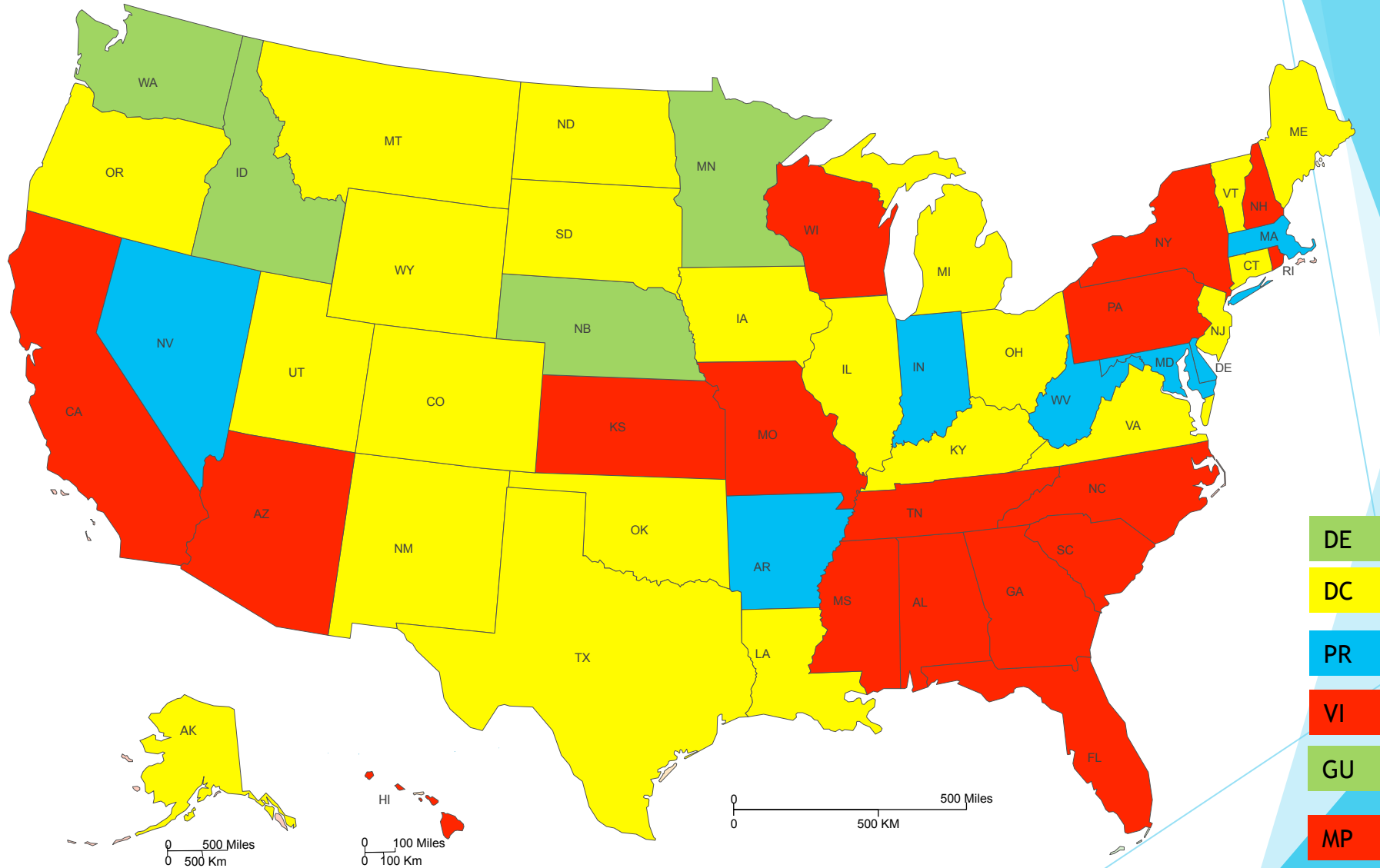
Percent Change SOC from 2008-2018

0 or less % SOC

1-9% SOC

10-19% SOC

20+% SOC



Percent Change SOC Since State Training Deadline

Possible Outside Influencers

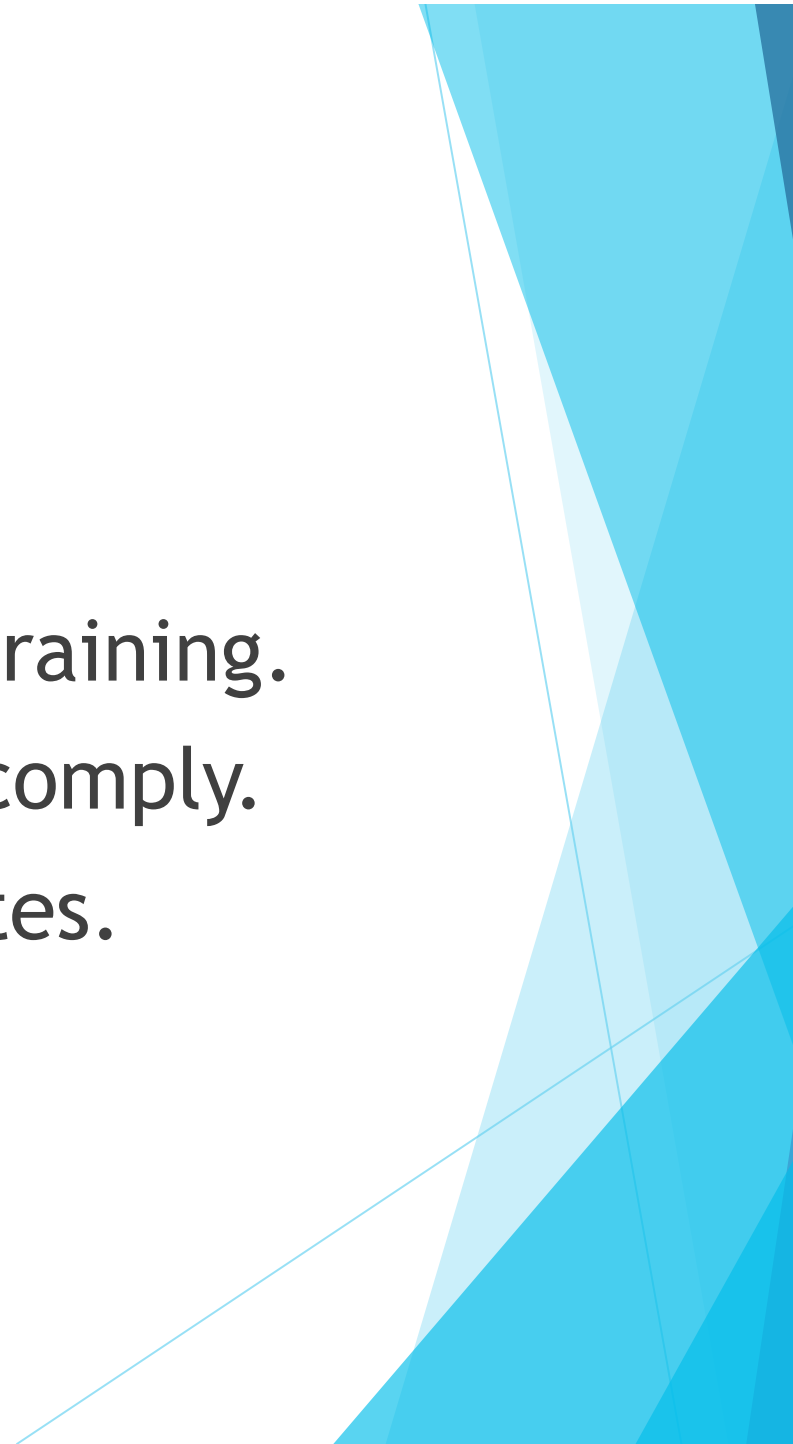
Late start adopting training rules.

Low compliance rate completing training.

Stricter rules adopted, harder to comply.

Stricter/looser use of SOCs by states.

Not all training is created equal.



Factors that May Affect Training Effectiveness

Authors: who developed the content

- ▶ State Agency, Commercial Vendor, Industry Group

Delivery: how is the content presented

- ▶ Online, Live, Both Online and Live

Assessment: How is knowledge measured

- ▶ Training only, Training and Exam, Exam only

Variety of Choices: Are there more than one main option?

- ▶ One Option, Many

Cost: Free, Costs \$

Year Training Due: Sooner adopted, better results?

LOSING THOUGHTS

