

Working Toward an Ongoing Climate Teacher Professional Learning Community: Survey Results on How Teachers Fund Their Climate Professional Development



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STEM Education for Tomorrow's Workforce

Vision

Communities and citizens prepared to address the environmental and technological challenges of tomorrow.

Mission

Engaging teachers as a key leverage to enable their students to develop an understanding of and ability to address the impacts of climate change, make evidence based decisions, and develop civic and business engagement skills to prepare them for college and the workforce.

What if.....

- High school students simultaneously could
 - Contribute to solving the societal and economic impacts of climate change and energy challenges
 - *Renewable energy to reduce greenhouse gas emissions*
 - *Infrastructure that can withstand sea level rise and extreme precipitation events*
 - *Health infrastructure that can help citizens who are vulnerable to extreme temperature and precipitation events which contribute to the spread of disease*
 - Develop their skills as the workforce of tomorrow
 - *Critical Thinking Skills and Science Literacy*
 - *Civic Engagement*
 - *Business Development*

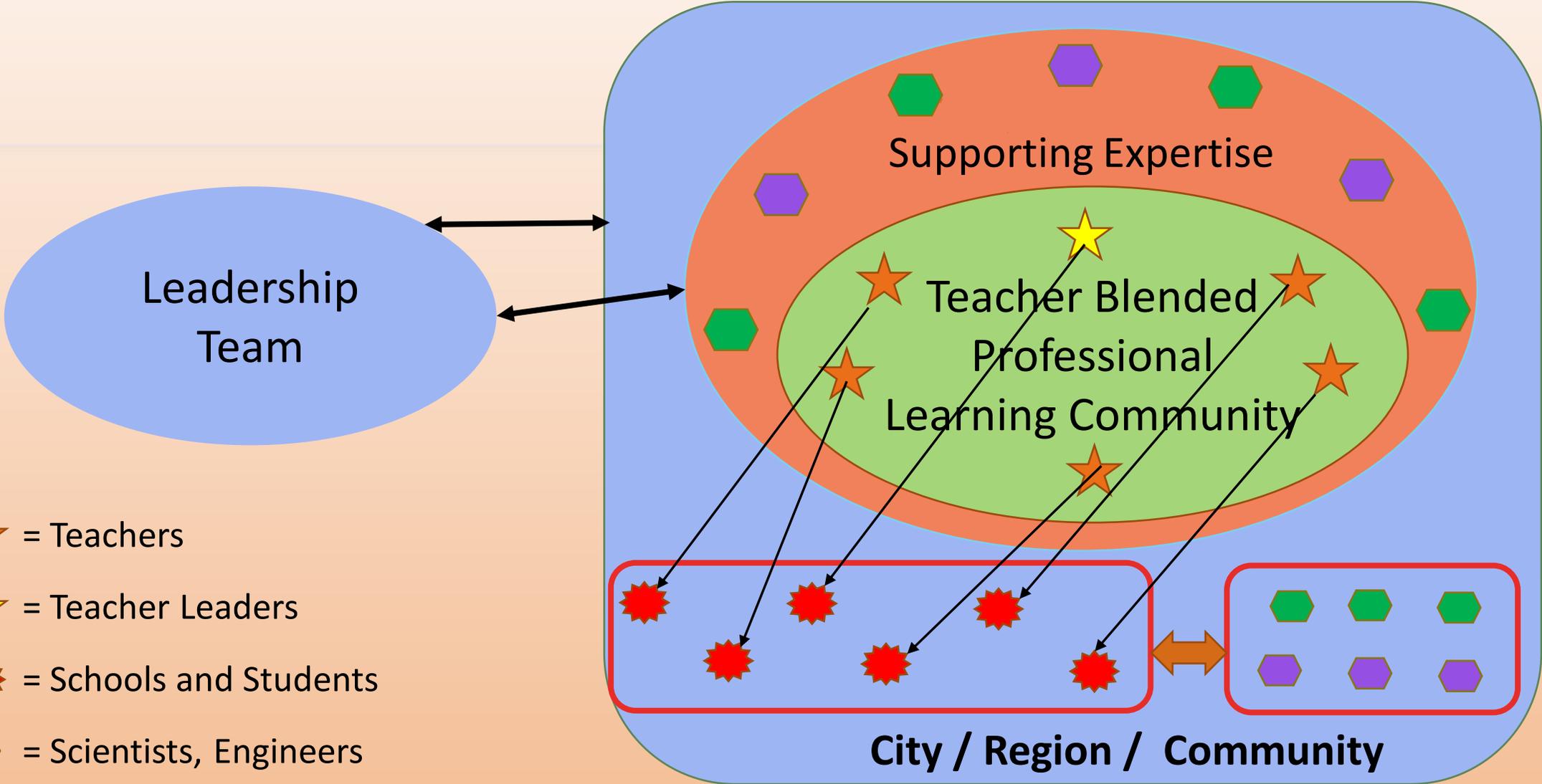


Strategy Using Teachers as a Key Leverage

- **Climate Teacher Professional Learning Community**
 - *Teacher peer support with input from and in collaboration with cross-sector experts*
 - *Ongoing development of Teachers knowledge of and abilities in*
 - *Climate and Energy Science*
 - *Evidence Based Decision Making & Data Analysis Skills*
 - *Social Impacts of climate change*
 - *Partnership Development*



STEM Education for Tomorrow's Workforce



- ★ = Teachers
- ★ = Teacher Leaders
- ★ = Schools and Students
- ⬡ = Scientists, Engineers
- ⬡ = Government Leaders, Businesses, Organizations

Climate Teacher Professional Learning Community (Climate TPLC)

Activities and Content

Earth Systems Investigation Template Built on the Science and Engineering Practices

Step 1: Define the investigation and gather background information

1. Asking Questions & Defining Problems

8a. Obtaining Information

Step 2: Plan approach to conduct investigation

2a. Developing Models

3a. Planning Investigations

8b. Evaluating Information

Step 3: Conduct the investigation

2b. Using Models

4. Analyzing & Interpreting Data

5. Using Mathematics & Computational Thinking

8b. Evaluating Information

3b. Carrying Out Investigations

Step 4: Construct the outcome of the investigation and communicate to others

6. Constructing Explanations & Designing Solutions

7. Engaging in Argument from Evidence

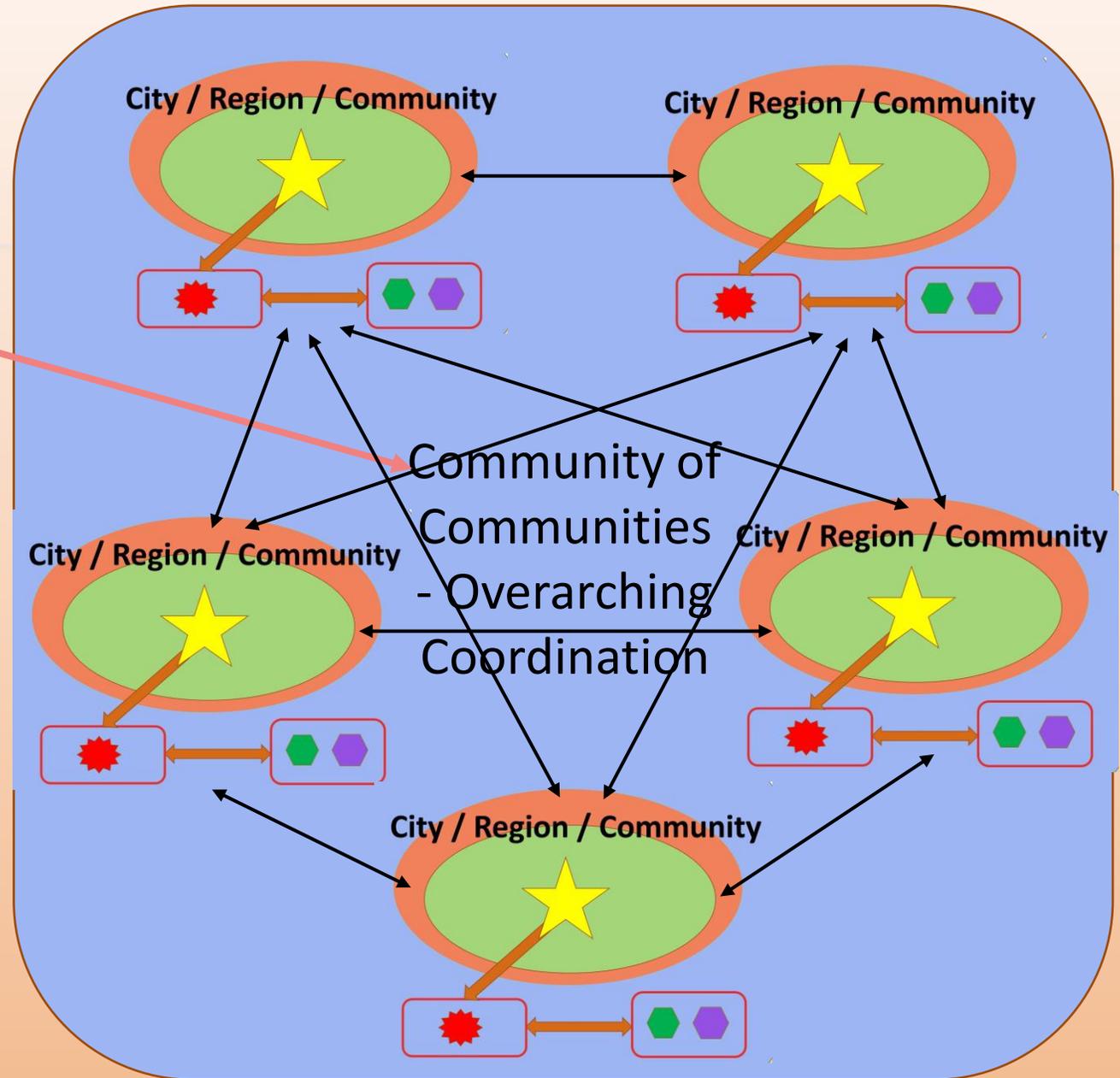
8c. Communicating Information

- Guidance and Collaboration on
 - Use of climate and energy educational resources: CLEAN Collection ■ EarthLabs ■ National Climate Assessment ■ Trusted online data and information sources (e.g. NASA, NOAA, USGS, etc)
 - Building investigation using reviewed and tested resources that address the Next Generation Science Standards or your State Science Standards
- Ongoing online and face-to-face collaboration with peers to help address teaching challenges and obstacles
- Engagement with civic leaders to involve students in addressing local climate & energy challenges
- Support of relevant external expertise: Scientists, Engineers, Professionals from Businesses, Organizations, & Government

This had been fleshed out to a much larger extent – Sept 2019

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Leadership Team

Vision for the Future



How Can an Ongoing Climate TPLC be Financially Sustained?

- Multiple Lines of Revenue will be Required
 - Philanthropic Grants
 - Government Grants
 - Business and Organizational Sponsorships
 - Individual Sponsorships
 - Professional Development Funds
 - Teachers Personal Funding of Professional Development

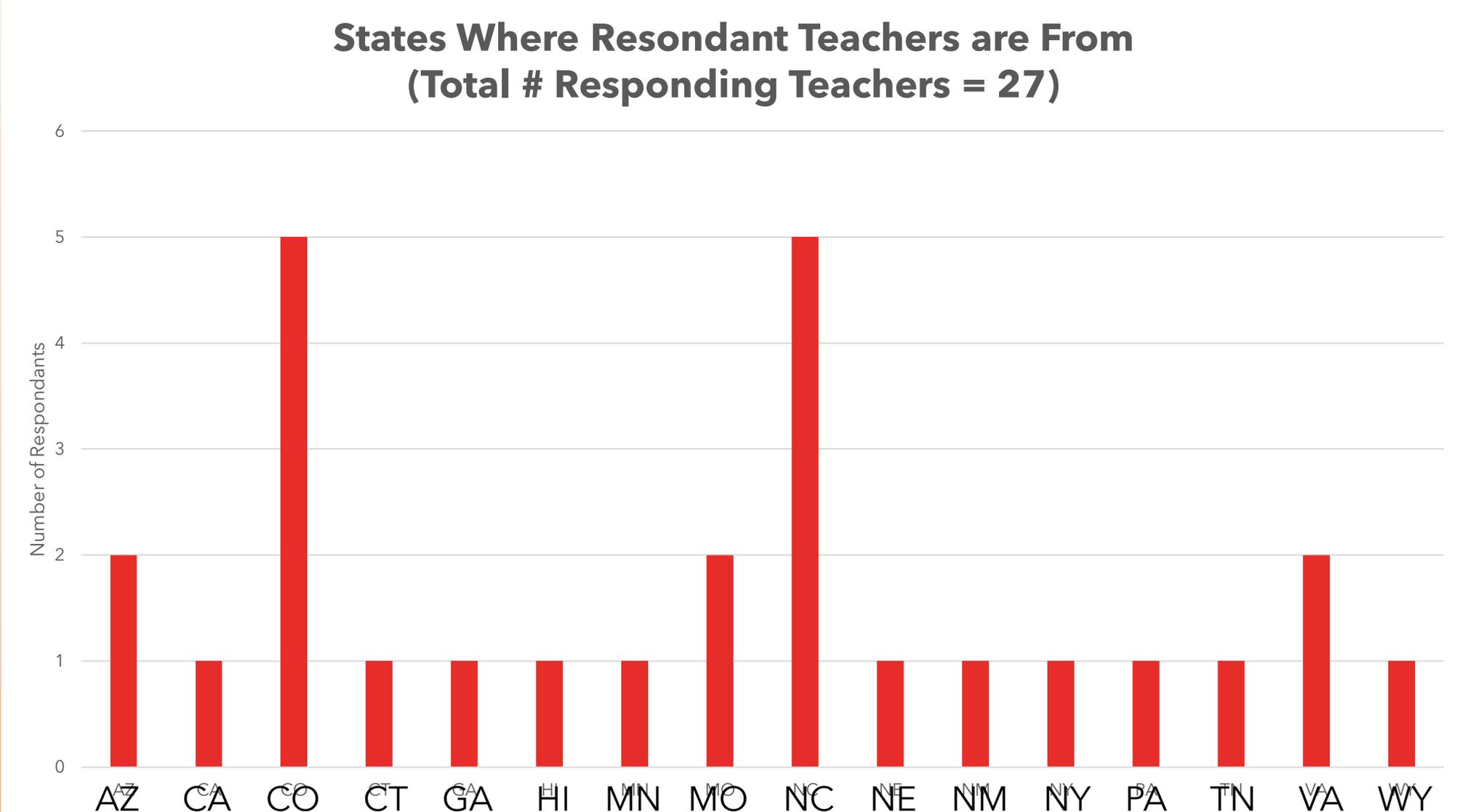
How Can an Ongoing Climate TPLC be Financially Sustained?

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Survey Conducted of Classroom Teachers in the United States, September – October 2019

- Areas Explored
 - Extent climate change is covered in their curriculum
 - Current climate change education professional development
 - Funding for professional development
 - Demographics
- 39 Teachers provided substantive input

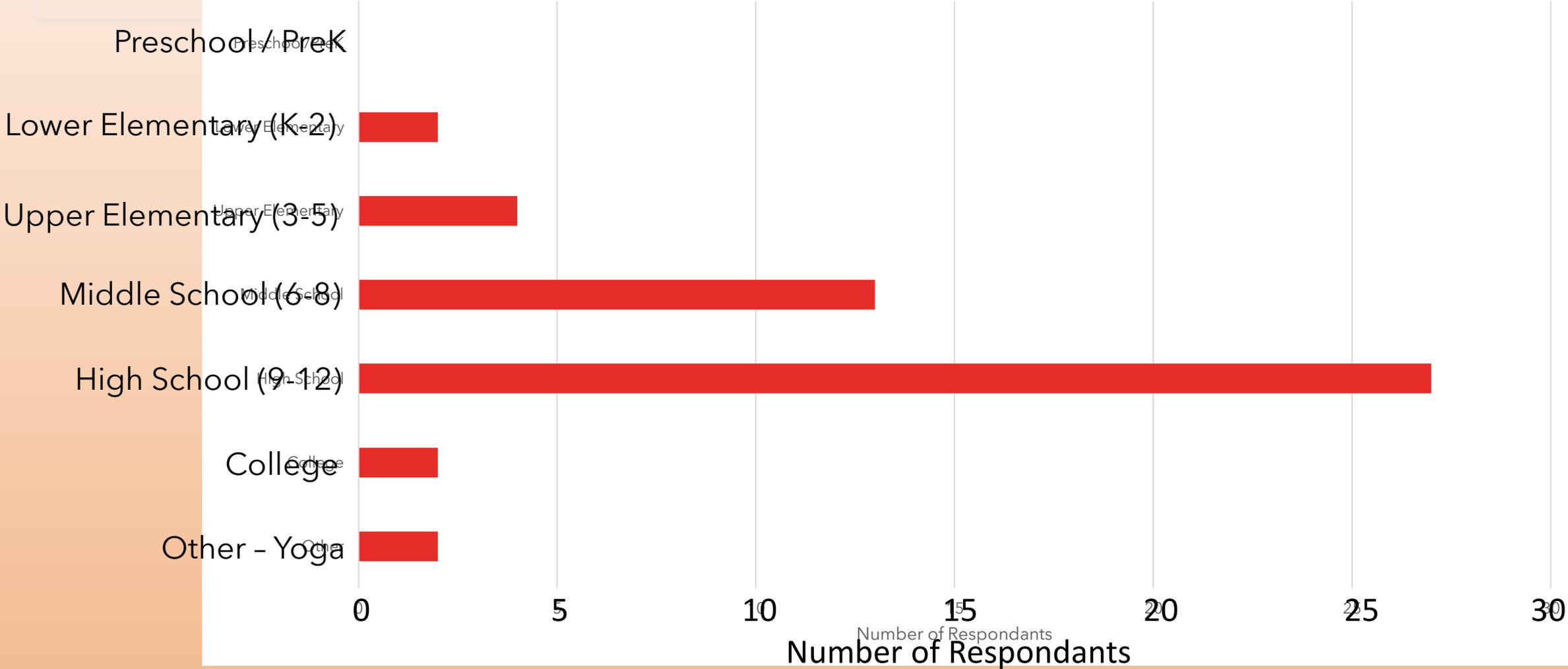
States of Responding Teachers



Grade Levels Taught by Responding Teachers

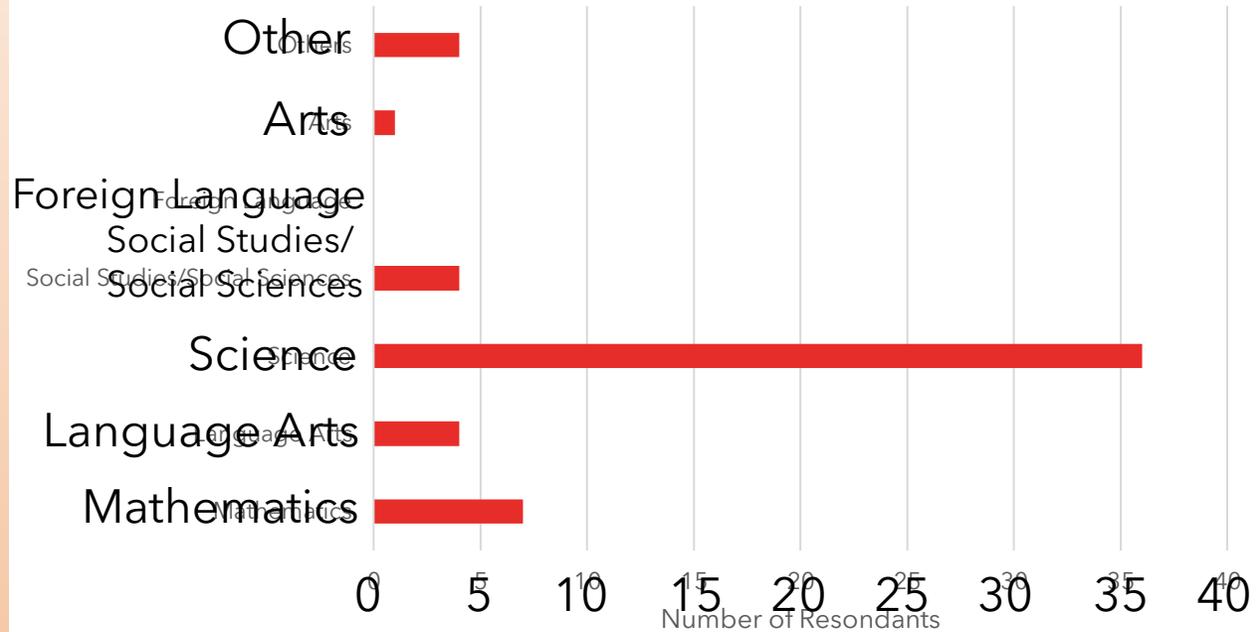
Grade Level Taught by all Responding Teachers

(Total = 40, Select all that apply)

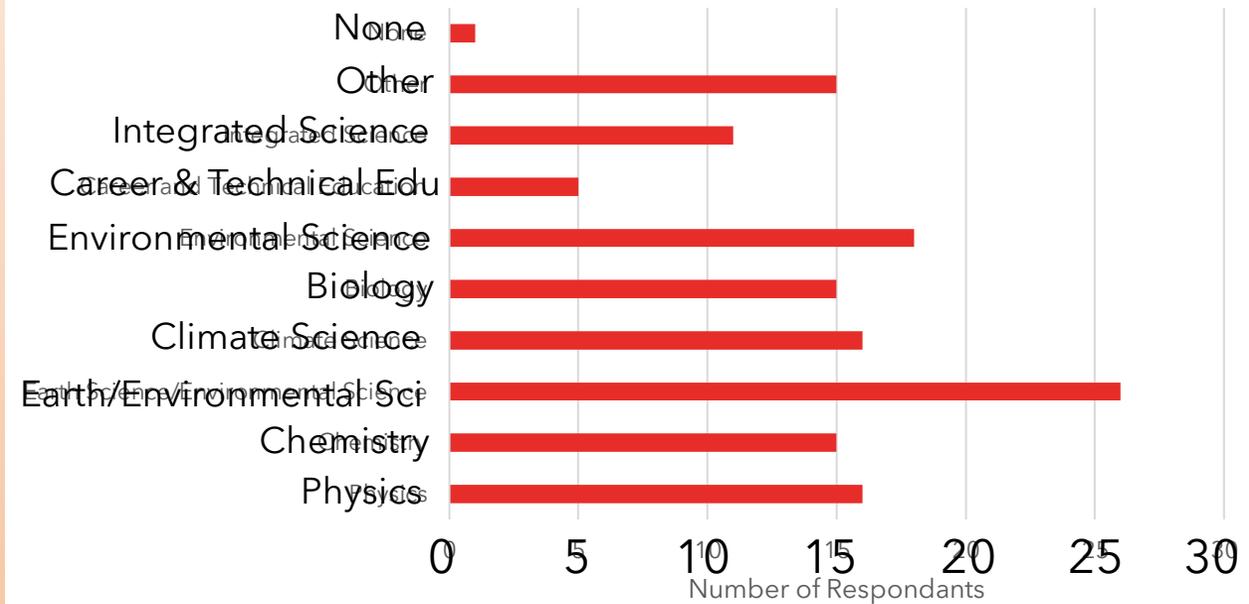


Subjects Taught by Responding Teachers

**Subjects Taught by Responding Teachers
(Total # Teachers=39, Select all that apply)**

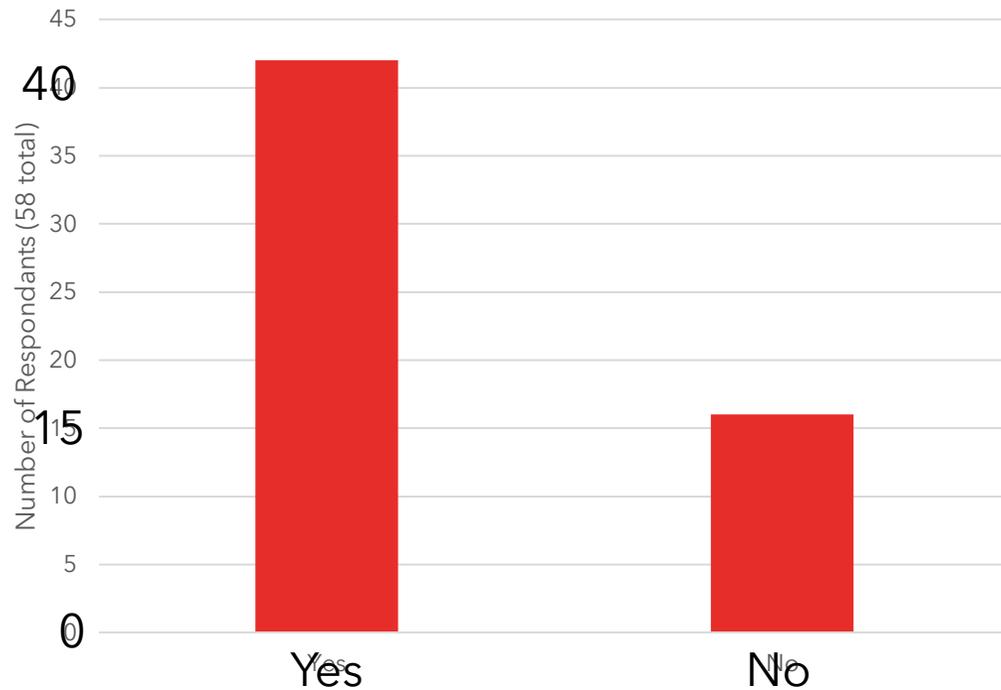


**Science Discipline Taught by Responding
Teachers (Total # Teachers = 38,
Select all that apply)**

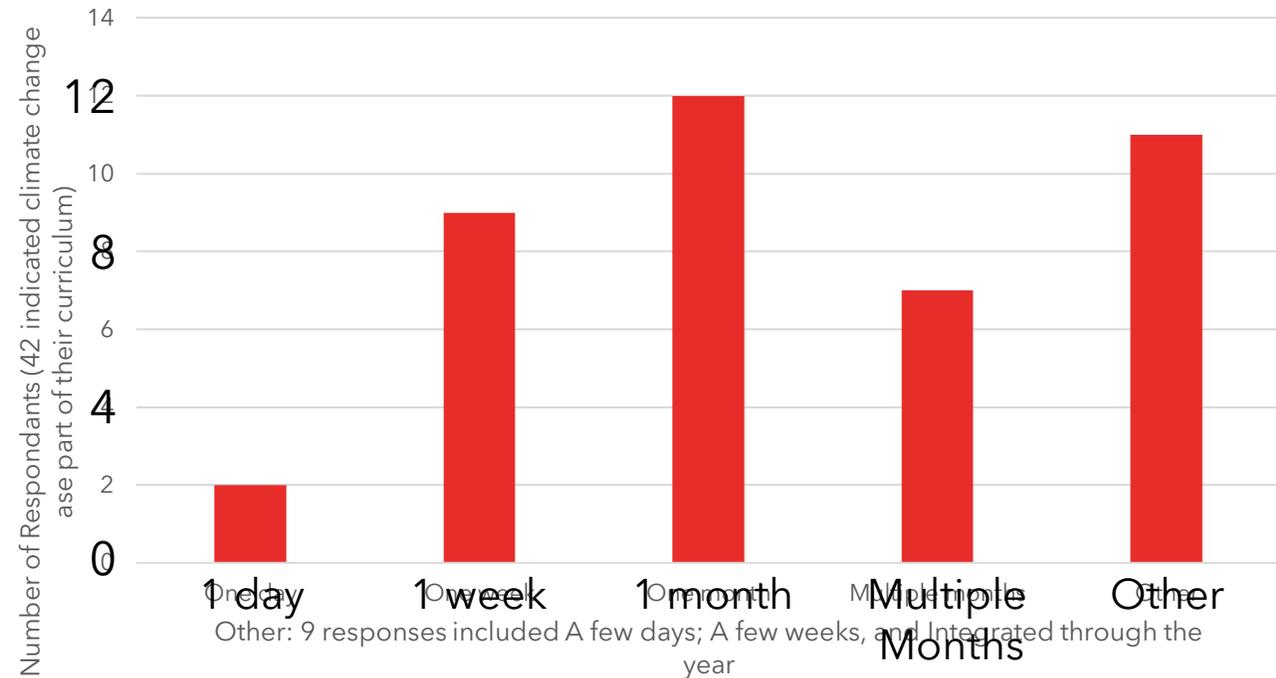


Is Climate Change Part of the Curriculum?

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Time Allocated in Curriculum to Climate Change



Other: 9 responses included

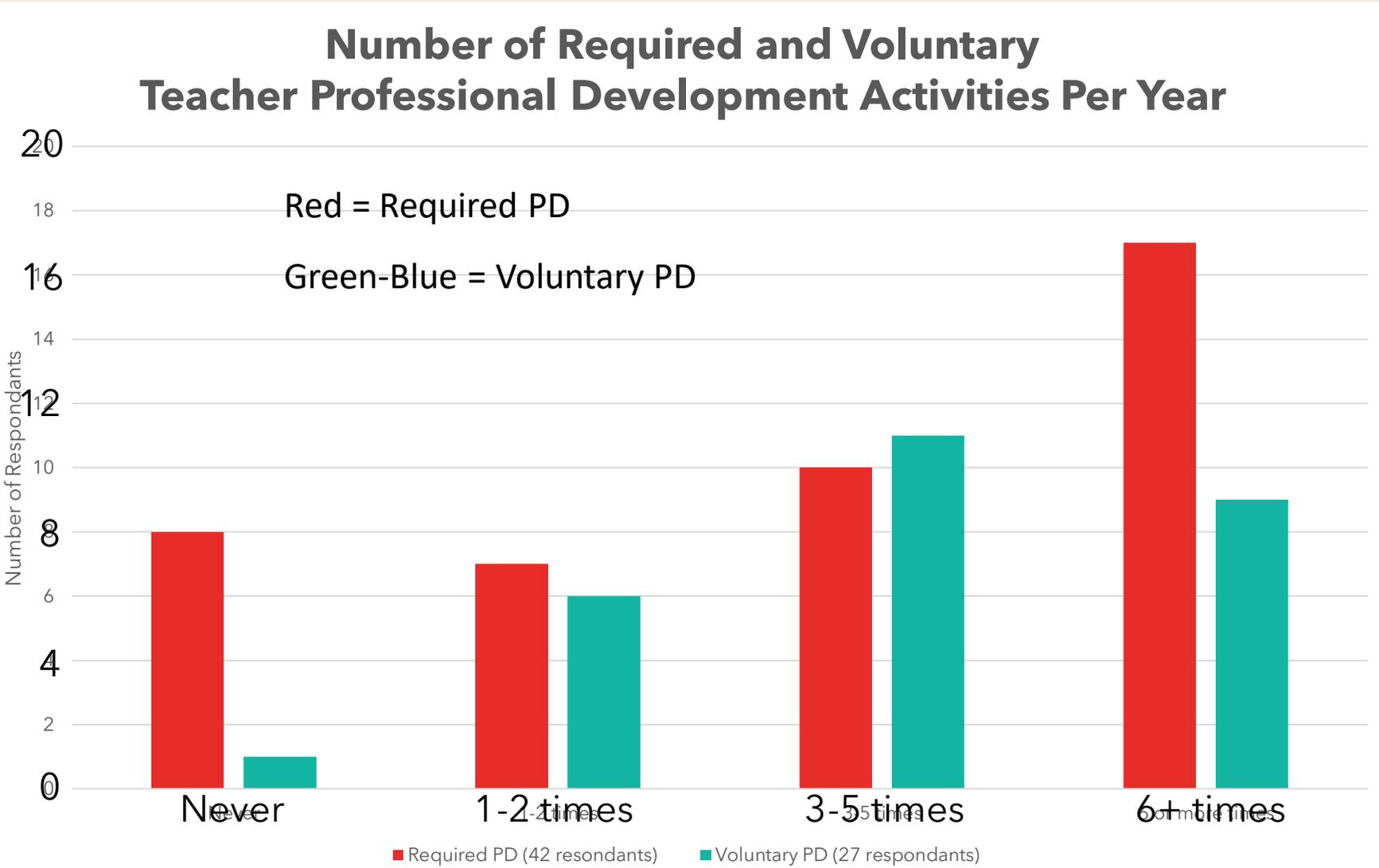
- A few days
- A few weeks
- Integrated through the year



Challenges to Incorporating Climate Change into Classes

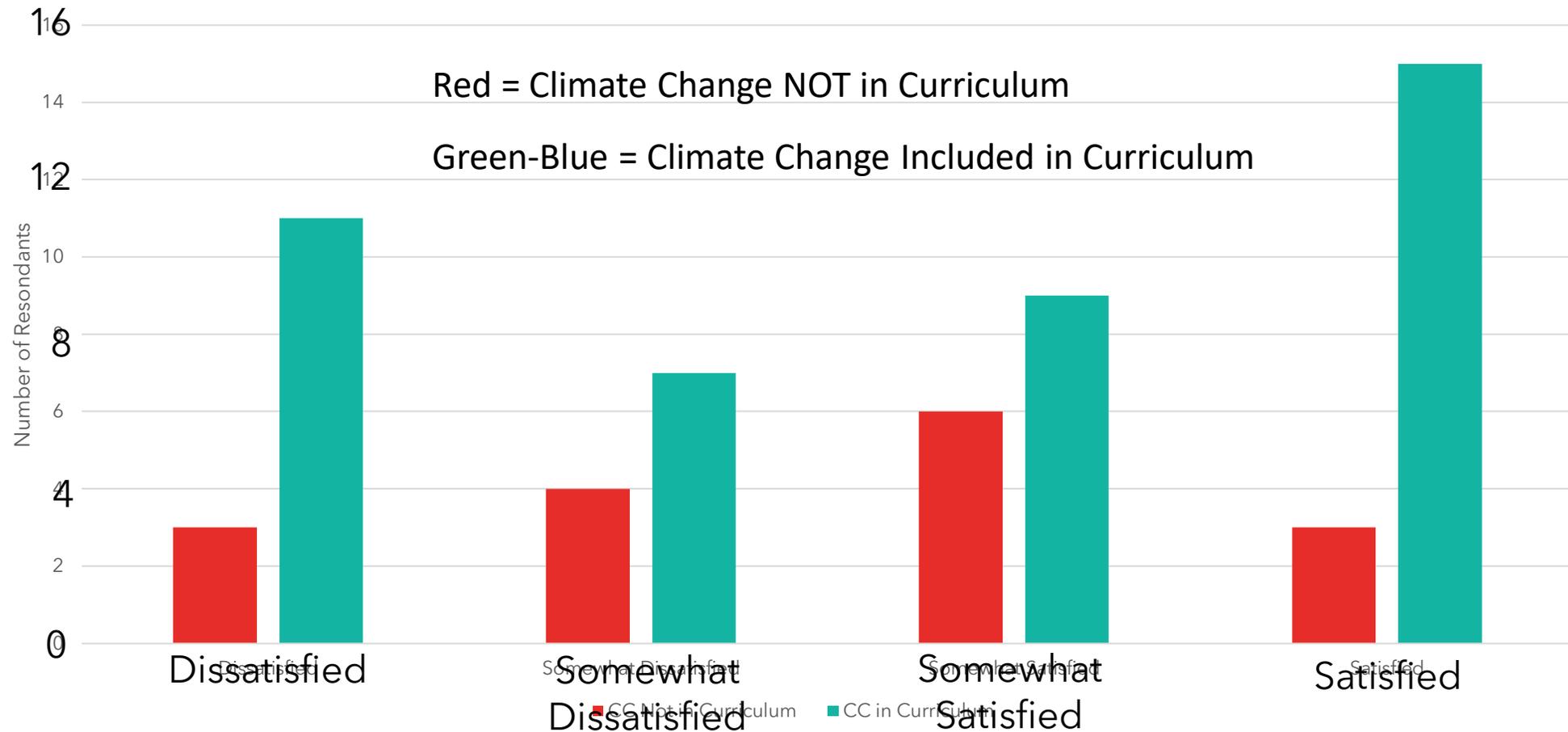
- Time
- Funding or technology materials not available
- State refuses to accept that climate change is real
- Not a priority at school
- Teach another subject
- Difficulting incorporating climate content into other classes

How Often Did Teachers Participate in Professional Development in the Last Year?

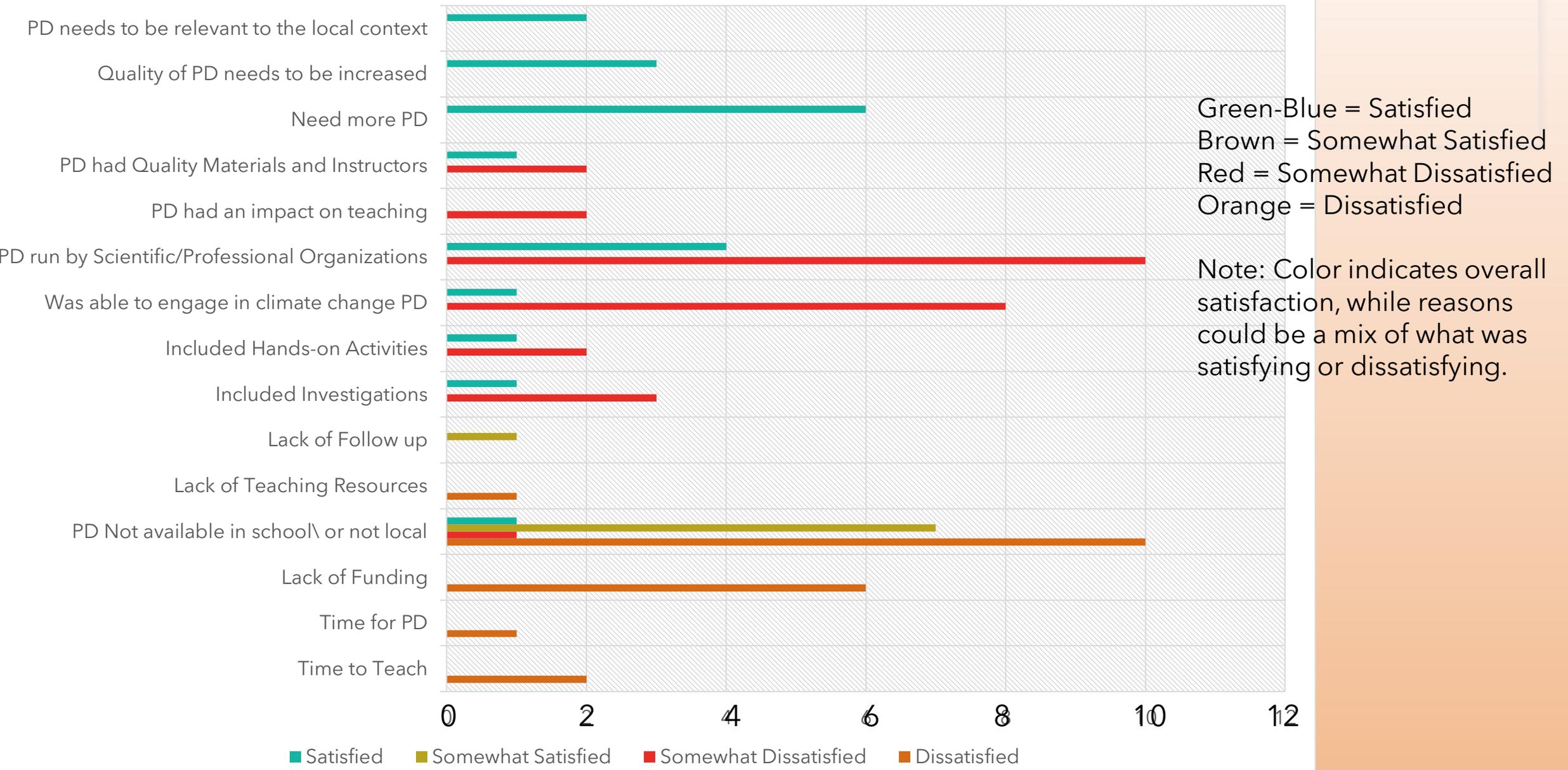


Satisfaction with Climate Professional Development Teachers Received

Satisfaction with Climate Professional Development When Climate Change Is or Isn't Included in Curriculum

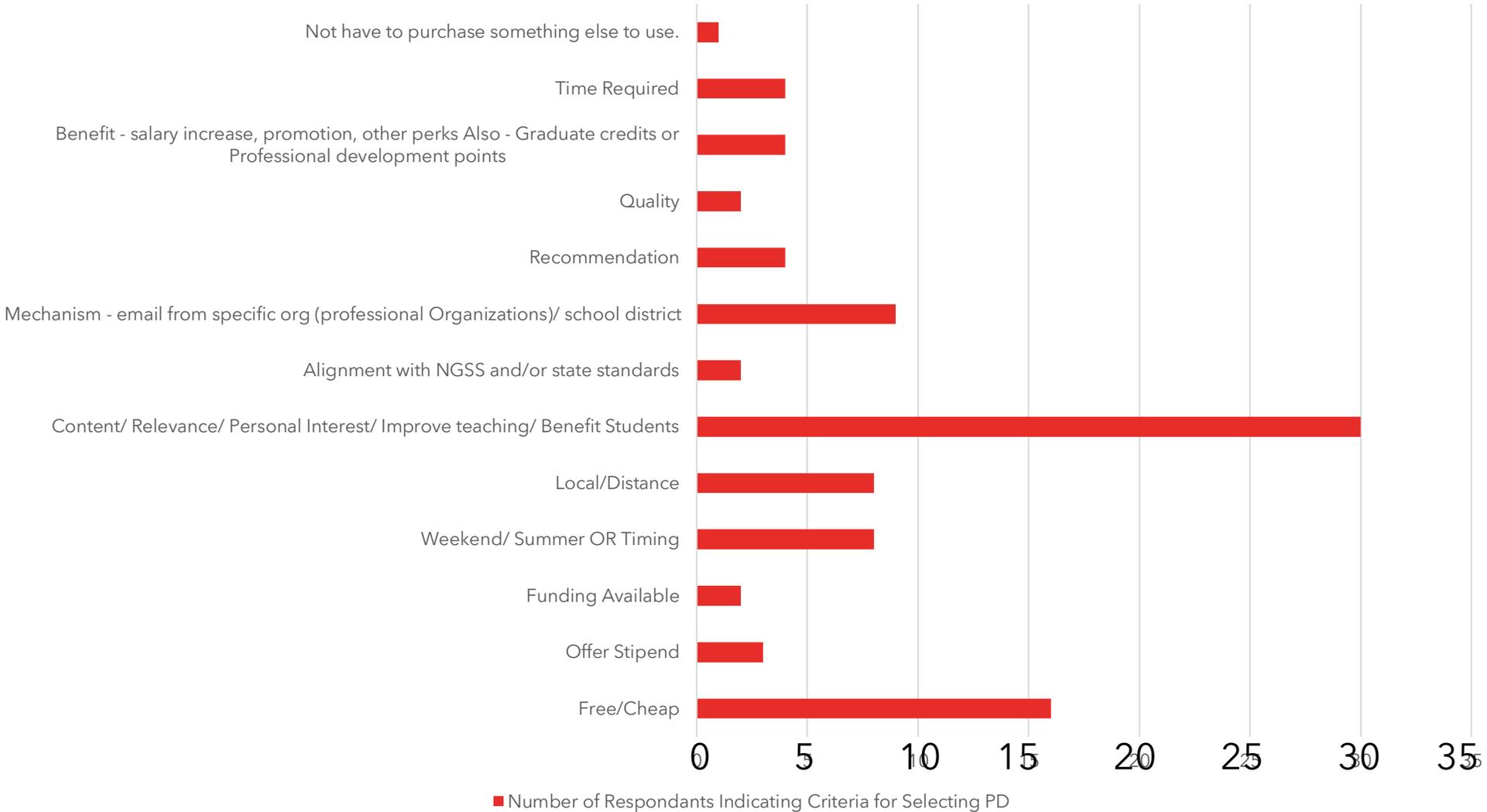


Reasons for Satisfaction or Dissatisfaction with Climate Professional Development (Total Resondants = 58)



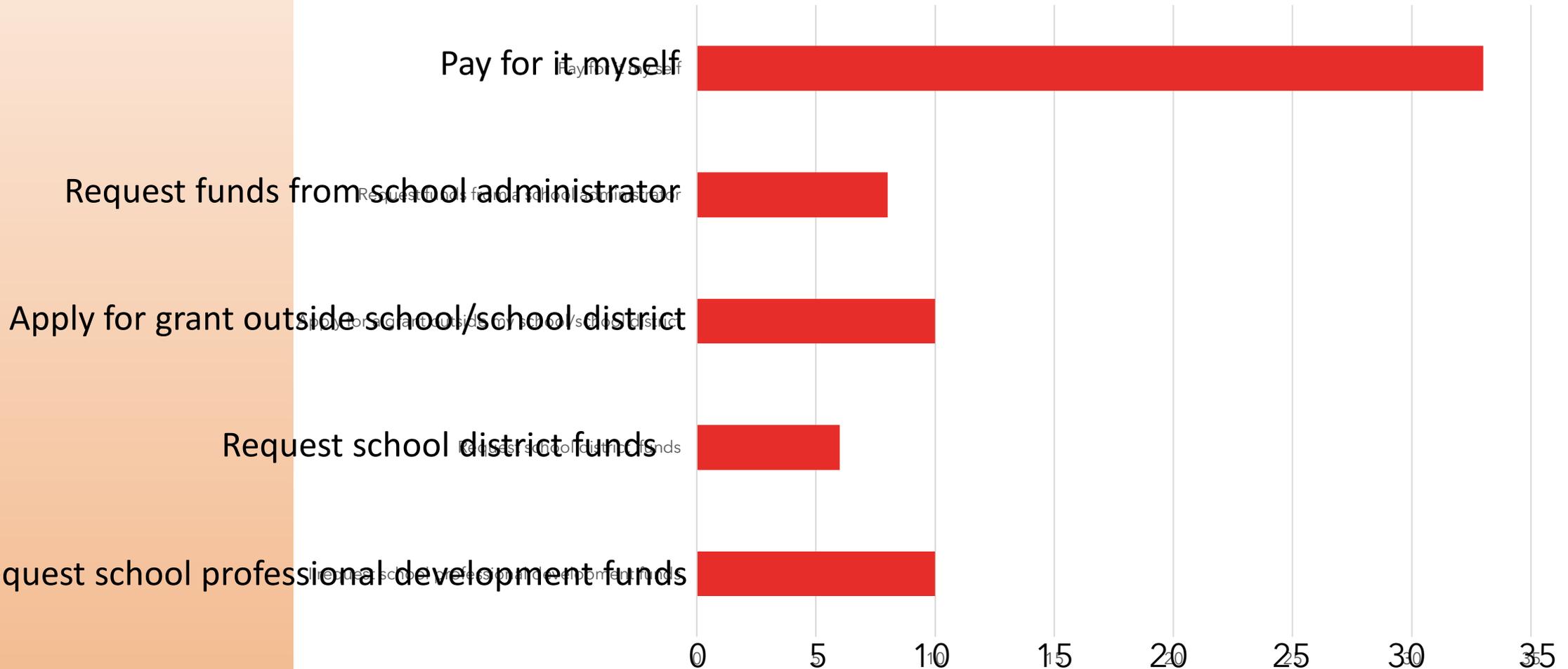
Criteria for Selecting Professional Development

Number of Respondants Indicating Criteria for Selecting PD Text responses contained multiple criteria



Funding of Teacher Professional Development

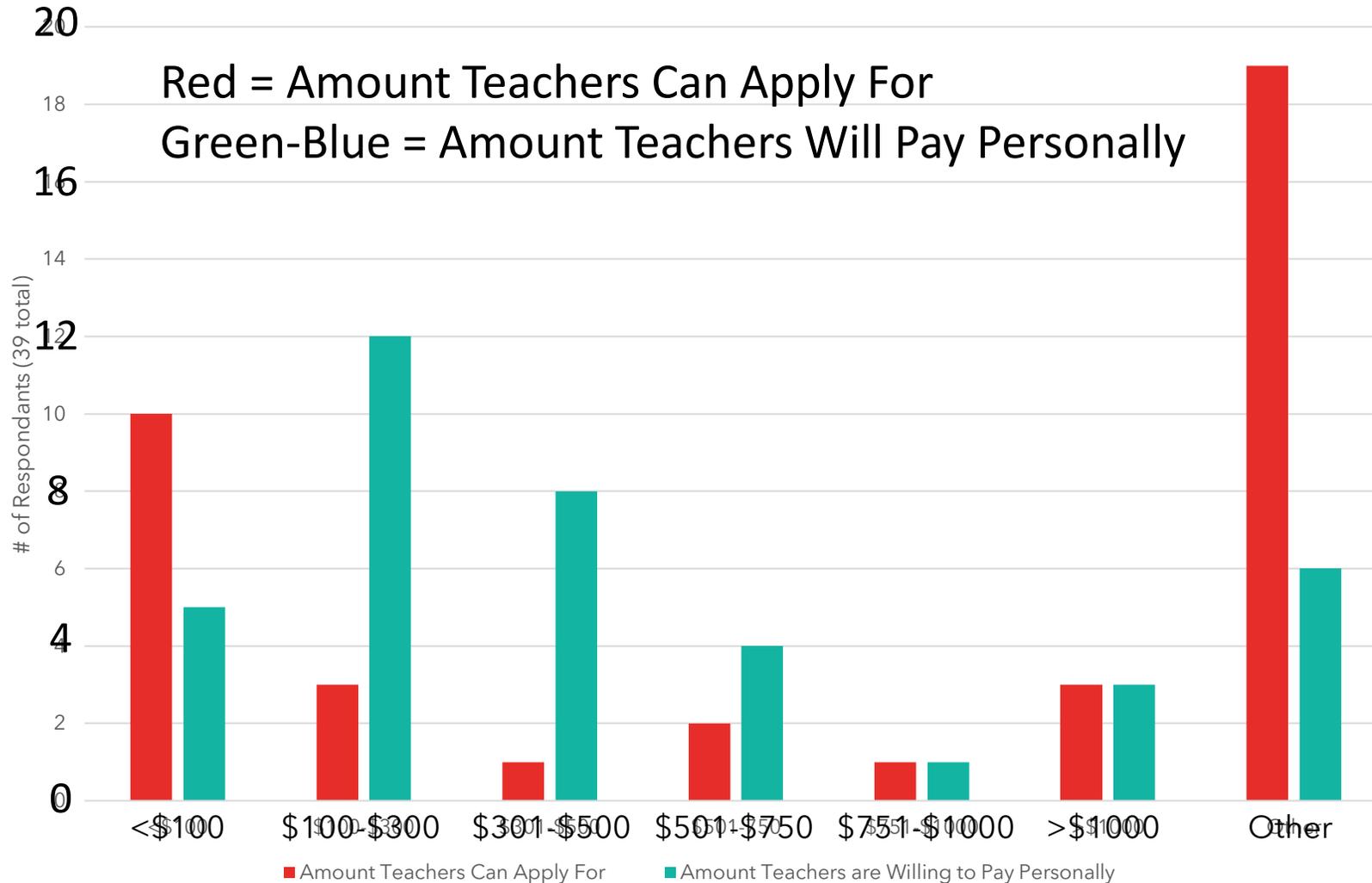
How Are Fees for Professional Development Paid?
Checked All That Apply, Total 67 responses



Funding of Teacher Professional Development

(Total = 39 Respondants)

Dollars Teachers Can Apply for or Are Will Pay Personally for Professional Development

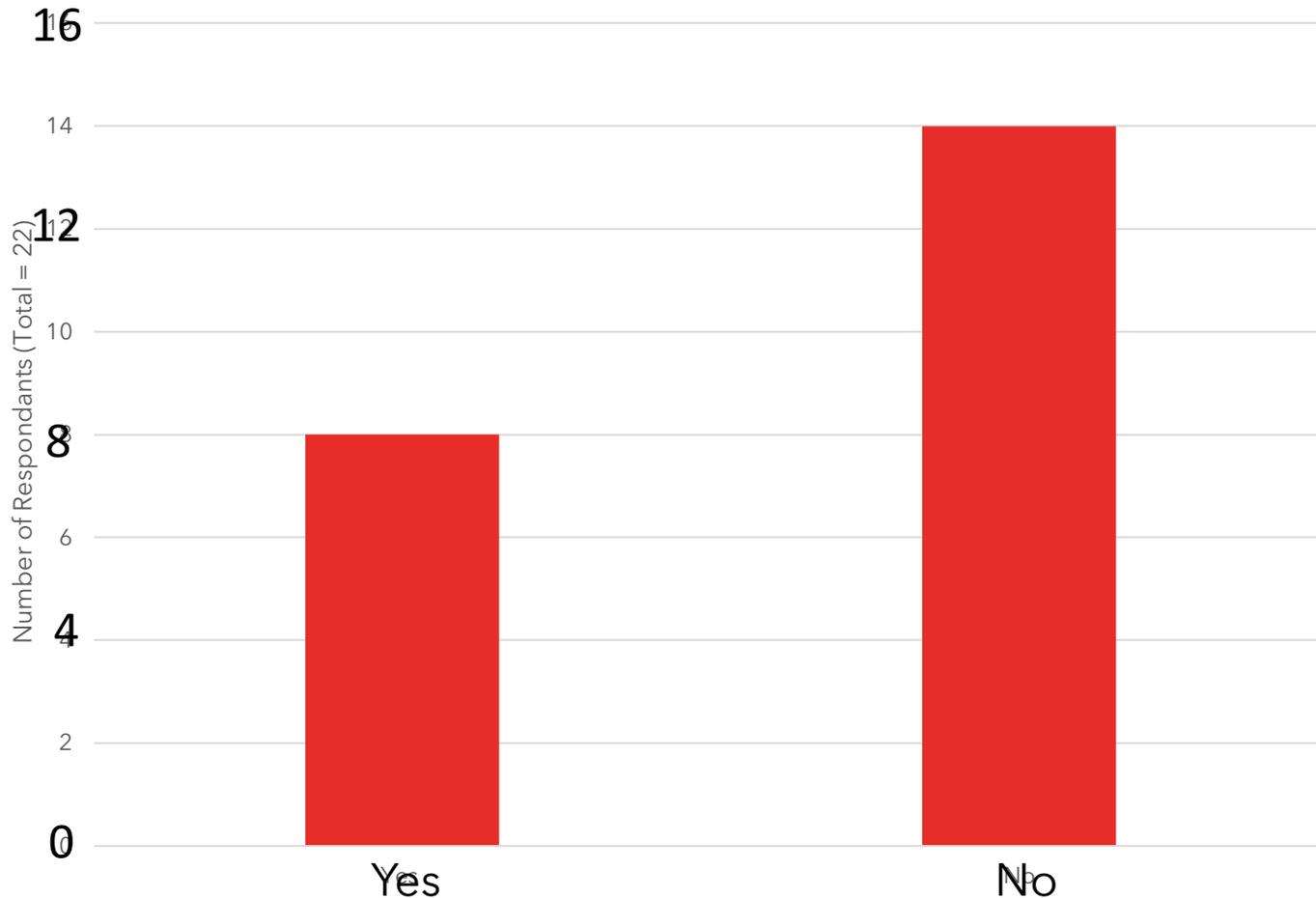


- Other
- Apply for
 - \$0 or don't know
- Pay Personally
 - Getting Graduate Degree
 - Travel
 - Won't pay anything

Do Teachers Depend on Receiving a Stipends?

(Total = 22 Respondants)

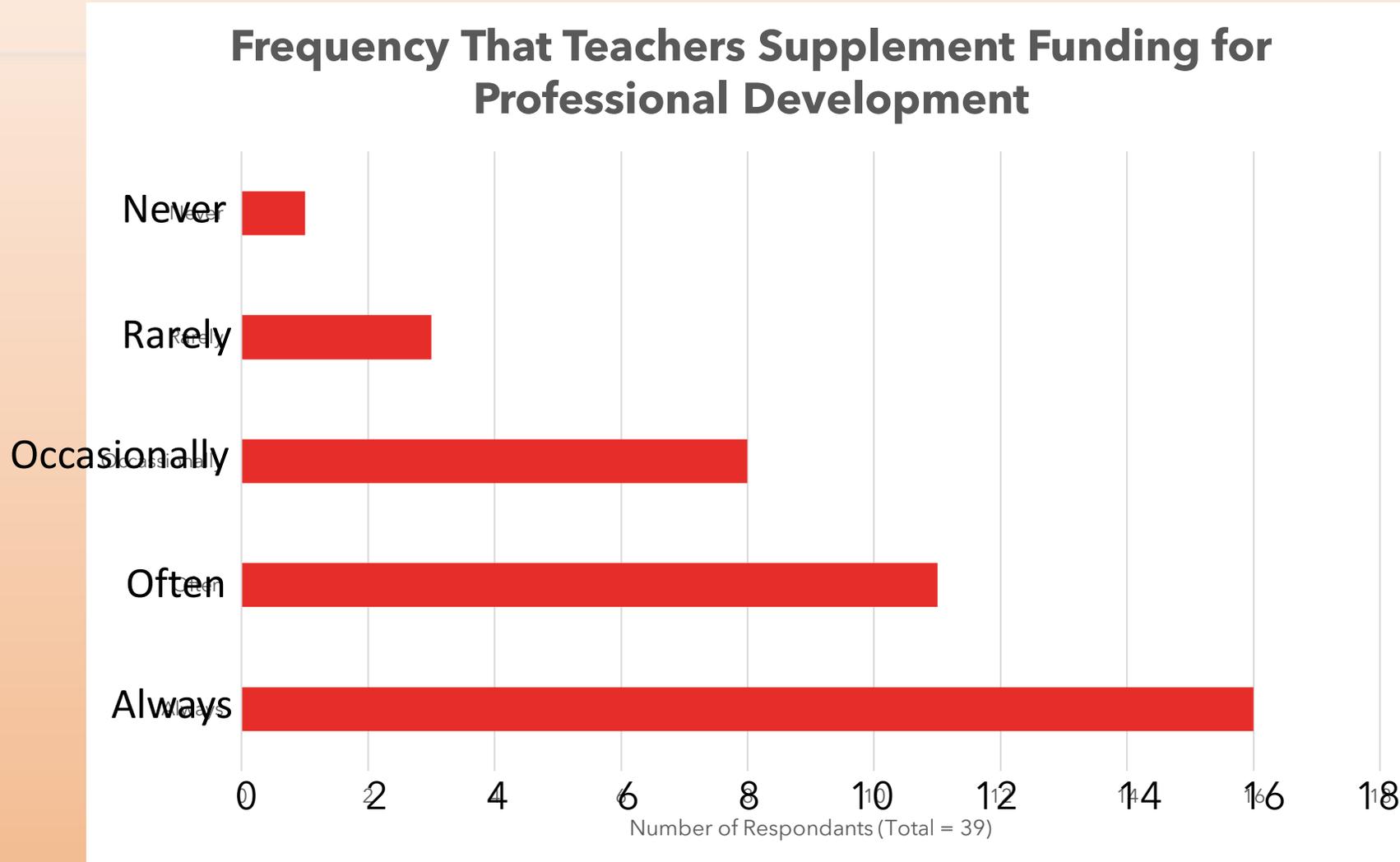
Teachers Looking for a Stipend to Support Professional Development



- If Yes, what level of stipend
 - Enough to cover expenses
 - \$2000. / \$600 + travel / \$300-\$500
 - \$250/day – Pay the teacher receives

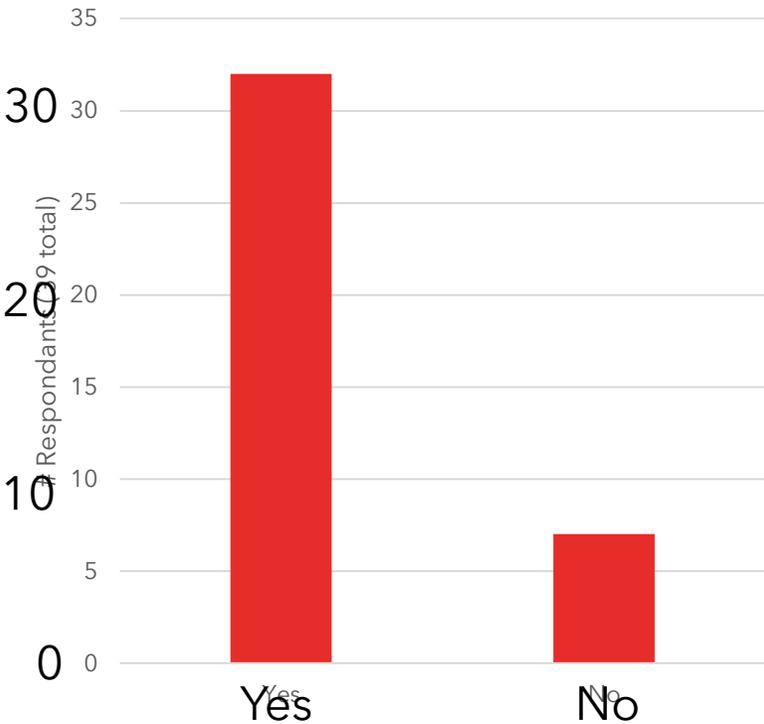
Frequency Teachers Supplement Teacher Professional Development Costs

(Total = 39 Respondants)



Would Teachers Be Interested in an Ongoing Climate Professional Development Program?

Responding Teachers Interest in Participating in a Climate TPLC?



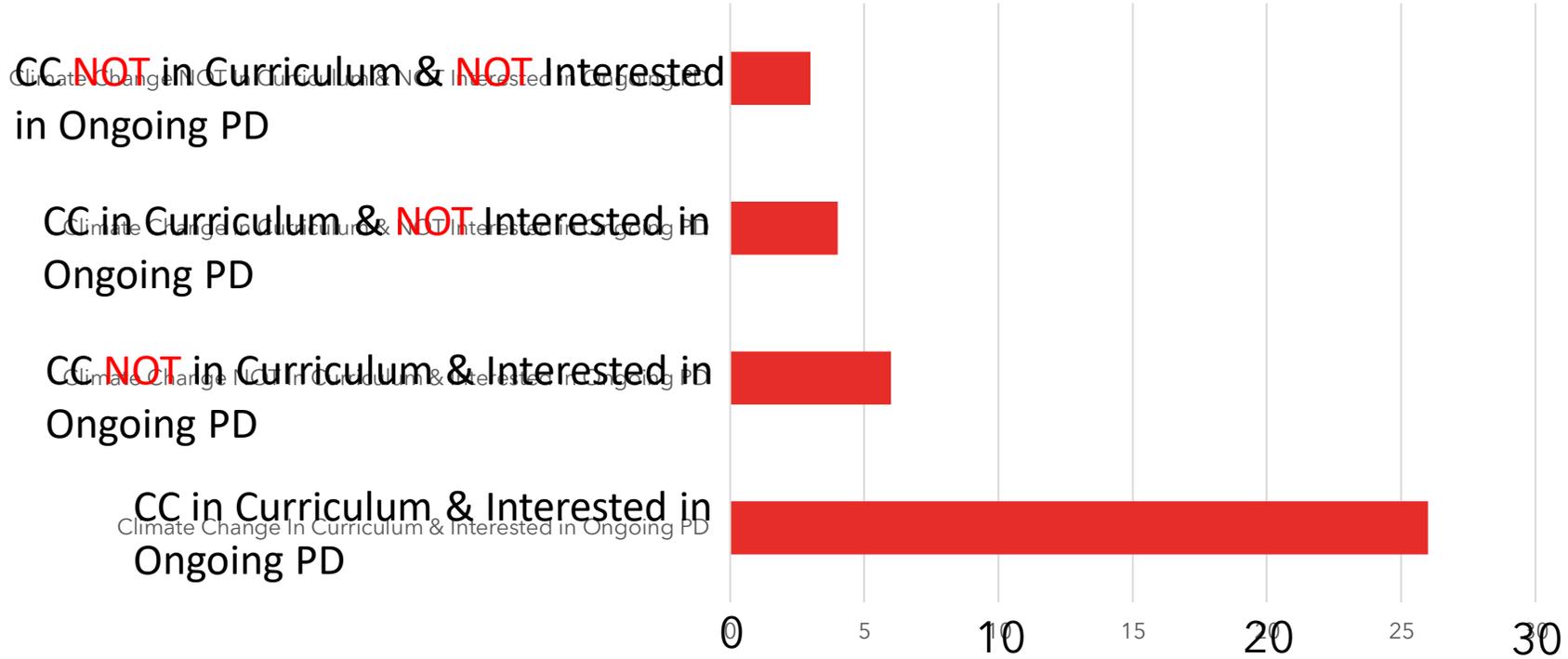
Interest in Ongoing Climate Professional Development by Whether Climate Change is in Curriculum

CC NOT in Curriculum & NOT Interested in Ongoing PD

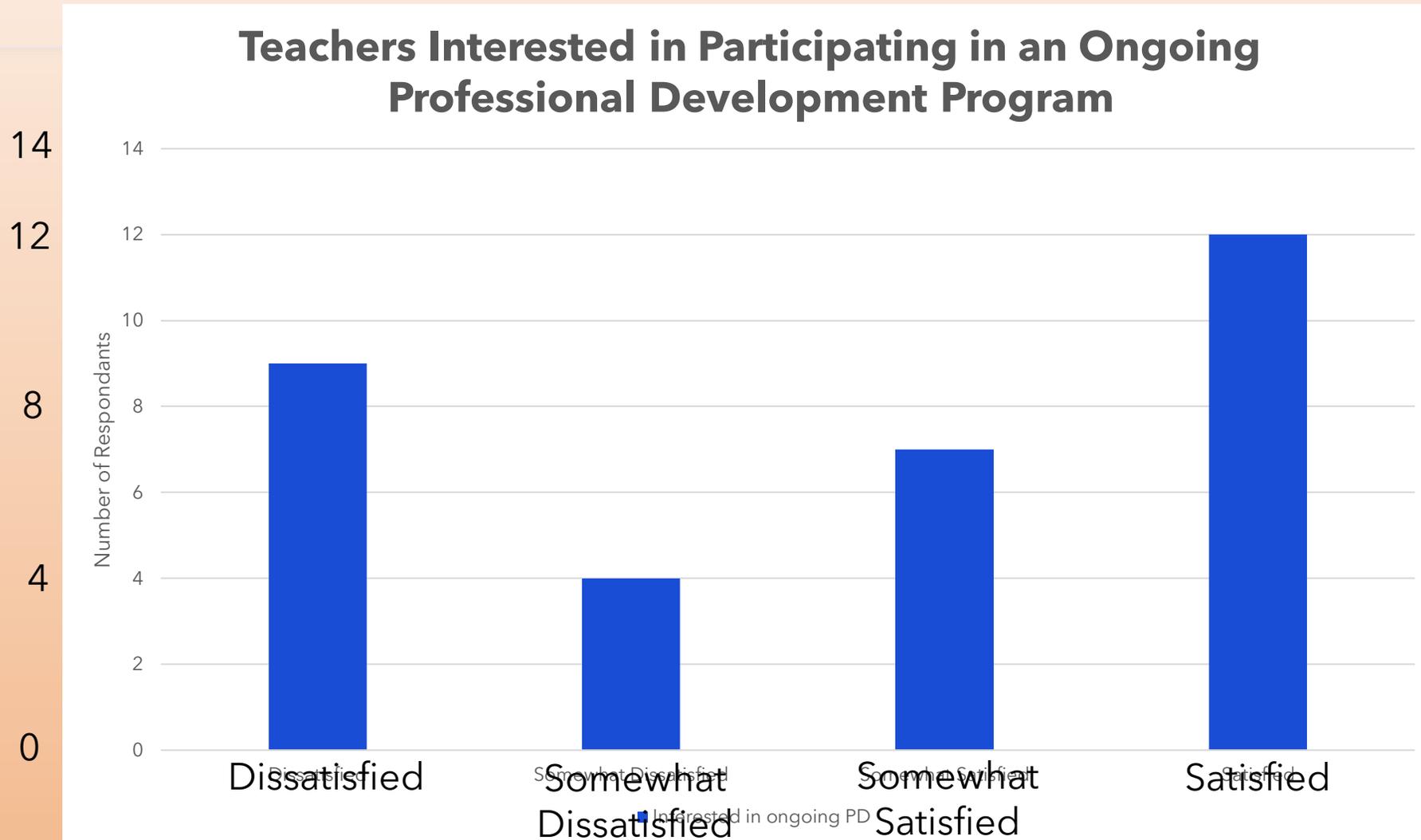
CC in Curriculum & NOT Interested in Ongoing PD

CC NOT in Curriculum & Interested in Ongoing PD

CC in Curriculum & Interested in Ongoing PD



Would Teachers Be Interested in an Ongoing Professional Development Program?



Take Aways

- Most teachers participated in multiple required & voluntary professional development activities a year – more than 3-5 event/year for each
- Top criteria for selecting PD
 - Content/Relevance
 - Cheap/Free
 - Offered by Scientific or Professional Organizations
 - Local
 - Timing
- Teachers often pay for PD themselves
- Teachers are willing to pay ~\$300 for quality PD and most teachers often or always supplement the cost of PD
- Teachers are interested in an ongoing climate professional development program

Thank You!

Questions?



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