Where do they go?
Veterans and the STEM pipeline.

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The Perfect Storm

The need for STEM workforce is on the rise

New GI Bill allows for veterans to pursue higher education

Veterans leave the military with technical and other job skills

Katsushika Hokusai - Great Wave off Kanagawa
FUTURE NEEDS: 1 million more STEM professionals in the next decade than the U.S. will produce at the current rate if the country is to retain its historical preeminence in science and technology.

“To meet this goal, the United States will need to increase the number of students who receive undergraduate STEM degrees by about 34% annually over current rates.”

CURRENTLY: ~ 300,000 bachelor and associate degrees in STEM fields annually in the U.S.
Percentage of STEM Degrees Has Decreased

Job Opportunities in STEM in CA

Vital Signs, September 2012:  www.changetheequation.org
Fewer than 40% of students who enter college intending to major in a STEM field complete a STEM degree.
California Educational Pipeline

Of students who enter a two-year degree program, what percentage graduate? (2009)
- 38.2%
- 29.2%

Of students who enter a four-year degree program, what percentage graduate? (2009)
- 63.9%
- 55.5%

Vital Signs, September 2012: www.changetheequation.org
Increasing retention of STEM majors from 40% to 50% would generate three-quarters of the 1 million additional STEM degrees over the next decade.

Many student who abandon STEM majors perform well in their introductory courses and would make valuable additions to the STEM workforce.
Retaining more students in STEM majors is the lowest-cost, fastest policy option to providing the STEM professionals ... and will not require expanding the number or size of introductory courses, which are constrained by space and resources at many colleges and universities.
Post-9/11 GI Bill: Opportunities For STEM And Engineering Sectors

1) Veterans of US armed forces: resource in advanced technical capacity, leadership and team-play mentality → backbone for future US technical innovation

2) Amazing diversity of US armed forces → diverse pipeline for engineering

3) Critical juncture: newly expanded veterans’ benefits enables higher education for veterans through GI Bill → Over the next 5 years, 2-3M servicemembers will transition out of the services
However...

1) GIs are generally not focused on engineering
2) Military operational specialty (Army: MOS)—lots of specialized, technical training—does not correlate well with technical educational aspirations, specifically engineering, or career goals
3) Education is not necessarily a universal value—enlisted/officer distinction
4) Amazing lack of consciousness about their technical expertise, capacity, and training
5) Streamlining or tracking into very traditional job sectors: Law enforcement

NSF-sponsored study: “From Battlefield to Classroom”, L. Steinberg et al., Syracuse University, 2011
STEM Is At A Disadvantage For Attracting Servicepersons

1) Pathways to post-secondary education are pretty well established – do not tend toward engineering
2) Credits are difficult to transfer from training, AA degrees
3) Little online training in engineering available during the period in service
4) Personnel are inculcated with a training/short course approach to education that does not necessarily set them up for undergraduate engineering
5) Concerns about time-frame for completing a degree and whether they would like the occupation they ended up with

NSF-sponsored study: “From Battlefield to Classroom”, L. Steinberg et al., Syracuse University, 2011
What Can We Do to Make Things Better?

An opportunity for collaboration

Do students understand what careers are possible with STEM qualifications?

Do students understand what STEM courses are needed to attain those careers?