Where Do I Go from Here?

Career Development Options for Science Teachers who Aspire to Do More

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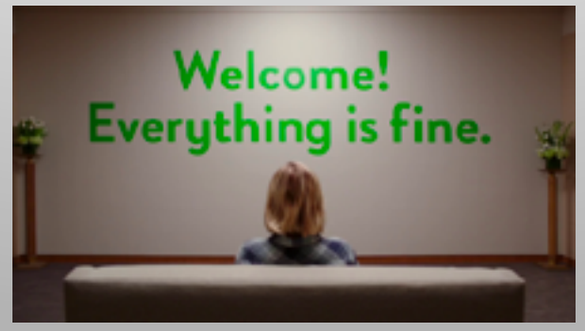
Welcome!

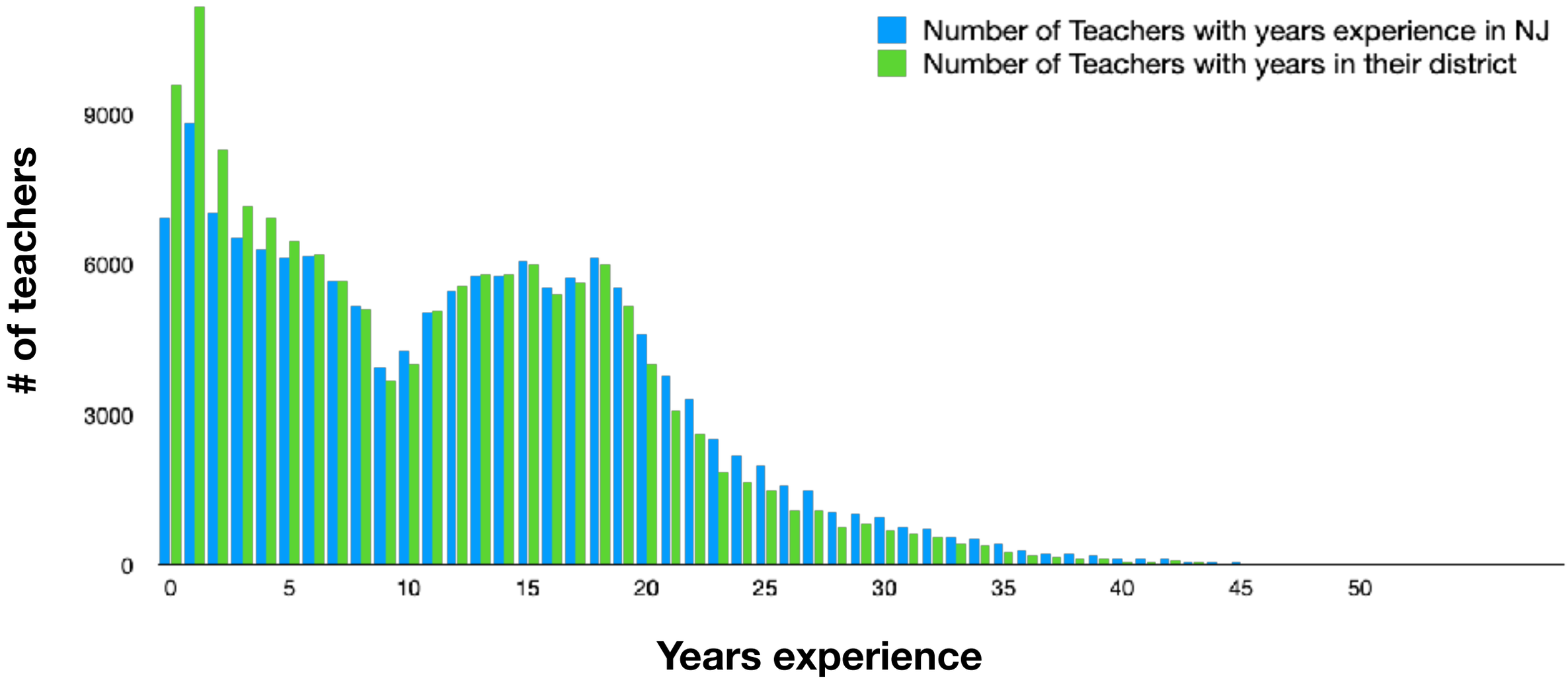
It's still okay to think about the future.



The median NJ Teacher has 9 years of experience in their district and 11 years of experience overall.

n=146,985 teachers

(Source: 2019-20 NJ Staffing Data, New Jersey Department of Education)



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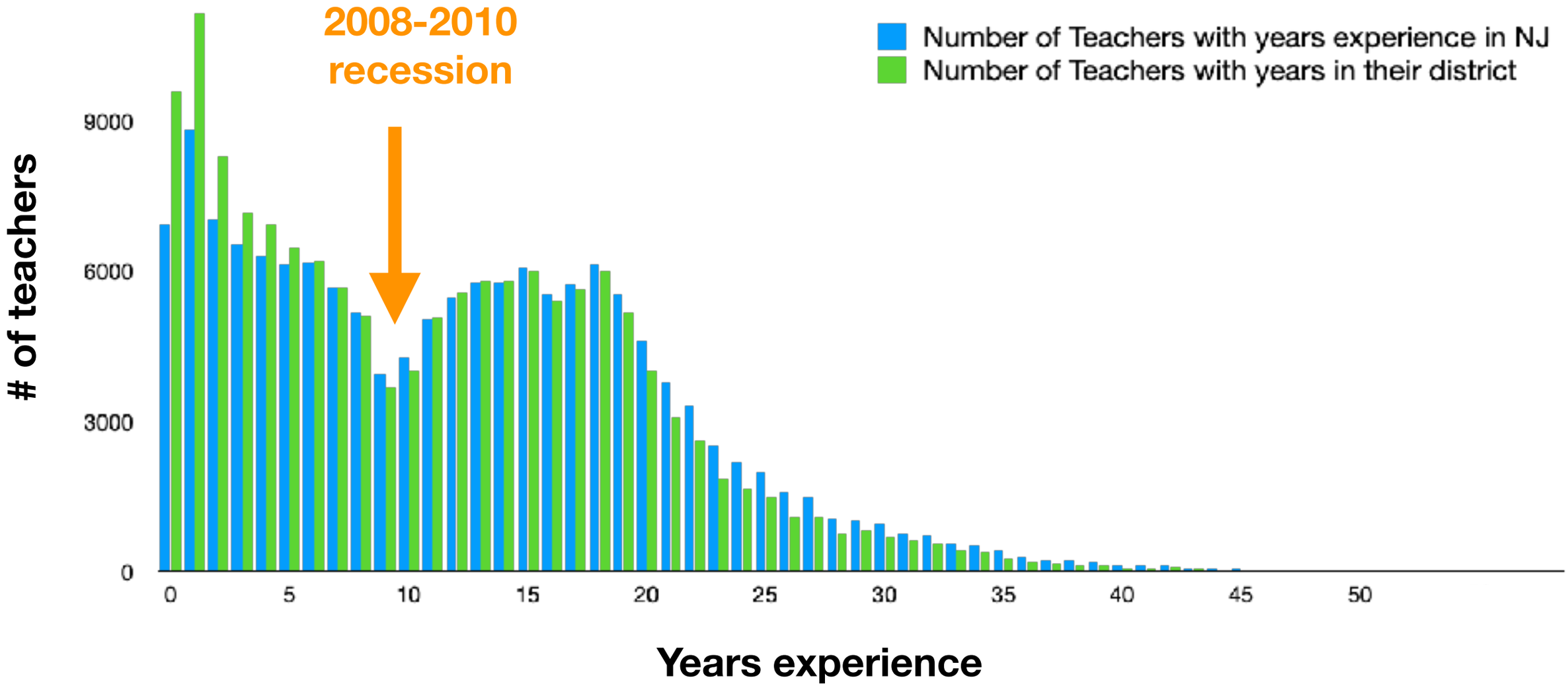

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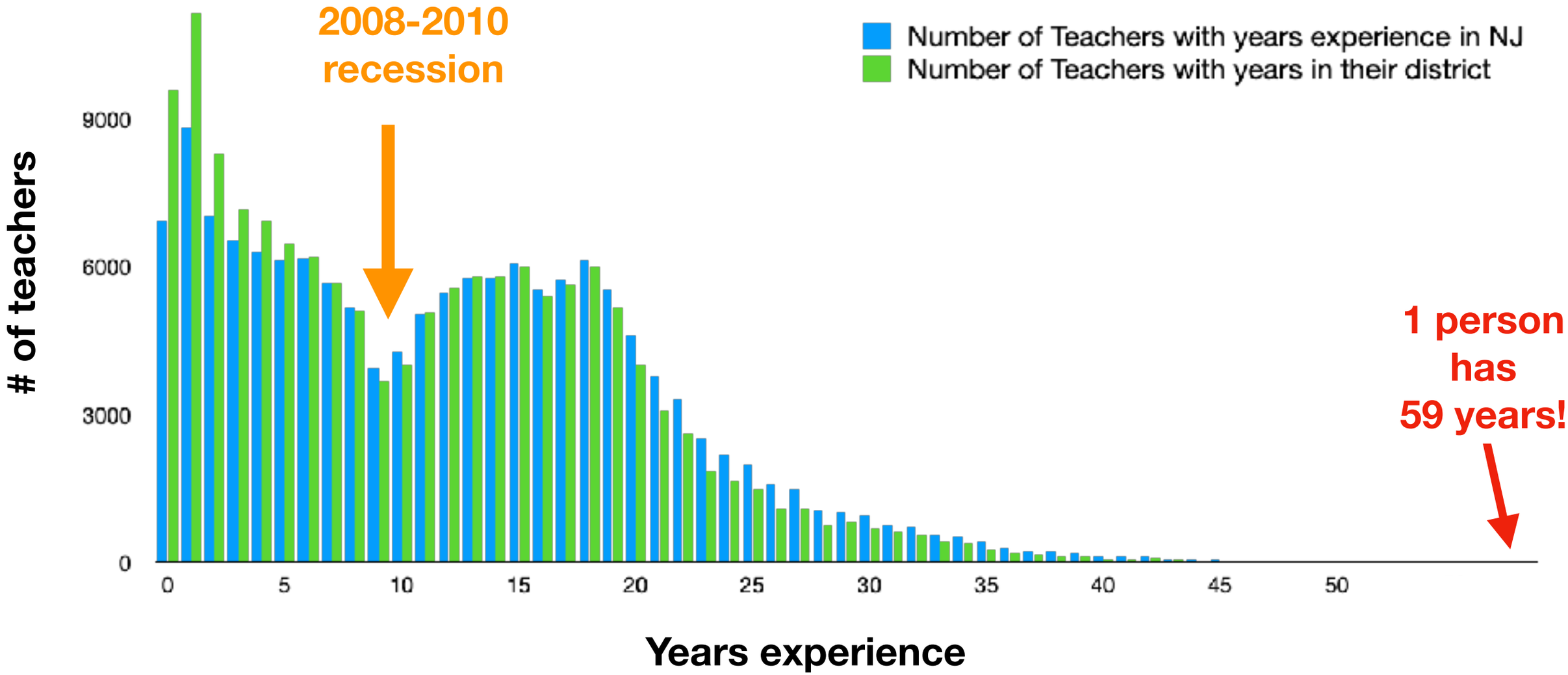

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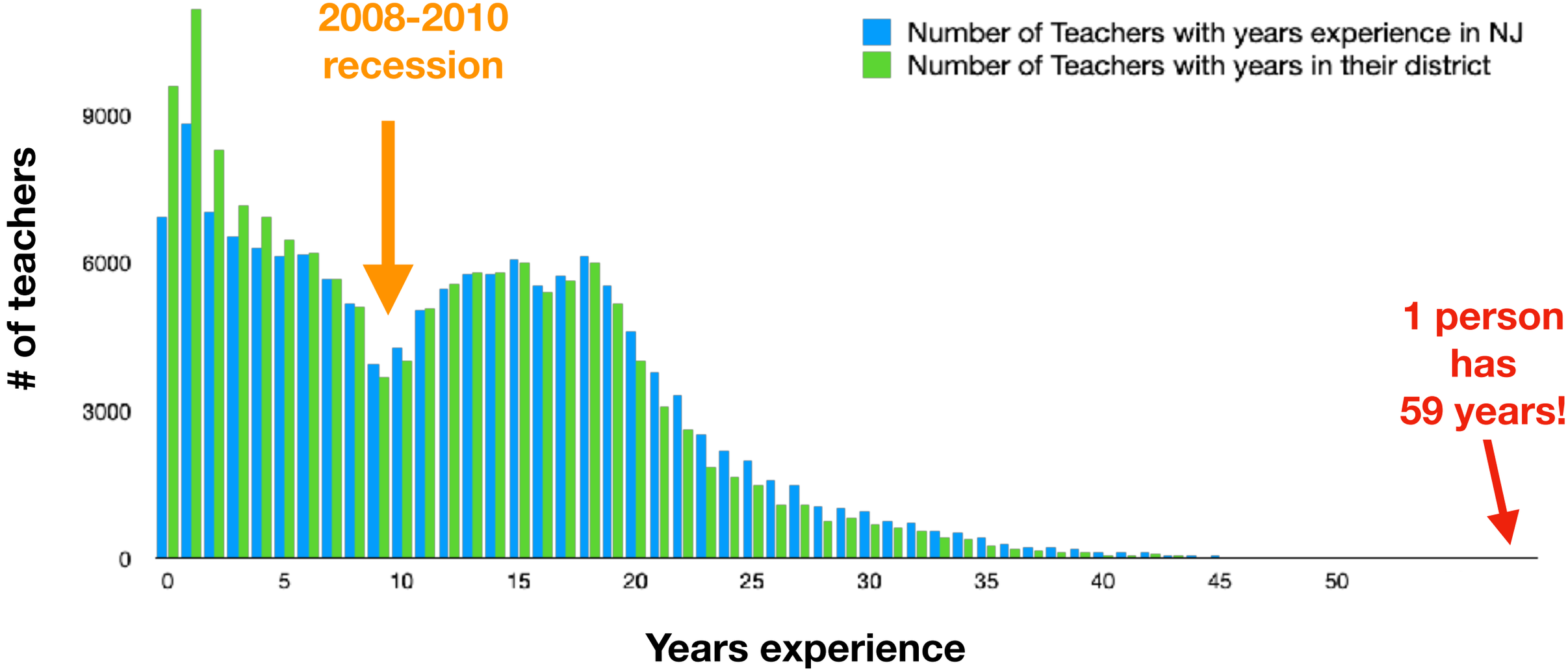
1 out of every 60 people in NJ is a public school teacher!



Teacher learning across the professional continuum

CENTRAL TASKS OF LEARNING TO TEACH

Preservice	Induction	Continuing Professional Development
1. Examine beliefs critically in relation to vision of good teaching	1. Learn the context—students, curriculum, school community	1. Extend and deepen subject matter knowledge for teaching
2. Develop subject matter knowledge for teaching	2. Design responsive instructional program	2. Extend and refine repertoire in curriculum, instruction, and assessment
3. Develop an understanding of learners, learning, and issues of diversity	3. Create a classroom learning community	3. Strengthen skills and dispositions to study and improve teaching
4. Develop a beginning repertoire	4. Enact a beginning repertoire	4. Expand responsibilities and develop leadership skills
5. Develop the tools and dispositions to study teaching	5. Develop a professional identity	

from Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. Teachers College Record, 103(6), 1013-1055. https://www.tcrecord.org/content.asp?contentid=10824

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Science

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Two Caveats:

1. These lists are <u>not</u> comprehensive. My purpose here is to broaden science teachers' range of thinking about professional opportunities. Things I've listed here are generally the ones I've had some experience with—but there is a lot I don't know!

2. The pandemic has changed many of these existing opportunities. Some are now less accessible, and others have moved online and become available to more teachers than ever.

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Pathways along the professional continuum

Continuing Professional Development
1. Extend and deepen subject matter knowledge for teaching
2. Extend and refine repertoire in curriculum, instruction, and assessment
3. Strengthen skills and dispositions to study and improve teaching
4. Expand responsibilities and develop leadership skills

- Local school-based opportunities
- Professional development
  –One shot deals
  –New Jersey
  –National
  –Research experiences for teachers
- Earn an additional certification/credential
- National Board of Professional Teaching Standards
- Earn a masters degree
- Earn a doctoral degree
- And more!

Local school-based opportunities

Start your own club as the advisor

- Environmental club
- Astronomy club
- Rocket club
- Hiking club

It is always a good idea to work with an administrator, not only to ensure that your club is sanctioned by the district, but also to see if there is sufficient interest. You can always "pilot" a club first or just meet once a month.

Local school-based opportunities

Take on leadership roles in science-based clubs with connections to state and national organizations (for example):

- Science Olympiad: https://www.soinc.org/
- Science Bowl: https://science.osti.gov/wdts/nsb
- National Ocean Sciences Bowl: http://nosb.org/
- 4-H Clubs: https://4-h.org/
- Future Farmers of America: https://www.ffa.org/
- ACS ChemClub: https://www.acs.org/content/acs/en/education/students/highschool/chemistryclubs.html
- Society for Science https://www.societyforscience.org/

Professional development–One shot deals

Professional Development covers a wide range of program types and durations. Some offer PD hours, and some don't. Sometimes all you need is a short-term focused workshop so that you can learn a specific skill:

- NJSTA Events: https://njsta.org/Events
- Vernier probeware workshops: https://www.vernier.com/training/
- NJ School of Conservation workshops: https://friendsofnjsoc.org/events/
- PPPL's Science on Saturday: https://www.pppl.gov/education/science-education/science-saturday-archive
- NJEA: https://www.njea.org/learning/professional-learning/
- AFT Professional Learning: https://www.aft.org/education/publications/professional-learning

Professional development–New Jersey

Higher Education and other Institutions in and around NJ also support science educators (Reminder: not a comprehensive list!)

- NJIT Programs for Educators: https://www.njit.edu/precollege/educatorprograms
- Liberty Science Center: https://lsc.org/education/educators/professional-development
- Raritan Valley CC Science Education Institute: https://www.raritanval.edu/community-resources/science-education-intitute
- Rutgers Center for Mathematics, Science, and Computer Education: https://cmsce.rutgers.edu/professional-development
- Montclair's PRISM center: https://www.montclair.edu/prism/
- Rowan's STEM Center: https://sites.rowan.edu/stemcenter/
- Rider's SELECT: https://www.rider.edu/about/offices-services/teaching-and-learning-center/select/professional-development

Professional development–National scope

- NASA intern program: https://intern.nasa.gov/
- NGSX: https://www.ngsx.org/programs
- AP Workshops & Summer Institutes: https://apcentral.collegeboard.org/professional-learning/workshops-summer-institutes
- American Modeling Teachers Association https://www.modelinginstruction.org/professional-development/
- Smithsonian Institute: https://ssec.si.edu/smithsonian-science-education-academies-teachers
- NSTA: https://www.nsta.org/professional-learning
- Knowles Teacher Initiative: https://trellis.knowlesteachers.org/knowles-academy
- National Geographic: https://www.nationalgeographic.org/education/professional-development/courses/
- Exploratorium: https://www.exploratorium.edu/education/professional-development-programs

Professional development–
Research Experiences for Teachers

- NASA Climate Change Research Initiative: https://www.giss.nasa.gov/edu/ccri/
- Climate Generation: https://www.climategen.org/our-core-programs/climate-change-education/professional-development/summer-institute/
- McDonald Observatory: https://mcdonaldobservatory.org/teachers/profdev
- Fermilab Teacher Research Associates: https://internships.fnal.gov/teacher-research-associates-trac/
- Project Atmosphere: https://www.ametsoc.org/index.cfm/ams/education-careers/education-program/k-12-teachers/project-atmosphere/training-opportunities/project-atmosphere/
- National High Magnetic Field Laboratory: https://nationalmaglab.org/education/teachers/professional-development/research-experiences-for-teachers
- CEDAM International: https://cedaminternational.org/about/
- Columbia Summer Research Program: https://www.scienceteacherprogram.org/

Earn an additional certification/credential

NJDOE **Certification** possibilities include:

- An additional content-area certification (15+ credits)
- Middle grades science certification (15 credits)
- Bilingual/Bicultural certification (13-16 credits)
- Teaching Students with Disabilities certification (21 credits)
- Teacher Leadership Endorsement (this is relatively new): https://www.state.nj.us/education/AchieveNJ/leadership/tle.shtml
- Supervisor certification (post-Masters)
- Administrator certification* (post-Masters)

*okay, this one is not science-related, but a lot of people do this!

One resource: www.NJSTEMTeachers.org

Earn an additional certification/credential

Many programs now offer **courses** or **certificates** that are not connected to NJDOE certifications. Certificates may range from 6-21 credits in a wide range of areas, and may be applicable to Master's degrees. Examples include:

- Endeavor STEM Teaching Certificate Project https://www.us-satellite.net/endeavor/index.cfm
- Smithsonian Science Education Center's The Science of Teaching Science: https://www.edx.org/professional-certificate/smithsonianx-the-science-of-teaching-science
- MSU Computer Science Education computer science certificate (online) : https://www.montclair.edu/graduate/k-12-computer-science-education-certificate-online/
- American Museum of Natural History: https://www.amnh.org/learn-teach/seminars-on-science/courses

National Board of Professional Teaching Standards Certification (a.k.a "National Board")

https://www.nbpts.org/

There are two science certifications

- Science Early Adolescence (teaching age 11–15)
- Science Adolescence and Young Adulthood (teaching age 14–18+)

To become a Board-certified teacher, eligible candidates must demonstrate advanced knowledge, skills, and practice in their individual certificate area by completing four components: three portfolio entries and a computer-based assessment.

School/district cohorts are encouraged, and the process seems to be more manageable when a group of colleagues decide to go for NBPTS certification together.

Earn an additional degree–Masters

- Masters of Education (Ed.M., M.Ed.) There are a number of programs in NJ, PA, and NY, but also many fully online.
- Masters of Science (MS) in a science area: biology, chemistry, physics, etc.

Earn an additional degree–Doctorate

Earn a doctorate in an education related field (Ph.D. or Ed.D) with a concentration in science education or science teacher education. This can be a 4-8 year commitment.

- Rutgers GSE: https://gse.rutgers.edu/degree/phd-lcid-specialization-in-science-education/
- Teachers College: https://www.tc.columbia.edu/mathematics-science-and-technology/science-education/degrees--requirements/science-education-phd/
- Montclair State University: https://www.montclair.edu/teacher-education-and-teacher-development-phd/
- Penn GSE: https://www.gse.upenn.edu/academics/programs/teaching-learning-teacher-education-phd
- There are also many doctoral programs in education and educational leadership (e.g. Rowan, University, Caldwell University, Seton Hall, Centenary University),where science education research may be pursued.
- Online doctoral programs can get you the credential faster, but the experience is different. Results may vary.

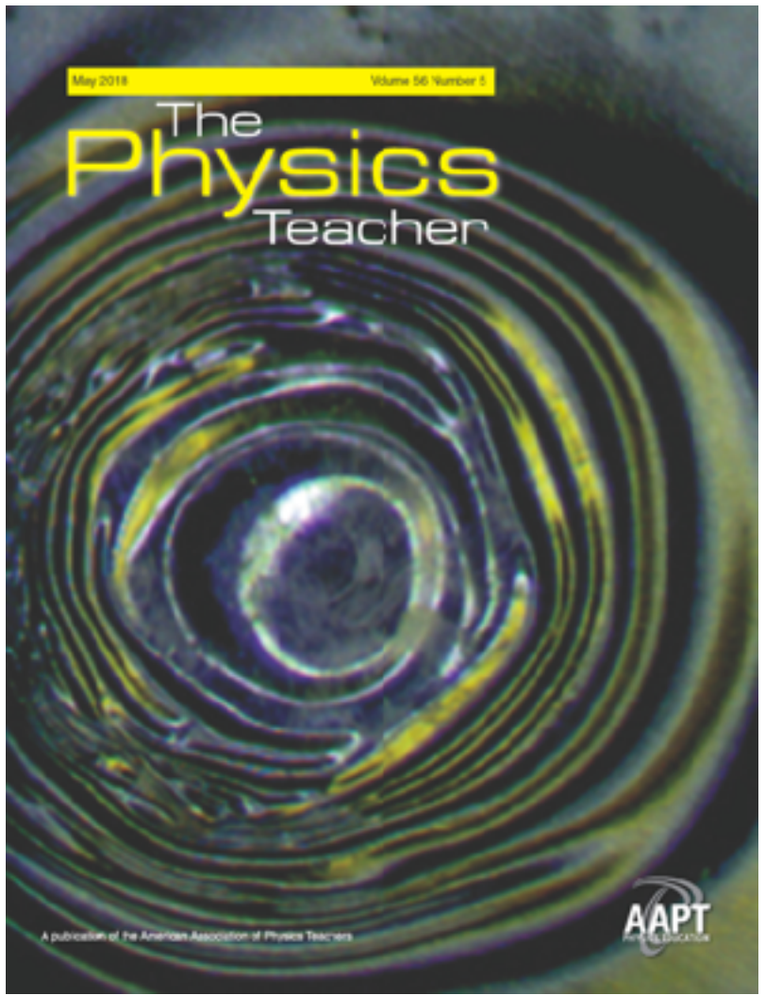
And more!

Take more active (or even a leadership) role in science education-related organizations:

- NJSTA: https://njsta.org/
- NSTA: https://nsta.org/
- NARST: https://narst.org/
- American Assn of Chemistry Teachers: https://teachchemistry.org/
- American Assn of Physics Teachers: https://www.aapt.org/
- National Assn of Biology Teachers: https://nabt.org/
- AAAS: https://www.aaas.org/
- NJ Audubon: https://njaudubon.org/
- Amateur Astronomer organizations: (e.g.): https://www.princetonastronomy.org/index.html

And more!

Many science education organizations have publications—you can learn a great deal by writing an article for any of them:



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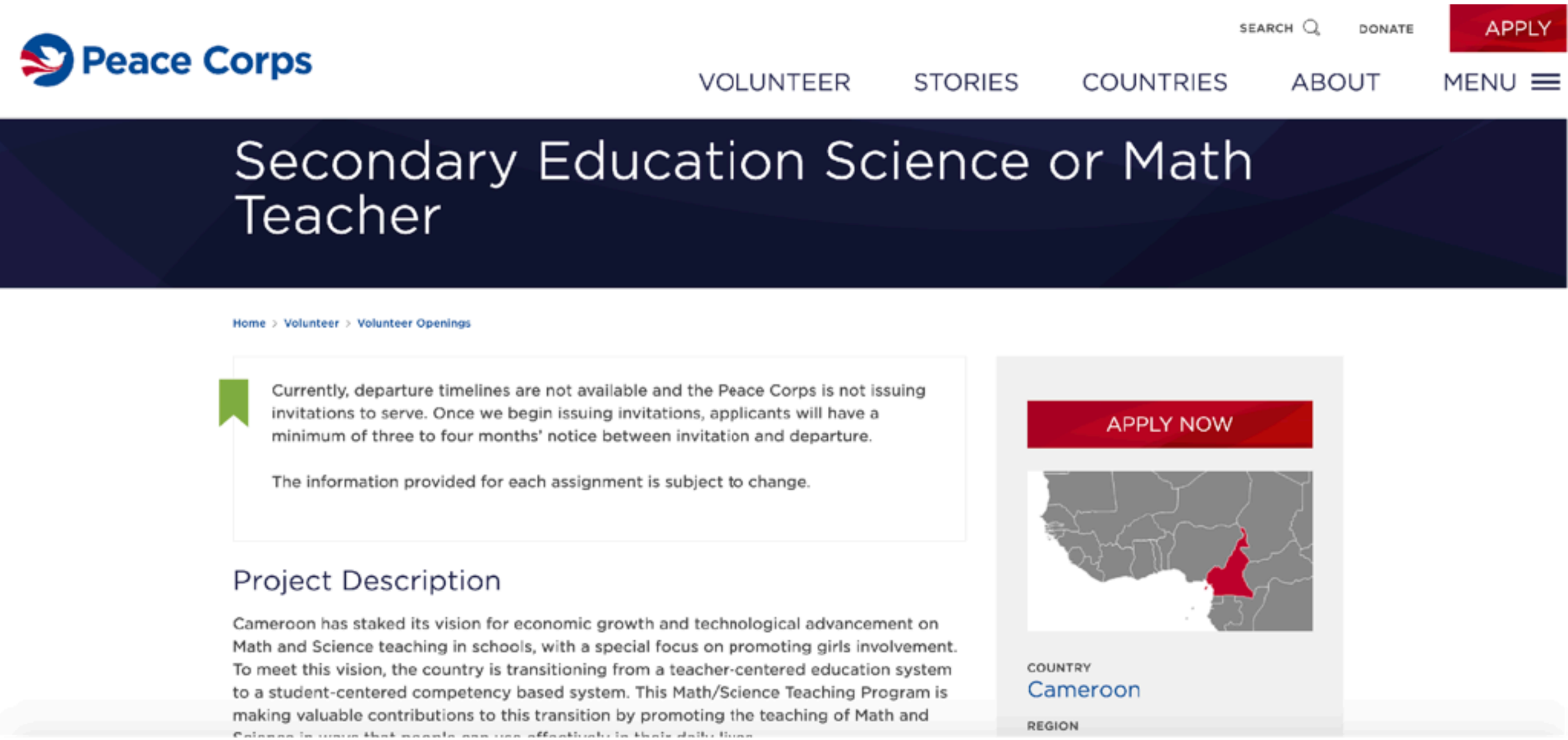

https://www.peacecorps.gov/

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Let's chat!

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