

An Evaluation of URL Officer Accession Programs

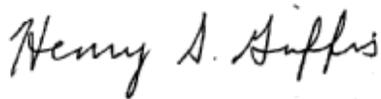
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Approved for distribution:

May 2008

A handwritten signature in black ink that reads "Henry S. Griffis". The signature is written in a cursive style with a clear, legible font.

Henry S. Griffis, Director
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Executive summary

This study began with a request from N13 to find the “best value” accession source among the Unrestricted Line (URL) Navy officer accession programs. The three main officer accession programs are the Naval Academy (USNA), the Naval Reserve Officer Training Corps (NROTC), and Officer Candidate School (OCS). There are also important enlisted-to-officer URL commissioning sources, but we focus our efforts on the three main sources. We evaluate the Navy’s current practice of seeking to access officers from these three sources in roughly equal shares. We compare the programs using several criteria.

First, we evaluate the cost-effectiveness of deviations from the “one-third” plan, assuming that all accession sources continue to produce officers. Specifically, we compare the net marginal costs and benefits of a small increase in URL officer accessions, by accession source. We define marginal costs as precommissioning costs plus an estimate of early postcommissioning training costs plus the cost of maintaining the additional personnel endstrength. We define the benefits as retention through a 20-year career. We find that OCS has the advantage here, although the cost-benefit difference between the programs for the URL as a whole is small—not necessarily large enough to indicate definitively which source the Navy should go to next for accessions.

Second, we recognize that retention is a somewhat limited definition of the benefits of additional officer endstrength. Therefore, we also examine whether officers are more likely to achieve certain career milestones, including screening for command and making flag rank, if they came from one particular accession source. The data indicate that USNA has the advantage here.

Finally, the Navy has other goals for its URL officer corps, such as racial/ethnic and gender diversity. We show how these demographic characteristics differ across programs. USNA and NROTC typically produce more demographically diverse accession cohorts.

The results of the best value accession source analysis demonstrate that no single accession source dominates. Although a cost-benefit analysis indicates that it could be marginally more cost effective for the Navy to draw more heavily from one accession source, other important criteria (e.g., production of senior leadership or contribution to demographic diversity in the URL officer corps) indicate that the Navy might expand other accession sources. The Navy must prioritize its many goals for URL officer accessions in order to make the most effective changes to its accession plan.

Additional tasking was added as the study progressed. CNA provided analytical support to the USNA submarine accessions working group. The Director of Navy Staff created the working group to understand why USNA had not been successful in accessing the planned number of submarine officer accessions for several consecutive years. The working group had participation from a variety of N13 offices, USNA, the NROTC program, and the Navy nuclear reactor program. We find that it was numerically possible for USNA to reach its submarine officer accession goal based on the number of graduating midshipmen with technical majors and higher than average academic success, but only if interest in serving in the submarine community remained sufficiently high. The working group made a variety of recommendations to increase the visibility and desirability of the submarine community to midshipmen and to consider some changes to the service selection process to ensure that all URL communities receive a minimum number of accessions.

Executive summary (continued)

While the study was in process, the Chief of Naval Operations (CNO) asked N1 to provide quarterly situation reports (SITREPs) on Navy officer diversity (race/ethnicity and gender) with a particular focus on the URL. CNA's task was to provide analytical support to the Navy Diversity Directorate (N134) to produce the SITREPs. To reach CNO's desire for a more racially and ethnically diverse flag pool in 2037, N134 developed URL officer accession racial/ethnic representation goals for USNA and the NROTC scholarship program for 2012—that is, the next accession cohort that will become part of the 2037 flag pool. We, in turn, analyzed data on recent racial/ethnic minority applications to USNA and to the NROTC scholarship program, as well as offer, acceptance, and completion rates in those programs. We find that both USNA and the NROTC scholarship program will have to substantially increase the number of minority applications to reach the 2037 flag pool goals. In addition, we analyze contemporaneous application to USNA and the NROTC scholarship program and find large racial/ethnic differences. We find that African American applicants are much less likely to apply to both programs contemporaneously, thus likely lowering the chances of becoming URL officers.

Tasking and outline



- Evaluate the current “one-third” accession plan
 - Flexibility
 - Cost-effective deviations
 - Career progression
 - Racial/ethnic and gender diversity
- Support the USNA Accessions Working Group (Submarines)
- Support the Diversity Directorate’s (N134) examination of demographic representation in the officer corps

This study is sponsored by the Director, Military Personnel Plans and Policy Division (N13). It has three main tasks.

In task 1, we evaluate the Navy’s current practice of seeking to access officers from each of the three main accession sources—the United States Naval Academy (USNA), the Naval Reserve Officer Training Corps (NROTC), and Officer Candidate School (OCS)—in roughly equal shares. First, assuming that all accession sources will continue to produce officers, we evaluate the cost-effectiveness of deviations from the so-called one-third plan. Second, we examine which accession sources produce the senior leadership of the Navy. Third, given that the Navy has still other goals for the officer corps, such as an emphasis on racial/ethnic and gender diversity, we show how these characteristics differ among accession sources.

At the same time that we were addressing the tasking for a “best value” accession source analysis, Navy personnel managers noted that the number of officers accessing to the submarine community from USNA had been lower than the one-third accession goal for several consecutive years. The Director of Navy Staff requested that a working group be set up to study the issue. Thus, CNA support for the Naval Academy submarine accessions working group became the second task of this study.

The third task was to support the Navy Diversity Directorate in its analytic efforts to respond to requests from the Chief of Naval Operations (CNO) about officer racial/ethnic and gender diversity.

This annotated briefing documents the work done on each of the three tasks.

Motivating question for task 1

- Some want a “best value accession source” rule or process that determines number of URL officer accessions (by community) that should come from each source
 - Which source, on the margin, gives the biggest return on investment?
 - Other factors are also important:
 - Do front-runners come disproportionately from one source?
 - Does racial/ethnic, gender, and other demographic diversity come disproportionately from one source?
- There may not be a rule per se, but there may be a set of tradeoffs across accession sources (by community) that can be clarified for the Navy

Task 1 was motivated by the desire for a “best value accession source” rule or process that could help determine the number of URL officer accessions for each officer community that should come from each accession source.

Over a number of years, N13 has developed an officer accession plan—hereafter called the one-third plan*—in which roughly one-third of URL accessions would come from each of the three main accession sources: USNA, NROTC, and OCS.

In the search for an optimal rule, N13 asked CNA to examine several aspects of the one-third plan. The primary question of interest was, what is the most cost-effective way to deviate from the plan if changes to the mission suggest that a shift is necessary? To answer this question, we compare the net marginal costs and benefits of a small increase in URL officer accessions, by accession source. We define marginal costs as precommissioning costs plus an estimate of early postcommissioning training costs plus the cost of maintaining the additional personnel endstrength. We define the benefits as retention through a 20-year career.

Senior leadership within the N1 organization correctly notes that retention is a limited definition of the benefits of additional endstrength. Therefore, we also examine whether officers are more likely to achieve certain career milestones, including screening for command and making flag rank, if they came from one particular accession source and whether there are differences in the racial/ethnic and gender diversity produced by each accession source.

*Enlisted-to-officer programs (since 2001 called the Seaman-to-Admiral (STA-21) program) provide another smaller source of URL officers. Other officers, such as Limited Duty Officers (LDOs) and Warrant Officers (WOs), are also drawn from enlisted personnel.

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Goals for the URL accession source system



Achieve retention to key career points in all communities cost-effectively

Provide diversity of academic backgrounds, life experiences, and demographics

Provide flexibility to meet changing accession missions

Provide an accurate 4-year forecast of quantity and quality of accessions

If producing/developing officers efficiently was the only factor to consider in making accession source decisions, it would be fairly straightforward to determine a “best value” accession source rule. It would be enough to compare the costs of producing officers and their expected retention across accession sources. However, the URL accession source system seeks to balance four goals: (1) produce officers efficiently; (2) provide the officer corps with a diversity of academic backgrounds, life experiences, and demographics to obtain the best leadership possible; (3) provide some predictability of numbers and consistency of quality of accessions; and (4) provide enough flexibility to meet changing accession missions quickly.

The difficulty is that meeting one goal may occur at the expense of meeting another. Great leadership can come from officers with a wide variety of backgrounds, so there are benefits to accessing and retaining officers with diverse academic/life experiences and demographics. Yet there is no guarantee that such diversity can be provided through the most cost-effective source. Therefore, creating an accession rule based solely on cost efficiency may limit the subsequent leadership pool.

Indeed, some of the goals are contradictory. For example, to support the goal of producing a known number of officer accessions of fairly consistent quality, the Navy typically must select officer candidates years in advance of accession and provide them with a lot of precommissioning education and training. At the same time, however, the Navy needs a certain amount of flexibility to meet changes to its accession mission quickly. Thus, guaranteeing a set number and quality of officers to be provided in the future directly conflicts with allowing for unanticipated changes in the number of accessions needed.

Finally, budgetary or other pressures may encourage the Navy to pursue one of these goals at the expense of other goals. It is likely not possible to say exactly which source will dominate since the precedence of these goals may change over time.

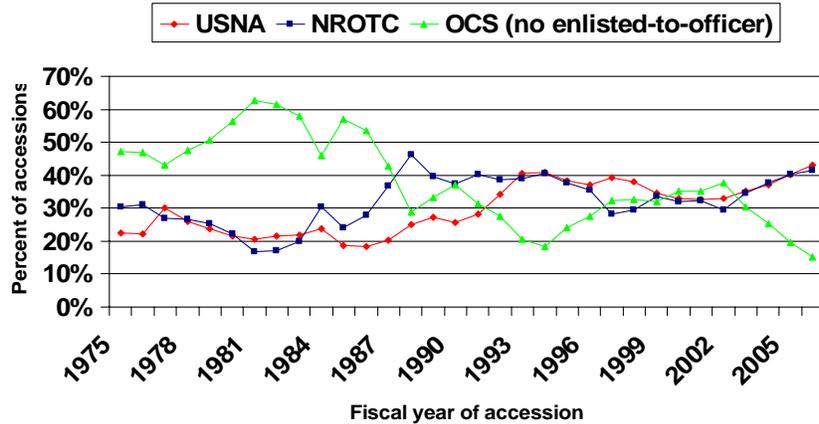
Each goal may be filled best by a different accession source

- Provide flexibility to meet changing accession missions
 - OCS > USNA \cong NROTC
- 4 years in advance, provide a fairly accurate forecast of quantity and quality of officers accessed
 - USNA \cong NROTC > OCS
- Provide diversity of academic backgrounds, life experiences, and demographics
 - NROTC \cong OCS > USNA
- Achieve accession and retention to key career points most cost effectively
 - USNA ? NROTC ? OCS

There is no one accession source that dominates for all four goals. In subsequent slides, we will show the following:

1. OCS typically provides flexibility to meet changing accession missions because the number of accessions it can provide can change quickly. In contrast, with much longer precommissioning pipelines, USNA and NROTC cannot be used to meet shorter term changes in the accession mission. The next slide helps explain how the OCS accession mission has changed over the years.
2. As measured by their success in postcommissioning training pipelines, the quality of OCS accessions can vary and may be difficult to predict. In contrast, USNA and NROTC provide a relatively known quantity and quality of accessions.
3. The NROTC program and OCS draw officer candidates from a variety of educational institutions with varied study programs. They also can offer a certain amount of geographic diversity. This is in contrast to USNA, whose students may come from across the country—but in limited numbers from each region—and will share a similar undergraduate education experience.
4. In the next section, we test whether one of the three accession sources is clearly the more cost-effective way to respond to small changes in the accession mission.

OCS provides flexibility by acting as valve for URL officer accessions



This slide shows that, although the one-third rule may be the stated goal for accessing from each of the big three accession sources, the actual percentages have varied over the years.

Specifically, the data show how OCS accessions can dominate during endstrength buildups (for example, in the 1980s) but can be significantly reduced during drawdowns/decreases in the accession mission (for example, in the FY 1993–95 period and after FY 2002). The one-third rule was most closely achieved from about FY 1989 to FY 1992 and from FY 1998 to FY 2002.

In other words, the data show that OCS is the most flexible accession source, acting as a valve when short-term changes in the accession mission occur. This is because the planning and development horizon for accessions from USNA and the NROTC scholarship program is at least 4 years, whereas OCS can recruit officer candidates very quickly if sufficient recruiting resources are made available. Likewise, USNA and NROTC can have large accession cohorts (greater than a one-third share each) during periods of downsizing, especially if decreases in the accession goal occur in less than 4 years. Once a class of midshipmen has begun at USNA or in the NROTC scholarship program, and assuming historical precommissioning attrition rates, the size of the accession cohort from those sources is difficult to change.

Tasking and outline



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Marginal cost-benefit comparison methodology



- Examines small changes in accessions
- Focuses on achieving retention to key career points
- Uses differences in marginal accession costs, assuming USMC accession levels are held constant
- Calculates costs of having too many junior/too few senior officers
- Includes some information on postcommissioning training costs; uses notional training costs where data are not available

If the Navy were to deviate from the one-third rule, how could it deviate most efficiently? We analyze small steady-state (vs. one-time) changes in the accession numbers from each source because, as of this writing, the Navy has no plans (a) to eliminate or greatly reduce any one of the big three accession sources or (b) to make very large changes in the overall accession mission. As a result, we felt that looking at the costs and benefits of a small number of additional accessions brought through each source was the appropriate analytic approach. Given this choice, this analysis does not identify an optimal accession rule overall but instead examines small movements from current accession policies.

We calculate the number of additional accessions needed to achieve a given additional steady-state endstrength and the marginal costs of the accessions from each source. We tried to include postcommissioning training costs but had very limited success in obtaining those costs from Navy commands. As a result, we use an estimate of postcommissioning training costs where necessary and determine the sensitivity of our results to the inclusion of those estimated costs.

To measure benefits, we use retention to 20 years of commissioned service (YCS 20), taking into consideration the benefits of the seniority of the additional endstrength. In the next few slides, we look at the inventory to YCS 20 generated by the additional accessions from each source. We make the assumption that the fewer junior officers it takes to produce a given additional officer endstrength to YCS 20, the more efficient. We calculate the costs of producing too many junior officers and too few senior officers in the additional endstrength compared with the endstrength that other accession sources generate.

An example of the marginal cost-benefit comparison



- Start with a *steady-state* 70-accession increase from USNA and calculate the change in *steady-state* endstrength associated with these additional accessions, by community
- Calculate the number of additional accessions needed to create the same additional community-specific endstrength from each of the other sources
- Calculate the precommissioning costs of producing the extra accessions from each source
- Calculate the costs associated with different YCS profiles. Specifically, the best YCS profile is the flattest one (this is not always USNA)
 - Calculate cost of extra junior officers
 - Calculate cost of senior officer shortage (a lower bound of the true cost)
- Add the costs for each source and compare OCS and NROTC with USNA

Here we describe in more detail how our cost-benefit comparison works. First, we assume that the Navy wants to access 70 more accessions from USNA each year.* We use cumulative continuation rates for USNA graduates in a particular URL community to estimate the endstrength that the additional accessions will generate.

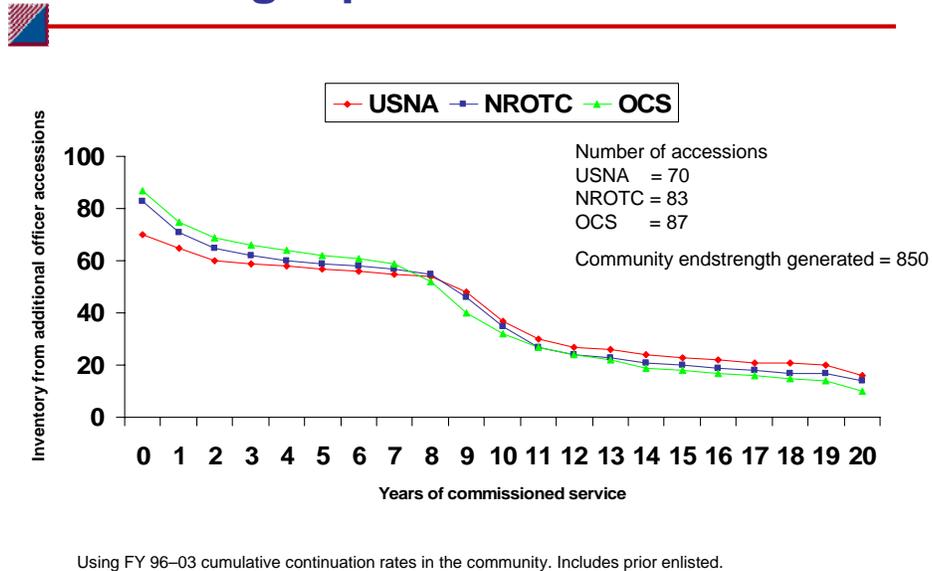
We then calculate how many additional accessions from each of the other sources are needed to produce the same additional endstrength (in numbers) that was produced by the 70 additional USNA accessions. It may require more (or fewer) accessions to produce the same additional endstrength that was produced by 70 USNA accessions. We calculate the marginal precommissioning costs of producing the 70 additional USNA accessions and of producing the additional accessions from the other sources.

The additional endstrength produced by the other accession sources may be more junior (or more senior) than the one generated by the additional USNA accessions, depending on differences in the cumulative continuation rates. A more junior endstrength does not give the Navy the same readiness as a more senior endstrength. In fact, a more junior endstrength creates a surplus of junior officers compared with a more senior endstrength; this junior officer surplus is a cost that could have been avoided if another accession source had been used. We use personnel costs (pay and benefit rates) and postcommissioning training costs to estimate the cost of the junior officer excess.

*We chose 70 accessions because that is approximately the remaining capacity in Bancroft Hall, the sole residence hall for the USNA midshipmen.

Similarly, an accession source may create senior officer shortages compared with what USNA produces. It is very difficult to estimate the cost of a senior officer shortage, but we can estimate a lower bound of the cost by applying personnel costs to the senior officer shortage. We realize that in a personnel system with no lateral entry—that is, where senior officers must come up through the system from the junior-most positions—current pay and benefits do not fully measure all of the productivity/readiness loss that the Navy experiences with a senior officer shortage. Unfortunately, there are no obvious alternatives to assigning a cost to the readiness loss.

Comparison of additional pilot endstrength produced



Here is the comparison of the additional endstrength produced by accessions from each of the three sources for the pilot community. We find that 70 additional USNA accessions will ultimately produce an increase in endstrength of 850 over the next 20 years. The Navy must access 83 additional NROTC accessions to produce additional endstrength of 850, and the endstrength will be more junior than that produced by USNA (compare the red USNA line with the blue NROTC line). Finally, the Navy must access 87 OCS accessions to produce additional endstrength of 850 over the next 20 years. The additional endstrength produced by OCS accessions is also more junior than that produced by USNA accessions.

We generate the endstrength profiles by averaging the FY 1996–2003 inventories from each accession source for the pilot community and calculating year-to-year continuation for those inventories. Then, we calculate cumulative continuation rates (CCRs) through YCS 20.

For pilots, USNA produces more senior officer endstrength with the fewest number of accessions because USNA graduates have the highest CCR through YCS 20. However, as the next slide shows, USNA graduates also have the highest precommissioning marginal costs. Further analysis will determine whether the superior continuation offsets the additional precommissioning costs.

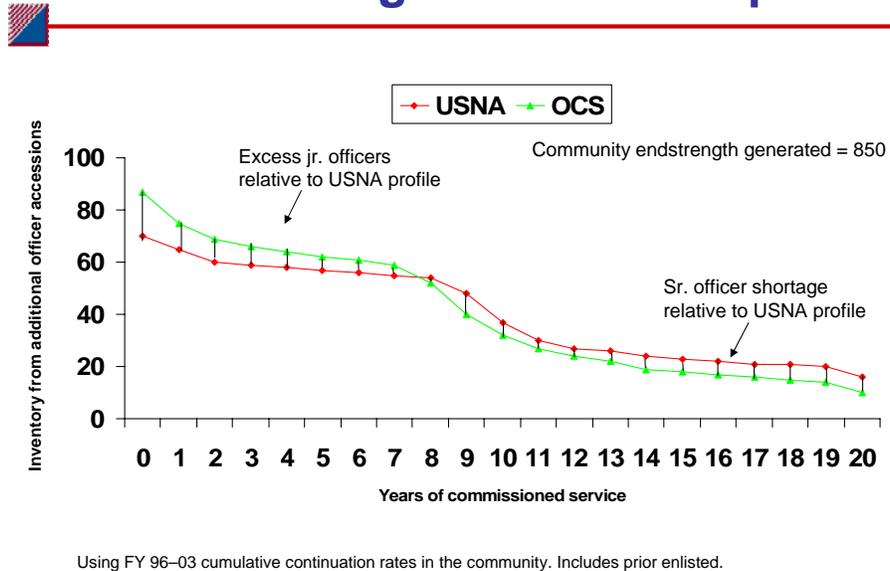
Calculating the marginal cost per accession—pilots

Accession source	Marginal cost (2009 levels)	Key cost assumptions	Alternative treatment of certain costs
USNA	\$215,000	Assumes no increase in recruiting costs or company leadership costs. Includes \$5,652 (FY 2006 level) annual Medicare Eligible Retiree Health Care (MERHC) accrual.	
NROTC	Low \$112,000 High \$135,000	Assumes no increase in recruiting costs or unit support costs.	Low estimate excludes annual MERHC accrual. High estimate includes annual MERHC accrual.
OCS	Low \$40,000 High \$60,000	Assumes the average FY 01–04 percentage of OCS selections from BDCP. Includes annual MERHC accrual.	Low estimate assumes no increase in recruiting costs or change in the number of instructors at OCS. High estimate assumes ~\$20,000 increase in recruiting and precommissioning training costs.

The marginal cost of producing an additional USNA accession is about \$215,000 at 2009 levels. This is 60 to 90 percent higher than the estimated marginal cost of an NROTC accession and about 3.5 to 5 times the cost of an OCS accession. The slides in appendix A give the details of the marginal costs.

The previous slide displays clear differences in the number of accessions needed from each accession source to achieve a fixed amount of additional endstrength. There are also differences in the seniority of the additional endstrength by accession source. Because of superior continuation rates, USNA produces the most senior additional endstrength with the fewest additional pilot accessions.

Junior officer excess/senior officer shortage: USNA-OCS pilots



Our underlying assumption is worth repeating: a “flatter” continuation pattern—one that produces the fewest junior officers and the most senior officers—is most beneficial to the Navy.

To calculate the shortage of junior officers created by the OCS pilot CCR compared with the USNA pilot CCR, we simply take the difference in the additional endstrength produced at each YCS. Similarly, to calculate the senior officer shortage, we take the difference in the additional endstrength produced at the more senior ranks. (Although we don’t show it in this graph, we also calculate the NROTC junior officer surplus/senior officer shortage relative to USNA.)

To estimate the cost of the surplus/shortage, we apply pay and benefit rates to the excess junior officers as well as to the senior officer shortage. We also examine a scenario in which early postcommissioning training costs (marginal costs associated with the early training pipelines) are also applied to the excess junior officers.

Results for pilots holding endstrength constant to YCS 20

	Millions of dollars	
	No postcommissioning training costs	Notional \$200,000/year for 3 years' postcommissioning training costs***
USNA baseline (sum of accession costs and postcommissioning costs)	103	141
NROTC difference to USNA baseline* (sum of (1) difference in NROTC-USNA accession costs and (2) cost of junior officer overage/senior officer shortage)	+1.6 to +3.5	+6.1 to +8.0
OCS difference to USNA baseline** (sum of (1) difference in OCS-USNA accession costs and (2) cost of junior officer overage/senior officer shortage)	+1.8 to +3.6	+9.1 to +10.8

*Low NROTC excludes Medicare Eligible Retiree Health Care (MERHC) accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

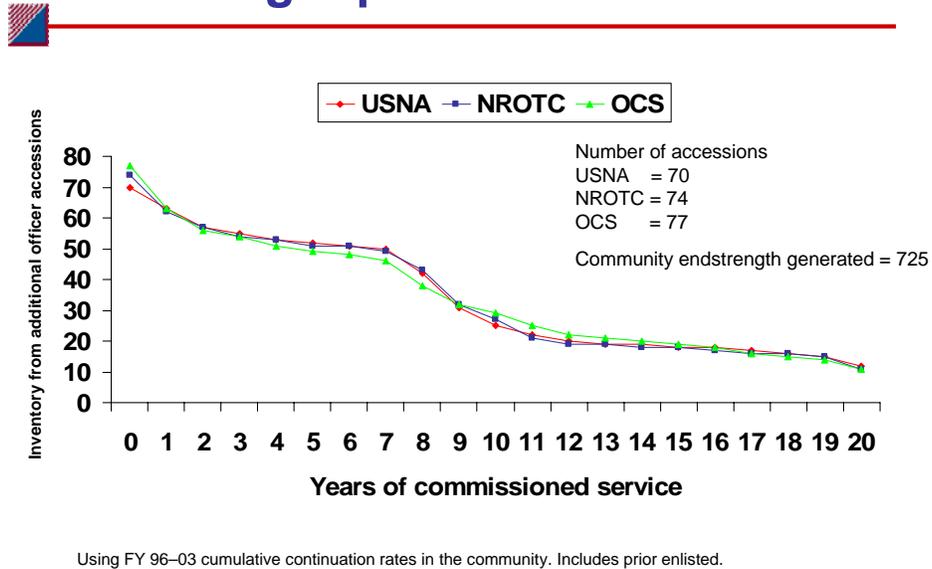
***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

This table shows the results of the accession source comparison for the pilot community. The 70 additional USNA accessions produced the most senior endstrength. We estimate that with precommissioning training costs and postcommissioning personnel costs, the additional accessions would cost about \$103 million. For NROTC, more accessions are needed, and the resulting endstrength is more junior than that produced by USNA. In fact, the NROTC net effect is about \$1.5 million to \$3.5 million more costly than the USNA baseline.

Even though the marginal OCS precommissioning costs are substantially lower than those for USNA, many more OCS accessions must be brought in to create the same additional endstrength, and this endstrength is more junior than that produced by USNA. This makes additional OCS accessions to the pilot community less cost-effective than those from USNA. When notional post-commissioning training costs are excluded, the OCS result is also about \$1.5 million to \$3.5 million more than the USNA result.

When an estimate of postcommissioning training costs is included, the USNA result is strengthened. Because postcommissioning training costs are sensitive to the number of junior officers in the additional endstrength, the result for NROTC is about \$6 million to \$8 million more than that for USNA, while the result for OCS is about \$9 million to \$11 million more than that for USNA.

Comparison of additional endstrength produced: NFOs



We use the same methodology for the Naval Flight Officer (NFO), submarine, and surface warfare (SW) communities. In this slide, we can see that the difference in the number of accessions needed to create the same amount of additional endstrength from the three accession sources is not large. If the Navy brought in 70 additional NFO accessions from USNA, this would result in additional endstrength of 725 through YCS 20. It would require 74 accessions from NROTC and 77 accessions from OCS to create this same additional endstrength. In contrast to pilots, the CCRs for NFOs from the different accession sources are similar.

Results for NFOs holding endstrength constant to YCS 20

	Millions of dollars	
	No postcommissioning training costs	Notional \$200,000/year for 3 years' postcommissioning training costs***
USNA baseline	89	127
NROTC difference to USNA baseline*	-5.2 to -3.6	-4.1 to -2.4
OCS difference to USNA baseline**	-7.9 to -6.2	-6.3 to -4.7

*Low NROTC excludes MERHC accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

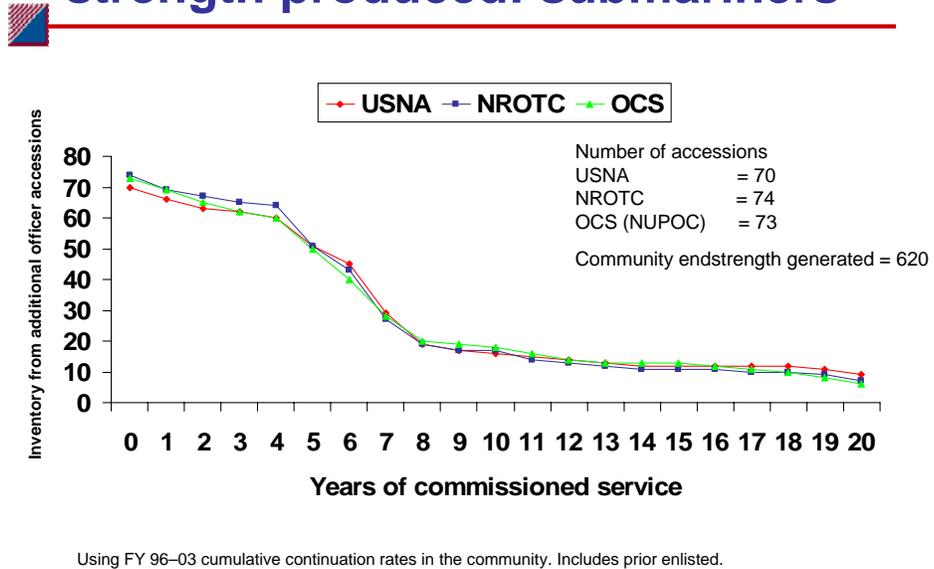
**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

Because the CCRs for the NFO accessions from the different sources are close, the number of accessions needed from USNA, NROTC, or OCS to produce a fixed amount of additional endstrength is similar. Likewise, there are minimal junior officer surpluses and senior officer shortages created in the endstrength profile when NROTC and OCS are compared with USNA. Thus, differences in the costs will largely be driven by differences in precommissioning costs. For NFOs, the baseline created by USNA accessions excluding postcommissioning training costs is about \$89 million. If the accessions came through NROTC, we estimate that the Navy would save \$3.5 million to \$5 million. If the accessions came through OCS, the Navy could save about \$6 million to \$8 million.

When a rough estimate of postcommissioning training costs is included in the analysis, we estimate that the Navy baseline costs for accessions through USNA would be about \$127 million. Savings by accessing through NROTC are estimated to be only about \$2.4 million to \$4 million. Savings by accessing through OCS are estimated to be about \$4.7 million to \$6 million.

Comparison of additional end-strength produced: submariners



We estimate that the additional endstrength produced by 70 USNA accessions to the submarine community through YCS 20 is about 620. It would require 74 and 73 accessions from NROTC and OCS, respectively, to generate additional endstrength of 620. As the graph clearly illustrates, the CCRs for accessions to the submarine community from the three accession sources are very close.

Results for submariners holding endstrength constant to YCS 20

	Millions of dollars	
	No postcommissioning training costs	Notional \$100,000/year for 2 years' postcommissioning training costs***
USNA baseline	77	91
NROTC difference to USNA baseline*	-3.0 to -1.3	-2.3 to -0.7
OCS difference to USNA baseline**	-3.4 to -2.0	-2.9 to -1.5

*Low NROTC excludes MERHC accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

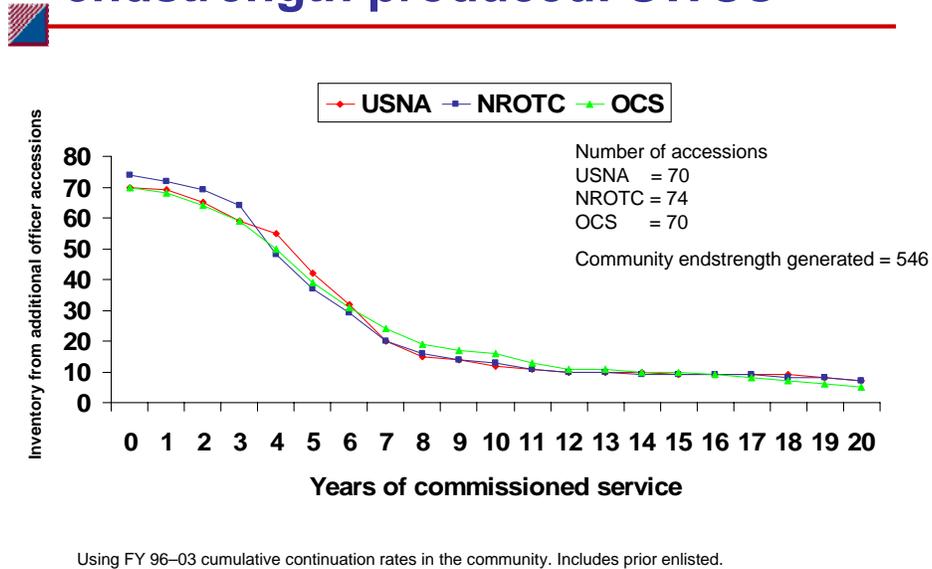
The precommissioning costs for the submarine accessions from the different sources are the closest of all the communities because the submarine community uses the Nuclear Propulsion Officer Candidate (NUPOC) program for many of its OCS accessions. This program identifies students with strong academic records in their first 2 years of college in technical majors (nearly all are engineering majors) who have an interest in serving as a submarine or surface nuclear Navy officer. These students are paid as E-6 Sailors for up to 36 months of college (though the average time in the program is about 21 months).

The cost comparisons of the additional accessions from USNA, NROTC, and OCS are therefore quite similar. From a baseline of \$77 million for 70 additional USNA graduates (excluding postcommissioning training costs), we estimate that the Navy would save only about \$1 million to \$3 million by accessing those officers through NROTC. We also estimate that the Navy would save only about \$2 million to \$3 million if it accessed the officers through OCS. Given that these are estimates, these differences do not seem very large.

When a notional figure of postcommissioning training costs is included, the USNA baseline increases to \$91 million.* If officers were accessed through NROTC, we estimate that the Navy would save about \$0.7 million to \$2 million; if accessed through OCS, the Navy might save \$1.5 million to \$3 million. If marginal postcommissioning training costs were less than \$100,000 per year, the savings from accessing through NROTC or OCS would increase slightly. If these costs are greater than \$100,000 per year, the overall differences among accession sources get smaller. Under any of these scenarios, the differences are quite modest.

*We were unable to find any information on postcommissioning training costs in the nuclear reactor program in published reports. We used \$100,000 per year for 2 years simply because it was smaller than the aviation costs but larger than the Surface Warfare Officer (SWO) costs that we used. The submarine community manager alerted us to analysis done by N133 that found that early pipeline training costs were about \$140,000 in FY 2007. We received no background or other supporting information on this cost, nor could we find it in a published study. Still, we reestimated our model using postcommissioning training costs of \$70,000 a year for 2 years. It was not surprising that the results fell between those posted in the table above and do not change our overall conclusions.

Comparison of additional endstrength produced: SWOs



Finally, we apply our analysis to the SW community. If the Navy accessed 70 additional Surface Warfare Officers (SWOs) through USNA, this would generate additional endstrength of 546 to YCS 20. To achieve this same additional endstrength, the Navy would have to access 74 SWOs through NROTC and 70 SWOs through OCS.

The junior officer excess and senior officer shortage relative to the USNA baseline is not apparent in the SW community. There is a slight junior officer excess created by the accessions from NROTC. However, the additional endstrength created by accessions from OCS from YCS 7-11 is greater than that for accessions from USNA.

Results for SWOs holding endstrength constant to YCS 20

	Millions of dollars	
	No postcommissioning training costs	Notional \$40,000/year for 2 years' postcommissioning training costs***
USNA baseline	66	72
NROTC difference to USNA baseline*	-3.5 to -1.8	-3.2 to -1.6
OCS difference to USNA baseline**	-6.2 to -4.8	-6.1 to -4.7

*Low NROTC excludes MERHC accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

We estimate that the cost of the additional endstrength created by the accessions from USNA is \$66 million (without postcommissioning costs). We estimate that the Navy could produce the additional endstrength for about \$2 million to \$3.5 million less if the officers accessed from NROTC, and for about \$5 million to \$6 million less if the officers accessed from OCS. These estimated cost savings are about the same when a rough estimate of postcommissioning costs is included.

Because of changes in the way SWOs are trained, it is very difficult to identify postcommissioning training costs. SWO trainees now typically go directly to ships after commissioning instead of first taking coursework at Surface Warfare Officer School (SWOS). While many SWOs do take courses at SWOS after some time at sea, SWO trainees now mix early training with performing jobs on ships, making it especially difficult to identify training costs. We use a notional \$40,000 per year in the first 2 years after commissioning to examine the sensitivity of the results to the inclusion of any postcommissioning costs.

Results of weighted average of warfighting communities holding endstrength constant to YCS 20

	Millions of dollars	
	No postcommissioning training costs	Notional postcommissioning training costs***
USNA baseline (sum of accession costs and postcommissioning costs)	83	106
NROTC difference to USNA baseline* (sum of (1) difference in NROTC-USNA accession costs and (2) cost of junior officer overage/senior officer shortage)	-2.0 to -0.3	-0.2 to +1.5
OCS difference to USNA baseline** (sum of (1) difference in OCS-USNA accession costs and (2) cost of junior officer overage/senior officer shortage)	-3.4 to -1.9	-0.7 to +0.8

*Low NROTC excludes Medicare Eligible Retiree Health Care (MERHC) accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are partly based on estimated costs; some are notional.

The Navy does not necessarily access additional officers from one of the big three sources exclusively for one community. Even a small number of additional officers accessed through any of the sources will typically be distributed to all of the large URL communities. The exact distribution will be based on community-specific accession needs, particular qualifications of the officer accessions, and possibly officer accession preferences.

In this table, we present the results of the efficiency comparison when we take a weighted average of the costs and CCRs across the warfighting communities. The weights are the community's share of all URL accessions.

To summarize, there are few efficiency differences across the three large accession sources. When we exclude postcommissioning training costs, accessions from NROTC are estimated to cost at most only \$2 million less than those from USNA. Those from OCS are estimated to cost only about \$2 million to \$3 million less than those from USNA. This represents less than a 5-percent difference from the estimated cost baseline.

When estimates of postcommissioning training costs are used, the differences are at most about \$1 million, or less than 1 percent of the USNA baseline costs. Our analysis of the efficiency of accessing additional officers indicates little difference among the three large accession sources.

Results of weighted average of communities when accessing to same number of officers at YCS 11

	Millions of dollars	
	No postcommissioning training costs	Notional postcommissioning training costs***
USNA baseline (sum of accession costs and postcommissioning costs)	66	88
NROTC difference to USNA baseline* (sum of (1) difference in NROTC-USNA accession costs and (2) cost of junior officer overage)	-2.9 to -1.2	0.3 to +2.1
OCS difference to USNA baseline** (sum of (1) difference in OCS-USNA accession costs and (2) cost of junior officer overage)	-11.6 to -10.1	-8.6 to -7.2

*Low NROTC excludes Medicare Eligible Retiree Health Care (MERHC) accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

Suppose the Navy focuses on addressing many of the manning challenges that come well before YCS 20. We altered the analysis slightly to focus on retaining officers to YCS 11. Using CCRs, we calculate the number of officers who stay to YCS 11 for USNA accessions, and then we determine how many officers would have to be accessed through the other sources to achieve that same number of officers at YCS 11. In the post-commissioning comparison, we are only concerned with junior officer surpluses that occur before YCS 11.

When the goal is to retain the same number of officers to YCS 11 instead of achieving the same additional endstrength through YCS 20, OCS appears to be the most efficient accession source, costing about \$7 million to \$11 million less than USNA and about \$8 million to \$9 million less than NROTC. Slides in appendix B contain separate calculations for each URL community.

Additional results of weighted average of warfighting communities holding endstrength constant to YCS 20

Cumulative continuation rates based on FY 2001-2006 inventories

	Millions of dollars	
	No postcommissioning training costs	Notional postcommissioning training costs***
USNA baseline (sum of accession costs and postcommissioning costs)	82.2	104.8
NROTC difference to USNA baseline* (sum of (1) difference in NROTC-USNA accession costs and (2) cost of junior officer overage/senior officer shortage)	-4.5 to -2.8	-3.5 to -1.9
OCS difference to USNA baseline** (sum of (1) difference in OCS-USNA accession costs and (2) cost of junior officer overage/senior officer shortage)	-12.4 to -10.9	-11.0 to -9.5

*Low NROTC excludes Medicare Eligible Retiree Health Care (MERHC) accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are partly based on estimated costs; some are notional.

In this table, we recompute the results of the efficiency comparison when we take a weighted average of the costs and CCRs across the warfighting communities. The weights are the community's share of all URL accessions.

With the more recent URL continuation behavior, where continuation for OCS accessions has improved relative to that of USNA accessions, there are clearer efficiency differences across the three large accession sources. When we exclude postcommissioning training costs, additional accessions from OCS are estimated to cost \$10 million to \$12 million less than those from USNA. Accessions from NROTC are estimated to cost about \$2 million to \$4 million less than those from USNA.

The differences are about the same when estimates of postcommissioning training costs are used. The updated analysis suggests a modest preference for additional accessions to be drawn from OCS, with a slight preference for additional accessions to be drawn from NROTC.

Conclusions from cost-benefit analysis



- When continuation behavior from 1996 to 2003 is used,
 - Marginal cost-benefit result of accessing to YCS 20 for URL, holding endstrength constant, does not clearly indicate choice of accession source
 - Marginal cost-benefit result of accessing to same number of URL officers at YCS 11 favors OCS
- When continuation behavior from 2001 to 2006 is used, marginal cost-benefit result of accessing to YCS 20 for URL favors OCS

When continuation behavior from 1996 through 2003 was used, the result of the marginal cost-benefit analysis to YCS 20 does not clearly indicate which accession source should be used for accessing a small number of additional accessions. Nor does it suggest that the one-third rule is inappropriate. The cost-benefit difference that we calculate between accession sources is very small—less than \$2 million on an estimated \$80-million base. Given that we have made numerous assumptions about the costs and benefits for each community from each source, and given that the future is uncertain, these calculated differences were simply not large enough to indicate which source the Navy should go to next for accessions.

The results for bringing the same number of URL officers to YCS 11 are clearer: the cost-benefit analysis suggests that OCS would be the most efficient way to achieve that goal. Note, however, that the goal in this analysis is different from the goal for the analysis to YCS 20. One focuses on bringing officers to retirement; the other focuses on solving one of the more difficult manning challenges earlier in the career and does not consider senior officer shortages. Both analyses assume laudable goals; the Navy needs to decide which is more important.

When continuation behavior from 2001 through 2006 is used, the result of the marginal cost-benefit analysis to YCS 20 indicates that OCS would be the efficient source for accessing a small number of additional accessions. Since 2001, the number of OCS accessions to the URL dropped significantly. Increasing the use of OCS would bring the overall accession plan closer to the one-third rule.

Other considerations for cost-benefit analysis

- Supply and demand
 - Excess capacity at each source
 - Demand for seats at each source
- If all three accession sources are maintained
 - How small can each source be and still be viable?
 - How large can each source be before non-marginal costs must be considered?
- How should flexibility to meet changing/emerging requirements be valued? Must manage:
 - Risk of filling future senior officer requirements
 - Risk of “locking in” number of accessions 4 years in advance

In the methodology that we used, we assumed that there would be enough capacity at USNA, in the NROTC program, and at OCS to accommodate the additional accessions. We also assumed that enough candidates for each accession source could be accessed within the cost structure we used.

There are other important issues to consider. For example, although we assumed that no source would be shut down, we did not explore the minimum size each accession source must be to remain viable. Similarly, we tried to limit the increase in accessions so that no fixed costs had to be incurred to accommodate the increase. However, at what point must other, nonmarginal costs be considered?

We also cannot fully analyze the risk of not meeting senior officer requirements. We estimated a lower bound of the cost of senior officer shortages, but it is not clear what the full effect of the shortage would be on readiness.

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Tasking and outline



- Evaluate the current “one-third” accession plan
 - Flexibility
 - Cost-effective deviations
 - Career progression
 - Racial/ethnic and gender diversity
- Support the USNA Accessions Working Group (Submarines)
- Support the Diversity Directorate’s (N134) examination of demographic diversity in the officer corps

Accession source and career progression



- Screening for command at sea
- Promotion to flag rank

The cost-benefit comparison of accession sources in the previous section does not incorporate some of the milestones that signal officer quality that the Navy also requires. For example, retention in the personnel system does not guarantee that officers have screened for command or are on the career path for flag rank—both very important concerns for the Navy. Thus, we ask, “For officers who remain on active duty, do the rates of screening for command at sea and promotion to flag rank differ by accession source?”

Aviation screen for command



Pilot

Accession source	Number of officers with YCS 15–16, sum of Sep inventories 1996–2003	First screened for command, FY 1997–2004	First screen for command (percentage)	Avg number screened per year
USNA	900	197	21.9	25
NROTC	864	182	21.1	23
OCS	1,751	287	16.4	36

NFO

Accession source	Number of officers with YCS 15–16, sum of Sep inventories 1996–2003	First screened for command, FY 1997–2004	First screen for command (percentage)	Avg number screened per year
USNA	578	71	12.3	9
NROTC	582	77	13.2	10
OCS	1,224	129	10.5	16

For those who stay long enough to attempt to screen for command at sea, we look at the percentage of officers from each accession source who do so. We average several years of data to eliminate the possibility of choosing an atypical accession cohort. Note that the numbers of aviators in the YCS 15–16 window in the years we examined clearly vary by accession source. OCS has the largest number of aviators in the screening window, which is the result of the large OCS accession cohorts in the 1980s. The number of officers who stay long enough to be eligible to screen for command also depends on continuation rates.

About 22 percent of the pilots who accessed from USNA and stayed to YCS 15–16 screened for command. A similar percentage of the NROTC pilots who stayed to YCS 15–16 screened for command—about 21 percent. The rate is clearly lower for OCS accessions who stayed to YCS 15–16—about 16 percent.

Similar discrepancies in the percentage screening for command by accession source are evident for the NFOs. In this community, however, NROTC accessions who stay to YCS 15–16 have a slightly higher rate of screening for command than accessions from USNA, while OCS accessions who stay to YCS 15–16 have lower rates of screening for command.

We urge caution in interpreting these data. Specifically, we cannot conclude anything about causation between accession source and screening for command. We cannot determine if students who chose to attend USNA were inherently more likely to succeed in the aviation community or if their USNA experience helped make them more likely to succeed. Nor can we determine if there are accession source biases in the promotion and screening systems. That is, for two otherwise identical officers with identical service records up to the point of attempting to screen for command, would the officer who attended USNA have a better chance of screening than the one from NROTC or OCS?

Sub/SWO screen for command



Submarine

Accession source	Number of officers with YCS 15–16, sum of Sep inventories 1996–2003	First screened for command, FY 1997–04	First screen for command (percentage)	Avg. number screened per year
USNA	653	154	23.6	19
NROTC	363	93	25.6	12
OCS	442	118	26.7	15

SWO

Accession source	Number of officers with YCS 15–16, sum of Sep inventories 1996–2003	First screened for command, FY 1997–04*	First screen for command (percentage)	Avg. number screened per year
USNA	896	244	27.2	31
NROTC	1,071	261	24.4	33
OCS	1,466	177	12.1	22

*LCDR/CDR only

Unlike in aviation, where USNA and NROTC accessions who stay to YCS 15–16 screen for command at higher rates than OCS accessions, the submarine community accessions from OCS screen for command at slightly higher rates than the other two sources, particularly USNA accessions.

However, the SWO community has the most distinct pattern of percentages of screening for command. USNA accessions who stay to YCS 15–16 are more than twice as likely to screen for command as their OCS counterparts, and slightly more likely to screen than their NROTC counterparts.

Overall, for the combined URL communities, USNA appears to have the highest percentage of accessions screening for command among those who stay to that career milestone, although the rate for NROTC accessions is similar. In contrast, the rate for OCS accessions is noticeably lower.

It should be noted that in earlier CNA work, we estimated the probability of screening for command at sea given survival to the career point where screening for command was possible.* We controlled for many observable characteristics of the officers, including their accession source. We found that holding other characteristics constant, USNA accessions had a higher estimated probability of screening for command in the aviation communities, whereas we found no statistically significant effect of accession source on the estimated probability of screening for command in the SW or sub communities.

*A. D. Parcell with A. K. Hodari and R. W. Shuford, *Predictors of Officer Success*, April 2003 (CNA Research Memorandum D0007437.A2).

Aviation promotion to flag officer



Pilot

Accession source	Number of O-6 officers with YCS 23 or more, sum of Sep inventories 1994-2004	Promotion to flag in following 12 months (number)	Promotion to flag in following 12 months (%)	Avg number promoted per year
USNA	1,254	39	3.1	3.5
NROTC	864	20	2.3	1.8
OCS	1,626	24	1.5	2.2

NFO

Accession source	Number of O-6 officers with YCS 23 or more, sum of Sep inventories 1994-2004	Promotion to flag in following 12 months (number)	Promotion to flag in following 12 months (%)	Avg number screened per year
USNA	379	16	4.2	1.5
NROTC	414	7	1.7	0.6
OCS	771	11	1.4	1.0

Given that USNA accessions have the highest rates screening for command, it would not be surprising if they also have higher rates of promotion to flag rank. Here we look at the aviation communities. Only 2 to 3 percent of pilots and NFOs who have reached at least YCS 23 with rank O-6 will promote to flag rank. Clearly, pilots and NFOs who accessed from USNA have a greater chance of promoting to flag than their NROTC or OCS counterparts. And again, the largest gap is USNA to OCS.

Keep in mind that very few officers stay to the point of promotion to flag rank. So, even though USNA accessions to the aviation community have about twice the chance to promote to flag rank as their OCS counterparts, the very small absolute level of chance to promote to flag rank puts these differences in perspective.

The same caution in data interpretation applies here. We cannot say that attendance at USNA causes officers to have higher chances of screening for command or for promoting to flag rank; we observe a correlation between accession source and achievement of career milestones (and we do not control for other characteristics of these officers).

Sub/SWO promotion to flag officer



Submarine

Accession source	Number of O-6 officers with YCS 23 or more, sum of Sep inventories 1994-2004	Promotion to flag in following 12 months (number)	Promotion to flag in following 12 months (%)	Avg number promoted per year
USNA	1,707	42	2.5	3.8
NROTC	475	5	1.1	0.5
OCS	269	3	1.1	0.3

SWO

Accession source	Number of O-6 officers with YCS 23 or more, sum of Sep inventories 1994-2004	Promotion to flag in following 12 months (number)	Promotion to flag in following 12 months (%)	Avg number promoted per year
USNA	1,617	44	2.7	4.0
NROTC	1,268	26	2.1	2.4
OCS	935	17	1.5	1.5

The submarine and SWO communities show patterns of rates of promotion to flag rank similar to those in the aviation community. In the submarine community, USNA accessions have the highest average rate of promoting to flag rank, which is about twice the rate as OCS and NROTC accessions. In the SWO community, the NROTC accessions have an average rate of promotion to flag rank that is roughly twice that of their OCS counterparts; the NROTC accessions have an average rate that is midway between the USNA rate and the OCS rate. Again, it is worth noting that all of these rates of promotion are very small.

USNA accessions have edge in career progression



- Given retention to the appropriate YCS window
 - A higher percentage of USNA/NROTC graduates screen for command
 - A higher percentage of USNA graduates get promoted to flag officer
- Neither result says that USNA attendance *causes* superior career progression
 - The group of students who self-select to attend USNA may make the most successful career officers, regardless of college attendance
 - For a given level of performance, the assignment and promotion systems may favor USNA grads

As the previous slides show, USNA accessions usually have higher rates of screening for command and for promoting to flag rank than accessions from other sources, particularly those from OCS. This result suggests that, if a relatively small number of additional accessions were needed on an ongoing basis (e.g., not a temporary increase in accessions), there might be an advantage to increasing the number of USNA accessions, assuming they performed like and were treated similarly to past USNA accessions.

As we have already pointed out, however, one should not interpret these results as evidence that attendance at USNA caused the higher rates of screening for command or for promoting to flag rank. It may be that the students who choose to attend USNA would have had Navy careers just as long even if they had not attended USNA. It could also be that the assignment and promotion systems favor USNA graduates when performance is identical to non-USNA accessions.

Our first result was that there is no distinct cost-benefit advantage to one accession source over another when looking out to YCS 20 but that using OCS may be advantageous if looking only as far as YCS 11. Coupled with the result on achievement of career milestones, this suggests that, if the increase in accessions is temporary, it may make sense to use OCS. OCS could more quickly and cost-effectively fill the increased requirement and, if temporary, might not greatly affect senior officer shortages or career milestone achievements. If the increase in the requirement is expected to be more permanent, using USNA may be in order.

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Tasking and outline



- Evaluate the current “one-third” accession plan
 - Flexibility
 - Cost-effective deviations
 - Career progression
 - Racial/ethnic and gender diversity
- Support the USNA Accessions Working Group (Submarines)
- Support the Diversity Directorate’s (N134) examination of demographic diversity in the officer corps

USNA, NROTC produce a lot of demographic diversity for URL

- Large percentage of URL women come through USNA and NROTC
- Large percentage of African American, Hispanic male SWOs come through USNA and NROTC
- More variation in source for African American, Hispanic male aviators
- Not clear what would happen to gender, race/ethnicity percentages if there were a move away from USNA, NROTC for overall URL accessions
 - Other research addresses the differential retention rates of SWO women by accession source

Since the repeal of the combat exclusion act (CEA), women have been allowed to access to the aviation and surface warfare communities. In fact, if women access through USNA or the NROTC scholarship program, they are essentially required to access to the Unrestricted Line.* Since the repeal of the CEA, many women officers come through USNA or the NROTC scholarship program; these sources have become significant contributors to gender diversity. Because of small sample sizes, we do not analyze racial/ethnic diversity among female accessions.

Racial/ethnic diversity for men in the URL comes from a balanced combination of the big three accession sources. This is true in the aviation community, where African American and Hispanic accessions come roughly proportionately from all three accession sources. For the SW community, however, the African American and Hispanic accessions come disproportionately from USNA and NROTC.

It is not clear what would happen to racial/ethnic and gender diversity if OCS were used more significantly for URL accessions. Much depends on Recruiting Command's ability to recruit to the warfighting community needs with racial/ethnic and gender diversity in mind.

The slides in the backup section of this annotated briefing provide detail on racial/ethnic and gender diversity by accession source and for communities. We omit the time-series graphs for some categories of officers, such as the accession sources for African American NFOs, because sample sizes are not large enough.

*Only a small number of both male and female midshipmen may access to Restricted Line (RL) or staff corps communities.

Tasking and outline



- Evaluate the current “one-third” accession plan
 - Flexibility
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- **Support the USNA Accessions Working Group (Submarines)**
- Support the Diversity Directorate’s (N134) examination of demographic diversity in the officer corps

Support to USNA Accessions Working Group (Submarines)

- Submarine accession goal for USNA missed in each year from 2001 to 2006
- Working group formed to explore reasons for missing USNA goal:
 - Decline in the percentage of technical degrees taken at USNA
 - Lack of information about the community
 - Other discouraging factors

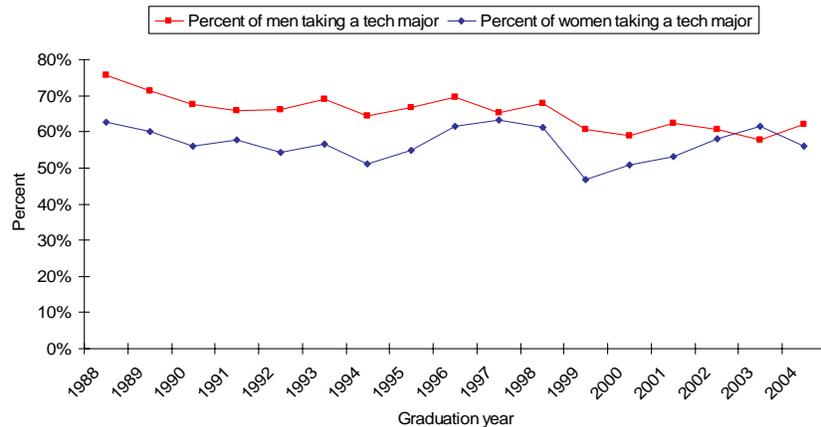
Like the rest of the URL, the submarine community tries to access about one-third of the roughly 300 to 330 new officers per year from each of the three big accession sources. The submarine accession goals for USNA were missed for 5 consecutive years. Although the community was able to make up some of the difference by accessing more heavily from the other sources, community leadership was concerned about missing the USNA goal.

The Director of Navy Staff (DNS) was concerned that the goal for submarine accessions from USNA was missed several years in a row. DNS stood up a working group that was chaired by an O-6 submariner. Working group members included representatives from the DNS staff, USNA, and management from the nuclear reactor program and the submarine community. Members also came from the SW and aviation communities. DNS directed CNA to support the analysis done by the working group.

The submarine community tries to access as many engineers as possible because this major provides excellent background for the rigorous technical training in nuclear reactor programs. Accessions must have done well academically, and they must complete a successful interview with senior leadership in the nuclear reactor program. Typically, accessions to this program are among the more successful academically and have some of the strongest technical credentials.

Community leadership suggested that a decline in the percentage of technical degrees taken at USNA was causing a shortage of midshipmen to select nuclear reactor training. DNS wanted the working group to explore that possibility. However, the group was also assigned the task of exploring whether qualified midshipmen were being discouraged from selecting nuclear reactor training or were disinterested in it due to lack of accurate community information.

USNA graduates and technical majors



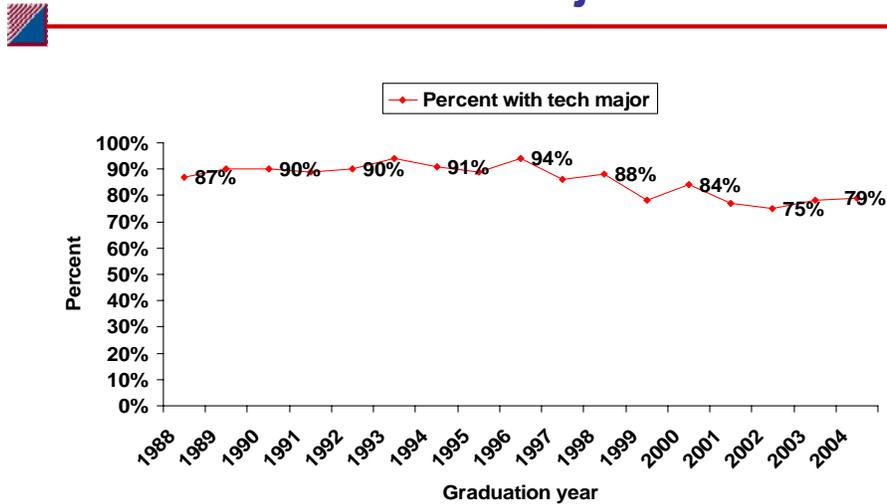
Technical majors at the academy include the engineering majors, naval architecture, chemistry, computer science, information technology, mathematics, quantitative economics, oceanography, and physics. The percentage of men taking a technical major did drop from 76 percent of the graduating class in 1988 to slightly less than 58 percent of the class of 2003. More recently, the trend has moved back to more than 60 percent of the class taking technical majors.

Typically, the submarine community needs 100 to 120 graduates to select (and be selected for) submarine training. Even with the decline in the percentage of technical majors, however, there were still sufficient *numbers* of technical majors—even engineering majors—to fill the submarine community’s requirement from USNA. The difficulty created by the decline in the percentage of technical/engineering majors was that there was very little room for mismatch between midshipmen service selection and submarine community accession requirements. In other words, if interest in the submarine community among qualified midshipmen falls, the submarine community is likely to miss its goal.

Although women cannot access to the submarine community, they have been able to access to the surface warfare (nuclear) community since 1994. The qualifications for accessing to the surface nuclear community are about the same as for the submarine community (aside from gender), and the nuclear reactor training pipeline is the same. For comparison, we also show the rate at which women graduates take technical majors. Typically, women at USNA take technical degrees at lower rates than men, but in nearly all years, at least one-half of the women took technical majors; in many years, as many as 60 percent took technical degrees.

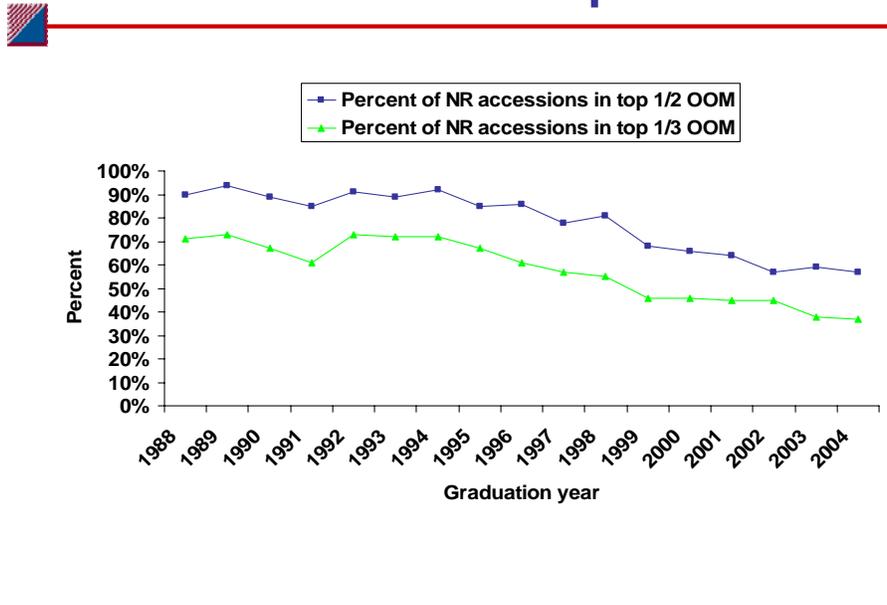
The number of midshipmen who eventually take technical majors can be influenced to a certain degree by the incoming selection process at USNA by accepting applicants with strong standardized test scores (especially in math) as well as a stated desire and past experiences that suggest that they want to take a technical degree.

Percentage of USNA nuclear submarine accessions with tech majors has fallen



As the submarine community suggested, the number of submarine accessions with technical majors has declined. However, there were still sufficient numbers to meet the submarine mission as long as the percentage of midshipmen selecting submarines was high.

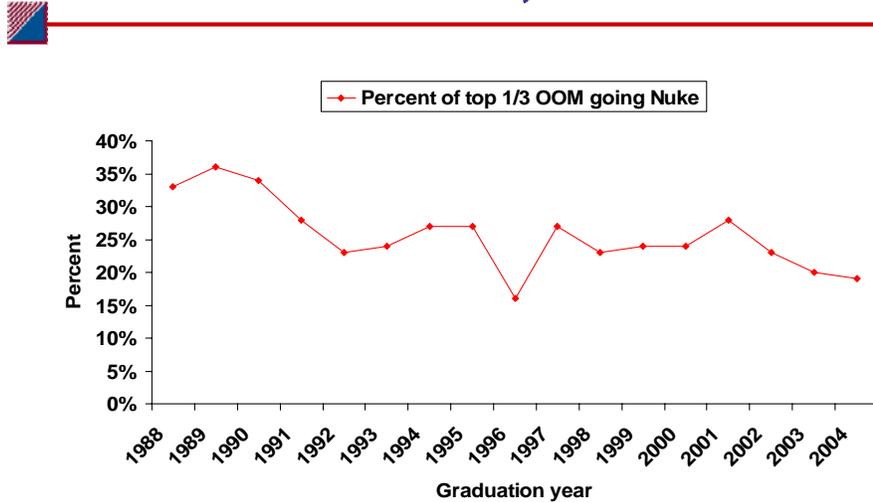
Declining percentage of nuclear reactor accessions in top OOM



The quality of midshipmen selecting nuclear reactor training measured by order of merit (OOM) appears to have fallen over time. About 65 percent of OOM is based on grade point average (GPA). In 1988, about 90 percent of the nuclear reactor accessions were in the top half of their graduating class, measured by OOM; by 2004, it was around 57 percent. A similar pattern over time holds for the percentage of nuclear reactor accessions that came from the top third of their class.

Note also that the decline began in about 1992. This coincides with the drawdown and decline of the cold war. Throughout the 1990s, there was a steady decrease in the academic quality of the USNA nuclear reactor accessions. Then, in 2001, the photorefractive keratectomy (PRK) procedure became available to midshipmen so that their eyesight could be corrected to meet the vision standards for the pilot community. This probably also caused fewer midshipmen with strong academic qualifications to select the nuclear reactor program.

Declining percentage of top OOM students choose sub, surface nuclear



If we looked at the top one-third of each class, what percentage selected nuclear reactor training? The percentage declined from a high of 36 percent for the class of 1989 to a low of 19 percent for the class of 2004. This is further evidence of a lack of desire among well-qualified candidates to select nuclear reactor training.

USNA accession working group: submarine community results

- Increase interest and break down barriers to selecting subs: midshipmen focus group results
 - Many midshipmen said needs of the Navy were as important as, or more important than, their service selection choice—needs of the nuclear community may have to be better advertised
 - Navy could increase actual exposure to community: get potential submariners into submarine summer programs/cruises so that they make an informed service selection choice
 - Navy could consider bigger bonuses for engineering majors/submarine selection
- Service selection process changes
 - Reengineer service selection process to be concurrent rather than sequential
 - Banding (service minimum/maximum numbers)

The working group suggested three ways to increase interest in the submarine community: (1) ensure that qualified midshipmen understand the needs of the nuclear community, (2) do more to expose qualified midshipmen to the submarine community in the fleet, such as giving them the opportunity to take a summer cruise or otherwise spend time in the community, and (3) consider larger incentives for studying engineering or accessing to the submarine community.

The working group also considered some service selection process changes to ensure that some communities do not exceed their academy accession requirement before another community has a chance to meet its requirement. One solution would be to select no more than some maximum number of midshipmen for a community before other communities—namely, the submarine community—have a chance to select at least some minimum number of midshipmen. This might require setting community selection “bands” (i.e., maximum and minimum selection numbers).

It would also require some changes in the way midshipmen are reviewed for selection with regard to their first, second, and third choices of service. In some years, the records of many midshipmen were reviewed by their first-choice community, but their record was not reviewed by their second-choice community (or any other) until the first-choice community rejected them. In a different system, the first- and second-choice communities could review midshipmen records simultaneously and work to ensure that a minimum number of midshipmen were selected for a community before another community reached its maximum number of accessions.

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Tasking and outline



- Evaluate the current “one-third” accession plan
 - Cost-effective deviations
 - Career progression
 - Racial/ethnic and gender diversity
- Support the USNA Accessions Working Group (Submarines)
- Support the Diversity Directorate’s (N134) examination of demographic diversity in the officer corps

Support for Diversity Directorate: quarterly SITREPs on officer accession diversity



- CNO fall 2006 memo to N1
 - CNO wants to increase diversity in the officer corps, especially for future leadership of the Navy (URL officers)
 - “Diversity” is defined by race/ethnicity and gender
- 1st SITREP (Nov 2006)
 - Compare/contrast USNA and NROTC scholarship selection processes with regard to race/ethnicity
- 2nd SITREP (Feb 2007)
 - Set 2037 race/ethnicity URL flag pool goals; describe accession plan to achieve it
- A draft 3rd SITREP (June 2007)
 - Compare the pools of applicants for USNA and the NROTC scholarship program

CNO Mullen made diversity in the Navy personnel system a high priority. Under his leadership, he directed the Chief of Naval Personnel (CNP) to produce quarterly situation reports (SITREPs) on diversity in the officer accession programs and throughout officer career progression. CNP, in turn, tasked N134, the Navy Diversity Directorate, to prepare draft SITREPs.

The last task in this study was to support N134 in drafting the quarterly SITREPs for November 2006, February 2007, and June 2007. Much of the CNO’s communication suggests that diversity is defined as gender and racial/ethnic diversity. The SITREPs focused on various aspects of racial/ethnic and gender representation in the URL, especially for accessions from USNA and the NROTC scholarship program.

CNO selected a specific topic for the first SITREP. In a memorandum to CNP dated 19 September 2006, CNO requested a SITREP that includes “differences/similarities between the U.S. Naval Academy’s and ROTC’s Admissions Board.”

We defined “ROTC Admissions Board” as the NROTC 4-year Scholarship Selection Board. We identified differences and similarities between the Scholarship Selection Board and the USNA Admissions Board by following the application process chronologically. We indicated how these similarities/differences may have affected the racial/ethnic diversity of the incoming classes of midshipmen.

For the second SITREP, N134 determined racial/ethnic representation goals for the 2037 flag pool. CNA helped determine the necessary racial/ethnic representation in the application, selection, and completion pools of officer candidates for the 2012 URL accession cohort that would achieve the flag pool goal 25 years later.

In a draft third SITREP, we examined the overlap of applications to USNA and the NROTC scholarship program.

1st SITREP: USNA, NROTC achieve diversity differently



- The Scholarship Selection Board and the USNA Admissions Board collect applications differently
- Both boards use a “whole person concept” to evaluate applications but may evaluate the same applicant differently
- Both boards must honor applicant selection by other sources
 - Future NROTC scholarship midshipmen must also receive admission to an NROTC affiliated institution
 - USNA applicants must receive a nomination from a congressperson, senator, the Vice President, etc.
- The USNA Admissions Board can direct applicants to the Naval Academy Preparatory School (NAPS) or to a college preparatory program sponsored by Naval Academy Foundation; NROTC cannot.
 - USNA’s ability to offer 5th year to strengthen academics and military leadership skills can help achieve racial/ethnic diversity

The Scholarship Selection Board and the USNA Admissions Board collect applications differently. The Scholarship Selection Board receives applications from Commander, Navy Recruiting Command (CNRC), who has responsibility for collecting scholarship applications. CNRC assigns goals to its regions for procuring applications from different racial/ethnic groups. In contrast, USNA receives applications directly to its admissions office. USNA does not set diversity targets, but it does reach out to potential applicants of diverse backgrounds through its Outreach Program in its Office of Admissions.

Both boards use a “whole person concept” to evaluate applications. However, the two boards may evaluate the same “whole person,” or applicant, differently. Both boards assign a score to each applicant. The score may include a weighted average of such factors as standardized test scores, secondary school performance indicators, secondary school teacher recommendations, extracurricular activities, leadership activities, and interviews. The two boards’ scores do not necessarily contain the same factors, nor do they necessarily assign the same weights to the factors that they have in common.

Both the Scholarship Selection Board and the USNA Admissions Board can change the score by adding points for such things as athleticism, potential for leadership, character-building experiences, and demonstrated motivation to pursue a career in the Navy. The two boards may have different reasons for changing a score, and, even when they agree on a reason for change, they may change the scores by a different amount. The factors that make up the calculated score, as well as factors considered in changing the score, help shape the racial/ethnic diversity of the candidates in each program.

Both the Scholarship Selection Board and the USNA Admissions Board must honor applicant selection by other sources. However, those other source selections are different for the two boards. Future NROTC scholarship midshipmen must also receive admission to an NROTC host institution, cross-town affiliate, or consortium member. This admissions process is separate from selection for a 4-year scholarship. The list of NROTC schools includes flagship state universities, private institutions, Historically Black Colleges and Universities (HBCUs), and Hispanic Serving Institutions (HSIs). The variety of schools available to a 4-year scholarship recipient could help provide a measure of racial/ethnic and gender diversity among NROTC midshipmen.

To be admitted to USNA, an applicant must typically receive a nomination from a congressperson, senator, the Vice President, or the President. The nominating party may direct the USNA Admissions Board to select certain nominated applicants over others.

Finally, the USNA Admissions Board can send applicants to the Naval Academy Preparatory School (NAPS) or to a college preparatory program sponsored by Naval Academy Foundation. The NROTC Scholarship Selection Board does not provide or fund attendance in any college preparatory programs. USNA's access to the college preparatory program may help increase racial/ethnic diversity of midshipmen.

Results from data



- Data showed that:
 - USNA gets more racial/ethnic minority applications, offers fewer admissions, but has high minority graduation rates
 - NROTC gets fewer minority applications, offers more scholarships, but graduates fewer (especially African American students)
 - Minorities make up similar percentages of the officers commissioned through USNA and NROTC

In our analyses to support the Diversity Directorate, we used CNP's 27 October 2003 memorandum on demographic data collection and reporting using new race codes (after January 2003) to define the racial/ethnic categories.

NROTC's applicant pool appears to be less diverse than USNA's pool, especially for African American and Hispanic applicants. Only 2 percent of NROTC's male applicants are African American compared with over 7 percent of USNA's male applicants. Five percent of NROTC's female applicants are African American compared with 10 percent of USNA's female applicants. Similar though smaller differences are found for Hispanic applicants.

Despite differences in the applicant pools, NROTC's pool of starting freshmen has a larger percentage of African American men and women than does the USNA pool. The two pools have very similar percentages of Hispanic midshipmen. Male and female African American midshipmen at USNA appear to graduate at higher rates than black NROTC scholarship recipients completing the scholarship program in 4 years.

Despite the differences listed above, the proportion of African American and Hispanic officers commissioned through the NROTC scholarship program and USNA over the 2002–2006 period is roughly the same.

About 4 percent of male NROTC scholarship program completers are African American compared with 5.5 percent of USNA graduates. About 5 percent of female NROTC scholarship program completers are African American, which is identical to the USNA rate. About 6 percent of male NROTC scholarship program completers and about 8 percent of female NROTC scholarship program completers are Hispanic. The comparable figures for USNA graduates are 8 and 9 percent, respectively.

2nd SITREP: 2012 accessions needed for desired 2037 flag pool

- The 2012 accession goal roughly doubles the racial/ethnic minority presence among URL officer accessions
 - It requires the Navy to achieve the goal in about a year (i.e., many 2012 accessions will start undergraduate studies in 2008)
- From 2005 to 2012, the Navy will have to decrease the share of URL accessions who are white by nearly 20 percentage points, from slightly more than 80 percent to about 63 percent
 - In the past, it took the Navy 20 years to achieve this percentage-point decrease
- NROTC scholarship program will have much more difficulty than USNA reaching the accession goals
 - NROTC has much lower numbers of minority applications and minority candidate program completion rates than USNA

N134 produced racial/ethnic representation goals for the 2012 officer accessions to ensure the desired racial/ethnic representation in the 2037 flag pool. The 2012 accession goal roughly doubles the racial/ethnic minority presence among URL officer accessions. It requires the Navy to achieve the goal in about a year (i.e., many 2012 accessions will start undergraduate studies in 2008).

We compare these 2012 accession goals with the racial/ethnic diversity that was achieved in the 2002–2006 officer accession cohorts to assess the likelihood of achieving the goal. From 2005 to 2012, the Navy will have to decrease the share of URL accessions who are white by nearly 20 percentage points, from slightly more than 80 percent to about 63 percent. In the past, it took the Navy 20 years to achieve this percentage-point decrease.

The current number of applications and the program completion rates for minority officer candidates suggest that the NROTC scholarship program will have much more difficulty reaching the accession goals than USNA will.

Accessions needed for the 2037 flag pool representation goal

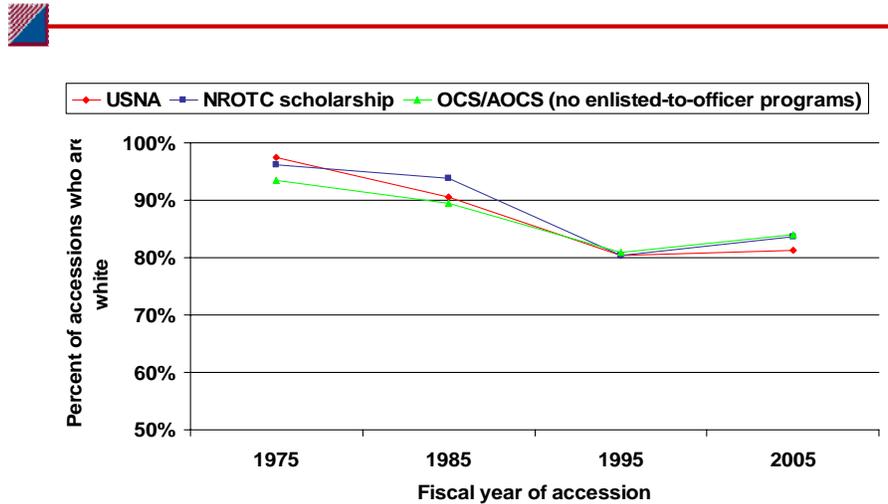
Racial/ethnic group	URL officer accessions from USNA, NROTC (scholarship), and OCS*			
	2037 representation goal (percentage of total)	2002-2006 accessions average (percentage of total)	2002-2006 accessions average (levels)	Change in the number of accessions needed**
African American	11%	5%	111	+115
Hispanic	13%	6%	125	+152
API/NATAM	13%	4%	76	+131
White	63%	82%	1,682	-349
Other/unknown	0%	2%	49	-50
Total	100%	100%	2,043	0

* Excludes enlisted-to-officer programs.

**Assumes no change in the total number of accessions.

Using demographic projections of the U.S. population and college attendance rates, N134 produced officer accession representation goals for 2012. Estimated continuation rates to YCS 25 in the URL for minority officers are approximately equal to that of white officers. Thus, the racial/ethnic representation among the 2012 URL officer accessions should generate the same representation among URL officers with YCS 25 in 2037. The 2012 accession goal requires many more minority officer accessions than the average of the 2002–2006 accession cohorts. The goal roughly doubles the number of African American and Hispanic URL officer accessions and triples the number of Asian/Pacific Islander/ Native American (API/NATAM) accessions.

Whites make up a large portion of URL accessions



This graph shows that, in 1975, nearly all URL officer accessions were white. Over the next two decades, the percentage of white officer accessions decreased to about 80 percent. In the last decade, no progress was made toward more racial/ethnic diversity among accessions.

Accessions needed for the 2037 flag pool representation goal

Racial/ethnic group	URL officer accessions from USNA, NROTC (scholarship), and OCS*			
	2037 representation goal (percentage of total)	2002-2006 accessions average (percentage of total)	2002-2006 accessions average (levels)	Change in the number of accessions needed**
African American	11%	5%	111	+106
Hispanic	13%	6%	125	+151
API/NATAM	13%	4%	76	+190
White	63%	82%	1,682	-397
Other/unknown	0%	2%	49	-49
Total	100%	100%	2,043	0

* Excludes enlisted-to-officer programs.

**Assumes no change in the total number of accessions.

Using demographic projections of the U.S. population and college attendance rates, N134 produced officer accession representation goals for 2012. Estimated continuation rates to YCS 25 in the URL for minority officers are approximately equal to that of white officers. Thus, the racial/ethnic representation among the 2012 URL officer accessions should generate the same representation among URL officers with YCS 25 in 2037. The 2012 accession goal requires many more minority officer accessions than the average of the 2002–2006 accession cohorts. The goal roughly doubles the number of African American and Hispanic URL officer accessions and triples the number of Asian/Pacific Islander/ Native American (API/NATAM) accessions.

Number of NROTC applications needed for 2012 accessions

Racial/ethnic group	2006 scholarship offer rate	2006 offer acceptance rate	Estimated NROTC pipeline completion rate	Application-to-accession ratio	Number of applications in 2006	Number of applications needed to reach 2012 accession goal**
African American	45%	42%	50%	10:1	84	850
Hispanic	43%	48%	70%	7:1	272	715
API/NATAM	55%	50%	75%	5:1	195	477
White	48%	55%	80%	5:1	3,030	2,224
Multi-race	52%	51%	N/A	N/A	196	N/A
Declined	55%	48%	N/A	N/A	99	N/A

**Assuming offer, acceptance, and completion rates remain the same.

To derive application goals to achieve these accession goals, we use 2006 scholarship offer and acceptance rates and historical estimated completion rates of the 4-year scholarships.

If offer, acceptance, and completion rates remain the same, the number of minority applications must increase by 270 percent to reach the 2012 accession goal. The number of African American applications must increase by 900 percent. If the number of applications cannot be adequately increased, the offer, acceptance, and completion rates will have to increase. Specifically, there will have to be dramatic improvement in all three rates for African Americans. Increasing all these rates simultaneously, however, may be difficult. In particular, if offer and acceptance rates are increased, completion rates may fall.

There is a complicated relationship between a candidate's many attributes and experiences and his/her chances of being offered a scholarship, accepting that offer, and completing the program. Minority candidates may have attributes/experiences that are different from those of majority candidates. Even when minority and majority candidates have similar attributes/experiences, the two groups may have different success rates in the application process and in the program. N134 has worked to increase the Navy's affiliation with community-based groups, such as the Association of Naval Service Officers (ANSO), the Hispanic Engineer National Achievement Awards (HENAAC), the Society of Hispanic Professional Engineers (SHPE), the National Naval Officers Association (NNOA), and the National Society of Black Engineers (NSBE), to help identify candidates with attributes/experiences that will translate into success in the NROTC scholarship program and as a Navy officer.

N134 also notes that minority candidates' program completion rates may be helped by adopting a NAPS-like approach within the NROTC scholarship program that would allow an additional year of study to strengthen the academic background and the leadership qualities of the candidate necessary to successfully complete the 4-year program. Much more analysis is required to assess the feasibility, cost, and likely outcomes of the program.

Number of 2012 USNA accessions needed for the 2037 flag goal



Racial/ethnic group	2002-2006 average (percentage of total)	2037 representation goal (percentage of total)	Number change
African American	46 (6%)	83 (11%)	+37
Hispanic	55 (7%)	106 (13%)	+51
API/NATAM	35 (5%)	102 (13%)	+67
White	639 (81%)	493 (63%)	-146
Other/unknown	9 (1%)	0 (0%)	-9
Total	784 (100%)	784 (100%)	0

This table shows the 2012 accession goals for USNA. These are the Navy accessions. During the 2002-2006 period, USNA also produced approximately 210 to 225 accessions for the Marine Corps.

Number of USNA applications needed for the accession 2012 goal



Racial/ethnic group	Classes of 2002-2006 average offer rate	Classes of 2002-2006 average offer acceptance rate	Estimated USNA completion rate	Application-to-accession ratio	Average number of applications 2002-2006*	Number of applications needed to reach 2012 accession goal**
African American	17%	87%	72%	10:1	490	973
Hispanic	25%	84%	75%	6:1	484	883
API/NATAM	22%	77%	76%	8:1	319	942
White	24%	81%	82%	6:1	4,749	3,836

* Excludes candidates who withdrew from the admissions process or were not evaluated by USNA.

**Assuming offer, acceptance, and completion rates remain the same.

Assuming that offer, acceptance, and completion rates remain the same, USNA would have to roughly double the number of African American and Hispanic applications that it evaluates, and it would have to nearly triple the number of API/NATAM applications it reviews to reach the 2012 accession goal. However, if USNA could double the offer rate without compromising the acceptance and completion rates, it already receives enough minority applications to reach the 2012 goal.

A draft 3rd SITREP: demographic diversity of applicants to both USNA and NROTC

- Compared with other racial/ethnic groups, African Americans are less likely to apply contemporaneously to USNA and the NROTC scholarship program
- Compared with other racial/ethnic groups, African American applicants to USNA are less likely to become Navy officers
- Little gender difference in application rates to both programs or in becoming Navy officers

In analysis done to support a draft third SITREP, we reviewed applicant data for USNA classes of 2005 through 2011 (applications were typically submitted in FY 2001 through FY 2007) and for the NROTC scholarship program from FY 2001 to FY 2007 to increase our understanding of the applicant pools to USNA and the NROTC program. Specifically, we examined the number and types of students who applied to both programs. We find that significant percentages of white, Hispanic, and Asian American/Pacific Islander (API) USNA applicants also applied for NROTC scholarships. This rate is much lower for African American applicants.

A significant percentage of white, Hispanic, and API USNA applicants eventually become Navy officers, whether through USNA or through other programs. The percentage of African American applicants to USNA who became Navy officers was comparable to the other racial/ethnic groups a decade ago but has fallen since. The Hispanic rates have also decreased over time.

Applications from African Americans to both programs have significantly decreased over the time period. No other racial/ethnic group has shown such a large a decline.

Women's application rates to both USNA and the NROTC scholarship program remain steady. The rate of contemporaneous application to both programs is similar for women and men. Women applicants to USNA become Navy officers at slightly lower rates than men, but the rates have been steady over time.

Racial/ethnic mix of USNA applicants who also applied for NROTC

	Number of applicants to USNA (FY of application)								Percentage that also applied to NROTC
	USNA class of '05 (2001)	USNA class of '06 (2002)	USNA class of '07 (2003)	USNA class of '08 (2004)	USNA class of '09 (2005)	USNA class of '10 (2006)	USNA class of '11 (2007)	Avg. all years	
White	6,516	6,641	8,626	8,962	6,786	6,612	6,507	7,236	22.7
African American	890	704	722	745	410	410	497	625	6.1
Hispanic	784	771	885	806	617	722	765	764	16.1
API	300	400	595	594	305	307	334	405	23.1
All other	397	295	357	384	720	581	635	481	18.9
Women	1630	1594	2337	2338	1620	1722	1775	1859	19.7
Men	7,256	7,217	8848	9,153	7,217	6,910	6,963	7,752	21.2
Total	8,887*	8,811	11,185	11,491	8,838*	8,632	8,738	9,512	20.9

*One applicant for the class of '05 and one for the class of '09 did not report gender.

The table shows the number of applicants for USNA classes of '05 through '11 (applications submitted in FY 2001–2007) by race/ethnicity and gender. The last column shows that almost 23 percent of white applicants also applied for an NROTC (Navy option) scholarship. The same figures for Hispanic and API applicants to USNA are about 16 and 23 percent, respectively. Only about 6 percent of African American applicants to USNA also applied for an NROTC scholarship.

The total number of applicants to USNA was about the same (roughly 8,800) at the beginning and end of our observation period (in FY 2001 for class of '05 and in FY 2007 for class of '11). There was a substantial but temporary increase in the number of applicants in FY 2003 and FY 2004 (classes of '07 and '08), which peaked at nearly 11,500. The increase occurred just before and soon after the beginning of Operation Iraqi Freedom.

For some racial/ethnic groups, the number and percentage of applications decreased. In particular, there were 890 African American applicants to USNA in FY 2001 (class of '05), or about 10 percent of all applicants. This figure decreased to 497 applicants in FY 2007 (class of '11), or about 6 percent of all applicants.* Similarly, the next table shows that there were 154 African American applicants for NROTC scholarships in FY 2001, or about 3.5 percent of all applicants. By FY 2007, the number had dropped to 98, which constituted 2.5 percent of all applicants.

*Applications from African Americans reached a high of 10 percent of all applications in FY 1999 (for class of '05). However, African American applications averaged 7.5 percent of the total from FY 1995–1999 (classes of '99–'04), so that the recent percentages of African American applicants for FY 2005–2007 (classes of '09–'11) still represent a decrease from prior-year averages.

Part of the explanation for the drop in the number of African American applicants to both programs may be changes in reporting race/ethnicity. Since FY 2005 (starting with applications to USNA class of '09), applicants could choose not to respond to questions about race/ethnicity or to report multiple races/ethnicities. In FY 2007 (USNA class of '11), there were 497 African American applicants to USNA, while 110 applicants declined to respond and 488 applicants declared multiple races. Similar figures hold for FY 2006 (USNA class of '10). All of the applicants who declined to respond or who declared multiple races in FY 2005 and FY 2006 would have to be considered African American for the number of African American applicants to approach the number who applied in FY 1999 (for USNA class of '05).

Although we do not have data on the race/ethnicity of those who declined to respond, we do have some information on the races/ethnicities of those who declared multiple races among NROTC applicants in FY 2006. In that year, 196 NROTC scholarship applicants declared multiple races. Twenty-one of the multi-race applicants declared black (or African American) as one of their races; 170 of the multi-race applicants declared Asian American-white or Native American-white as their races. Thus, the NROTC scholarship applicant data from FY 2006 would suggest that those of African American descent do not have a large presence among multi-race applicants.

Note that the decline in African American applicants began before the changes in race/ethnicity reporting were in effect. This suggests that other factors may be contributing to the decline in the number of African American applicants.

The application rates for women to USNA and the NROTC scholarship program contemporaneously showed no decline over time. Over the period we examined, applications by women to USNA were about 19 percent of the total each year, while applications by women to the scholarship program have been approximately 24 percent of the total. On average, about 20 percent of female applicants to USNA also applied to the NROTC program. Over the period, this figure grew from 16.2 percent for the class of '05 to 21.3 percent for the class of '10, and then fell to about 16 percent for the class of '11. For men, the average rate of contemporaneous application is about 22 percent. That rate grew from about 17 percent for the class of '05 to 23 percent for the class of '10 and then fell to 17 percent for the class of '11. Thus, the behavior of women applicants is very similar to that of men.

Racial/ethnic mix of NROTC scholarship applicants

	Number of applicants for NROTC scholarships (Navy Option only) by FY of application							
	2001	2002	2003	2004	2005	2006	2007	Average all years
White	3,672	4,248	4,449	4,035	3,108	3,178	2,871	3,652
African American	154	129	199	140	100	89	98	130
Hispanic	270	244	295	327	274	296	322	290
API	277	300	353	441	313	314	298	206
All other	82	71	166	319	258	244	301	190
Women	1,054	1,237	1,382	1,303	948	1,012	873	1,116
Men	3,401	3,755	4,080	3,959	3,105	3,109	3,017	3,489
Total	4,455	4,993	5,462	5,262	4,053	4,121	3,890	4,605

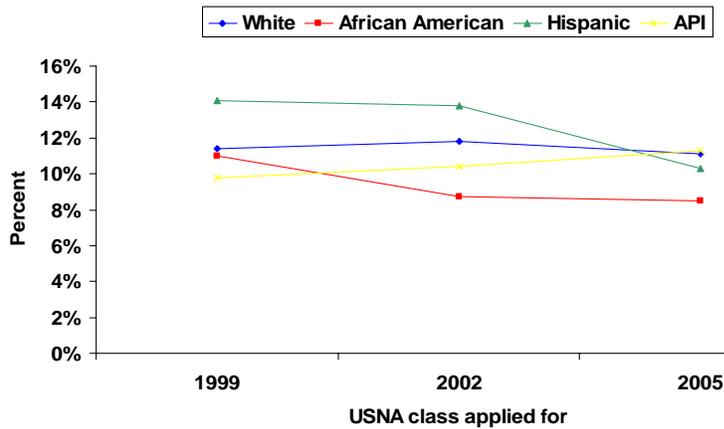
This table shows the same data on applicants to the NROTC scholarship program. For African Americans, there seem to be two separate markets for application to the Navy's higher education programs—USNA being the larger of the two. To decrease this difference, perhaps more could be done to ensure that African American applicants to USNA are aware, and urged to take advantage, of education options through NROTC.

We suggest that the Navy explore options to expand the pool of African American applicants to both programs. The NROTC scholarship selection board already receives data on minority applicants to USNA, but only after they are rejected by USNA. According to Recruiting Command staff, the rejected applications are often received too late in the college admission cycle to be a useful source of scholarship applications. If minority candidates applied for an NROTC scholarship at the same time that they applied to USNA, their chances of receiving a scholarship might increase.

The two applicant groups may stay separate for several reasons. Some USNA applicants may not apply for an NROTC scholarship because the financial support at USNA is more comprehensive than an NROTC scholarship, which covers tuition and fees only. Also, the NROTC scholarship selection board may view some applicants to USNA as having insufficient academic qualifications to receive an NROTC scholarship, so combining the USNA and NROTC applicant pools may yield little improvement in NROTC scholarship selection. Indeed, the USNA applicant pool may have a disproportionate share of students who need to strengthen their academic background to be successful at the university level. USNA may be able to accommodate these students through NAPS or the Naval Academy Foundation programs followed by close monitoring at the academy, whereas the NROTC program cannot. African Americans and other minorities may be overrepresented in this group of USNA applicants.*

*We do not have data on high school courses taken or GPA for either USNA or NROTC applicants. We have SAT scores for NROTC applicants, including those who also applied to USNA, but we cannot determine if USNA applicants who do not apply to the NROTC program have greater or lesser academic credentials than the typical NROTC applicant. Recruiting Command staff suggest that a number of the minority applications turned down by USNA do not meet the NROTC scholarship selection board's desired admission test scores.

Percentage of USNA applicants who become officers through USNA

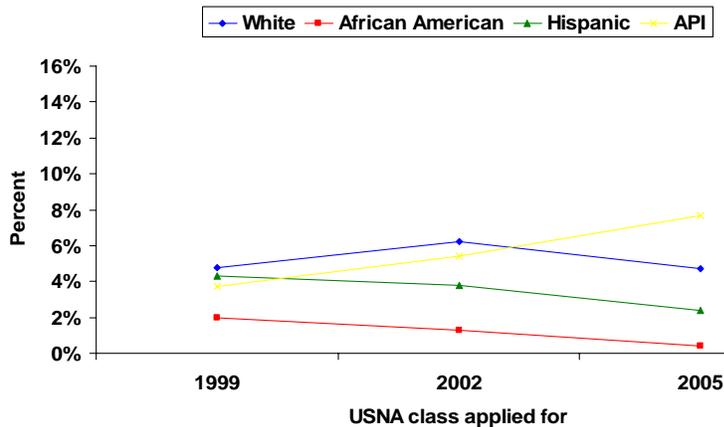


This graph shows, by race/ethnicity, the percentage of USNA applicants who became commissioned officers through USNA.* These are data from earlier USNA applicant pools (for the classes of '99, '02, and '05) so that we can follow the applicants to commissioning.

About 11 percent of the white USNA applicants became Navy officers through USNA for each of the three classes. The percentage of API USNA applicants who became Navy officers through USNA increased modestly from about 10 percent for the class of '99 to just over 11 percent for the class of '05. In contrast, the percentages of African American and Hispanic USNA applicants who became Navy officers through USNA fell over the period. The Hispanic USNA applicants had the highest rate of becoming Navy officers through USNA for the class of '99 (14.1 percent), but the rate fell to just slightly above 10 percent for the class of '05. The rate for African American USNA applicants was comparable to that of white applicants for the class of '99 (about 11 percent), but it subsequently fell to only 8.5 percent for the class of '05 and is now noticeably lower than the other racial/ethnic groups.

*The calculation is as follows: (USNA applicants who were commissioned as Navy officers through USNA) / (all USNA applicants).

Percentage of USNA applicants who become officers via non-USNA sources

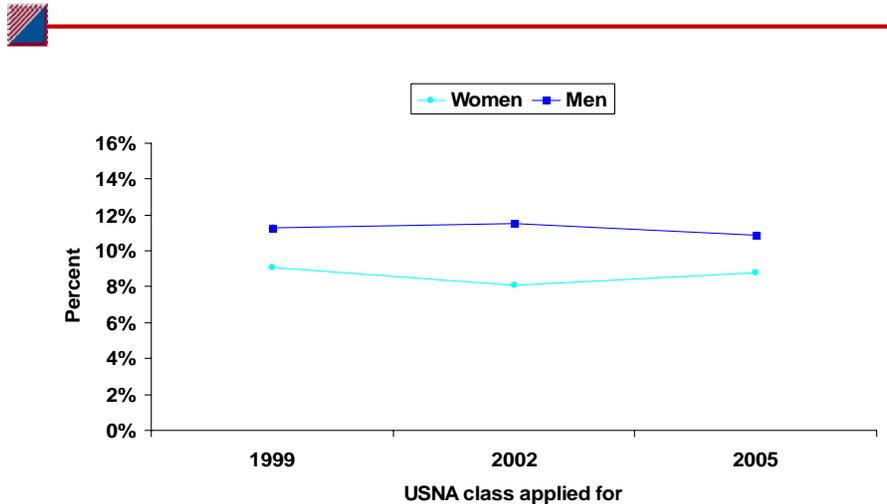


This graph shows the percentage of USNA applicants by race/ethnicity who became Navy officers through non-USNA sources.* The most common way for USNA applicants to become Navy officers through a non-USNA source is through the NROTC scholarship program. This is true for all racial/ethnic groups. The rate for white applicants was just under 5 percent for each of the classes of '99 and '05 and was slightly higher for the class of '02. The rate of API USNA applicants who become Navy officers through a non-USNA source rose substantially over the period, from just under 4 percent for the class of '99 to nearly 8 percent for the class of '05. The API group is the only racial/ethnic group for which we see an increase in this rate.

The rates for Hispanic and African American USNA applicants who become Navy officers through a non-USNA source show a more troubling trend. The Hispanic rate fell from 4.3 percent for the class of '99 to 2.4 percent for the class of '05, while the African American rate was low to begin with (2 percent for the class of '99) and was nearly zero for the class of '05.

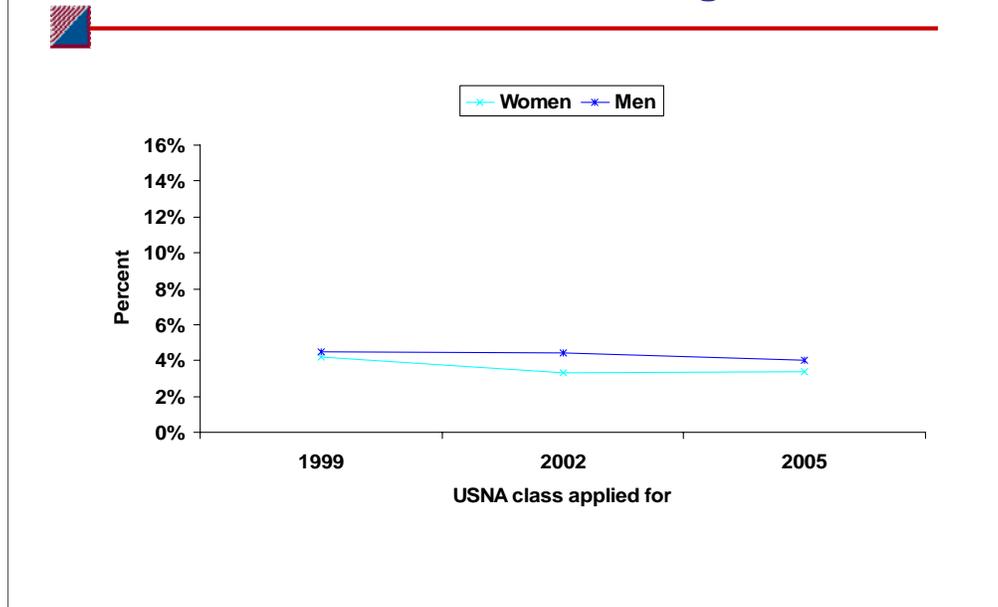
*The calculation is as follows: (USNA applicants who were commissioned as Navy officers through a non-USNA source) / (all USNA applicants).

Percentage of USNA applicants who become officers through USNA: gender



There is a modest difference in the percentages of female and male USNA applicants who become Navy officers. This graph shows the percentages of USNA applicants who become Navy officers through USNA for men and women. Although the rate for men is several percentage points higher than the rate for women, the difference in the rates has not grown appreciably from the class of '99 to the class of '05. The next graph shows a slight percentage-point difference in the rate of USNA applicants who become Navy officers through non-USNA sources for men and women, but the difference has not grown consistently over the period.

Percentage of USNA applicants who become officers via non-USNA sources: gender



Factors that may have lowered the application rates for African Americans may not have affected female applicants to the same degree. The number of women trying to gain access to undergraduate programs to become Navy officers has remained steady despite the war. Since the number of women entering the pipelines to officer commissioning appears unlikely to change, it may benefit the Navy to continue to pursue retention policies that are especially attractive to women.

In general, retention of women officers in the URL communities since repeal of the CEA has been lower than that for men. Navy quick polls and focus groups suggest that many officers, perhaps especially women, struggle to balance Navy career demands and other pursuits. In FY 2007, the Navy submitted a budget proposal for review to initiate a pilot program to allow active duty officers to take up to 3 years' leave from active duty. While away from active duty, officers must join the Individual Ready Reserve. They would not be eligible for active duty pay but would be eligible for other active duty benefits, such as medical, dental, and commissary benefits. These officers would be obligated to return to active duty and to serve for a time period commensurate with their leave time.

The Office of Women's Policy and the Diversity Directorate are also examining other strategies to improve female officer retention, such as improving the overall command climate and allowing for homesteading. They will continue to collect more detailed information from current and former female officers to help determine which policies may be most effective in improving retention.

Appendix A



Sources of costs

USNA marginal costs



Marginal cost of an additional Midshipman at USNA	
Cost category	\$ in thousands
MPN:	2009 levels
I-Day Transportation	0.4
Midshipmen Pay	85.9
TOTAL MPN	86.3
O&M,N (MISSION):	
Civilian Faculty	78.9
Support Staff	10.9
Academic Materials & Supplies	5.9
Professional Development Program	6.1
Athletic Program	3.1
Food Service	4.0
P. O. Box Rental	0.2
Admissions	0.9
Initial Outfitting Midshipmen	2.8
Initial Outfitting Faculty & Staff	1.2
Initial faculty labs	5.4
Maintenance faculty labs	4.2
IT Support	5.3
TOTAL O&M,N Mission	128.9
O&M,N (BOS):	
Water/Sewage/Utilities	0.2
TOTAL	215.3

DoD composite rate for midshipmen used. Includes \$5,652 annual Medicare Eligible Retiree Health Care accrual.

NROTC marginal costs



Marginal cost of one scholarship NROTC Midshipman	
Cost category	\$ in thousands 2009 levels
Tuition/Fees	89.3
Book stipend	3.0
Monthly subsistence	12.0
Uniforms	1.2
Summer cruise pay and allowance	2.5
Summer cruise subsistence in kind	0.7
Summer cruise travel	3.1
Initial travel	0.1
Total	111.8
Adjust for 1.5% of scholarship holders that will receive 5th year of scholarship	112.1
Add approximately \$23,000 for 4 years of MERHC accrual for comparison with USNA and OCS marginal costs	135.0

Add \$10,000 for nuclear accession bonus where appropriate

OCS marginal costs



Marginal cost of a NUPOC program completer	
Cost category	\$ in thousands 2009 levels
Annual basic pay	26.4
Allowances	18.2
MERHC accrual	6.3
Annual total	50.9
Apply to 20.7 months in program	87.8
Adjustment for attrition in NUPOC	90.9
Add \$10,000 accession bonus	10.0
Program total	100.9

Marginal cost of a BDCP program completer	
Cost category	\$ in thousands 2009 levels
Annual basic pay	24.2
Allowances	17.3
MERHC accrual	6.3
Annual total	47.8
Apply to 24 months in program	95.6
Adjustment for attrition in BDCP	97.5
Program total	97.5

Marginal cost of an OCS candidate at OCS	
Cost category	\$ in thousands 2009 levels
Annual basic pay and allowances (includes adjustment for attrites in OCS and MERHC accrual). Uses DoD composite rate.	21.2
Other non-labor costs per student	0.4
Total	21.6

DoD composite rate components



-
- Average basic pay
 - Retired pay accrual (not counted until officer commissioning)
 - Medical health care accrual (MERHC)
 - BAH
 - BAS
 - Incentive and special pay
 - Permanent change-of-station expenses
 - Miscellaneous pay (includes employer portion of FICA and Medicare taxes)

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Appendix B

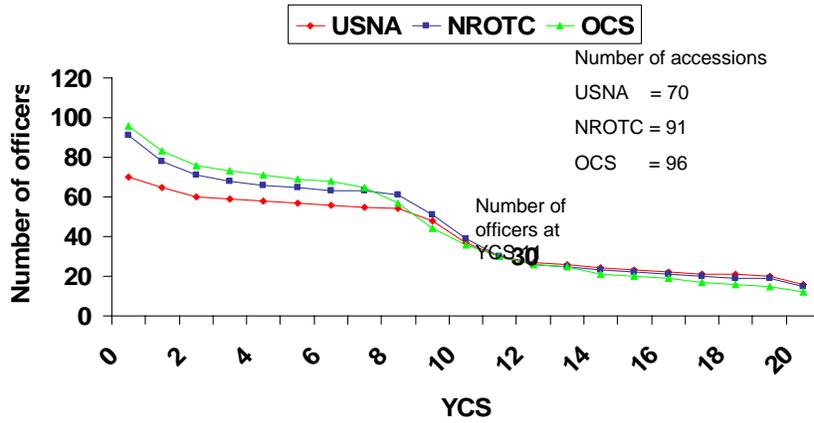


**Alternative cost-benefit
calculation to same number of
officers at YCS 11**

Example of USNA–OCS cost comparison to YCS 11

- Calculate number of officers at YCS 11 generated by 70 additional USNA accessions using USNA CCR
- Calculate accession and postcommissioning costs of these USNA officers to YCS 11
- Calculate number of OCS accessions needed to generate the same number of officers at YCS 11 using OCS CCR
- Calculate accession and postcommissioning costs of these OCS officers to YCS 11
- Compare with USNA result
- Redo exercise including notional postcommissioning training costs

Access to achieve the same number of pilots at YCS 11



Using FY96-03 cumulative continuation rates in the community. Includes prior enlisted.

Results for pilots when number of officers at YCS 11 is the same



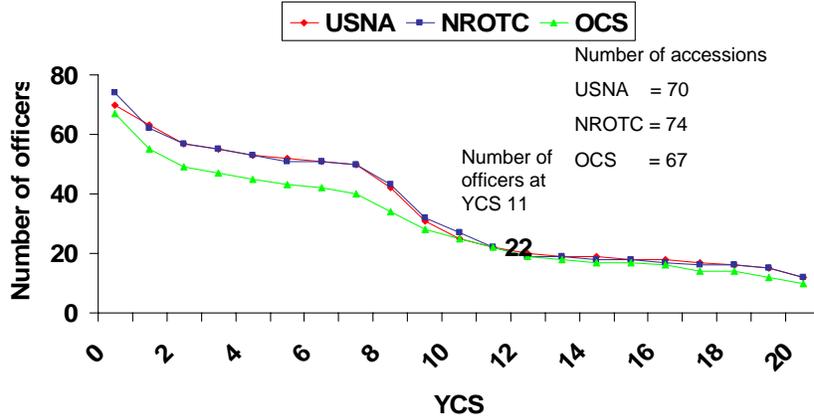
	Millions of dollars	
	No postcommissioning training costs	Notional \$200,000 per year for 3 years of post-commissioning training costs***
USNA baseline	77	115
NROTC difference to USNA baseline*	+3.4 to +5.4	+12.2 to +14.2
OCS difference to USNA baseline**	-1.4 to +0.5	+10.6 to +12.5

*Low NROTC excludes MERHC accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

Access to achieve the same number of NFOs at YCS 11



Using FY96-03 cumulative continuation rates in the community. Includes prior enlisted.

Results for NFOs when number of officers at YCS 11 is the same



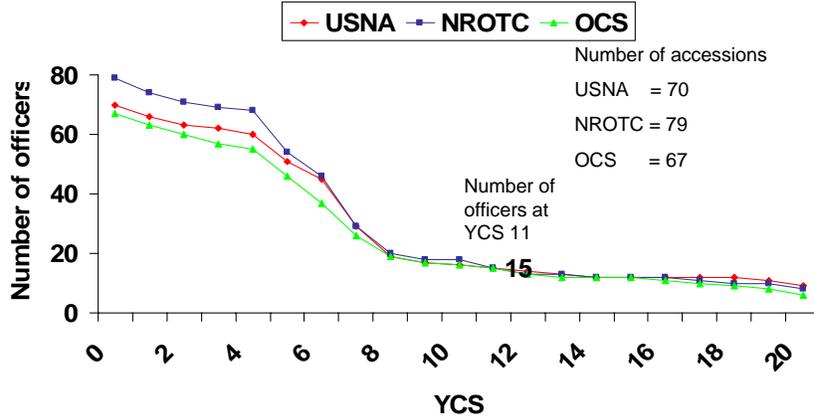
	Millions of dollars	
	No postcommissioning training costs	Notional \$200,000 per year for 3 years of post-commissioning training costs***
USNA baseline	69	107
NROTC difference to USNA baseline*	-6.3 to -4.6	-5.8 to -4.1
OCS difference to USNA baseline**	-19.9 to -18.6	-23.6 to -22.3

*Low NROTC excludes MERHC accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

Access to achieve the same number of submariners at YCS 11



Using FY96-03 cumulative continuation rates in the community. Includes prior enlisted.

Results for submariners when number of officers at YCS 11 is the same



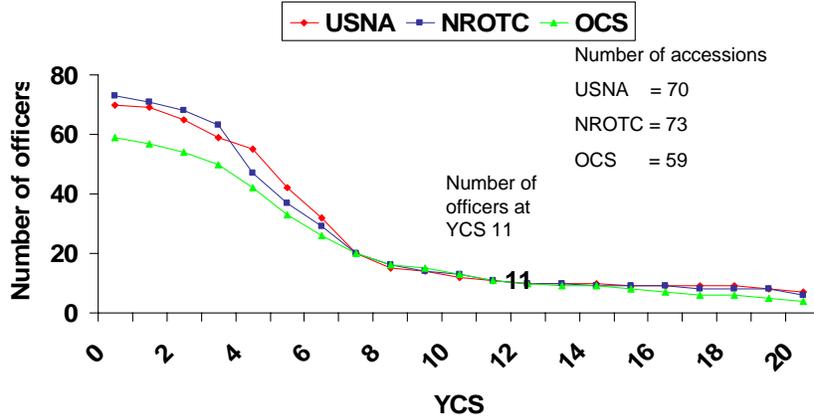
	Millions of dollars	
	No postcommissioning training costs	Notional \$100,000 per year for 2 years of post-commissioning training costs***
USNA baseline	64	77
NROTC difference to USNA baseline*	-2.0 to -0.3	-0.5 to 1.3
OCS difference to USNA baseline**	-10.8 to -9.5	-11.4 to -10.1

*Low NROTC excludes MERHC accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

**Low OCS assumes zero additional recruiting and precommissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and precommissioning training costs per accession.

***Postcommissioning training costs are notional. They are used here only to demonstrate the significance of including postcommissioning training costs.

Access to achieve the same number of SWOs at YCS 11



Using FY96-03 cumulative continuation rates in the community. Includes prior enlisted.

Results for SWOs when number of officers at YCS 11 is the same



	Millions of dollars	
	No post-commissioning training costs	Notional \$40,000 per year for 2 years post-commissioning training costs***
USNA baseline	57	62
NROTC difference to USNA baseline*	-7.5 to -5.9	-7.3 to -5.7
OCS difference to USNA baseline**	-17.4 to -16.3	-18.3 to -17.2

*Low NROTC excludes MERHC accrual; high NROTC includes MERHC accrual. USNA and OCS costs include MERHC accruals.

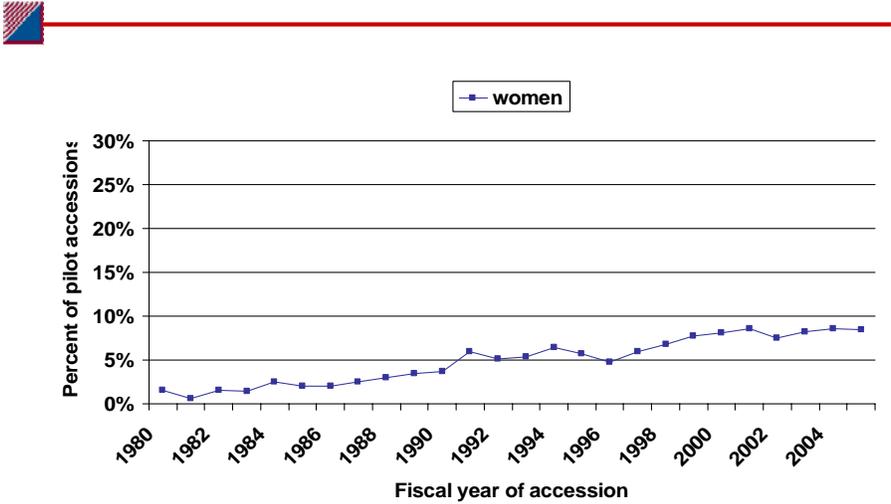
**Low OCS assumes zero additional recruiting and pre-commissioning training costs per accession; high OCS assumes \$20,000 additional recruiting and pre-commissioning training costs per accession.

***Post-commissioning training costs are notional. They are used here only to demonstrate the significance of including post-commissioning training costs.

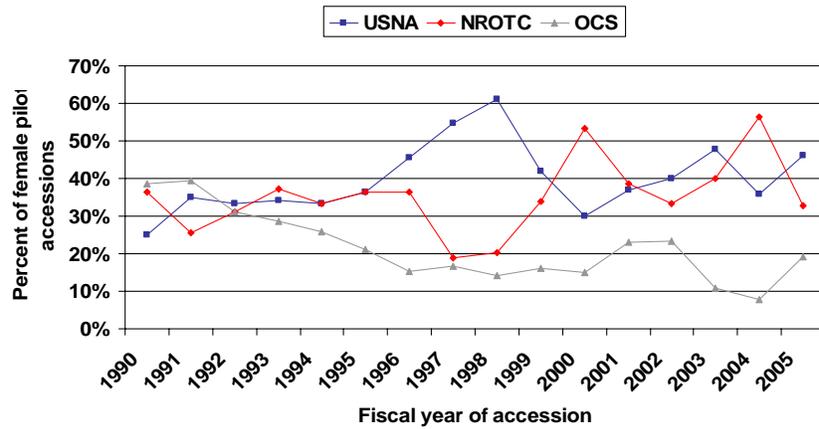
Backup



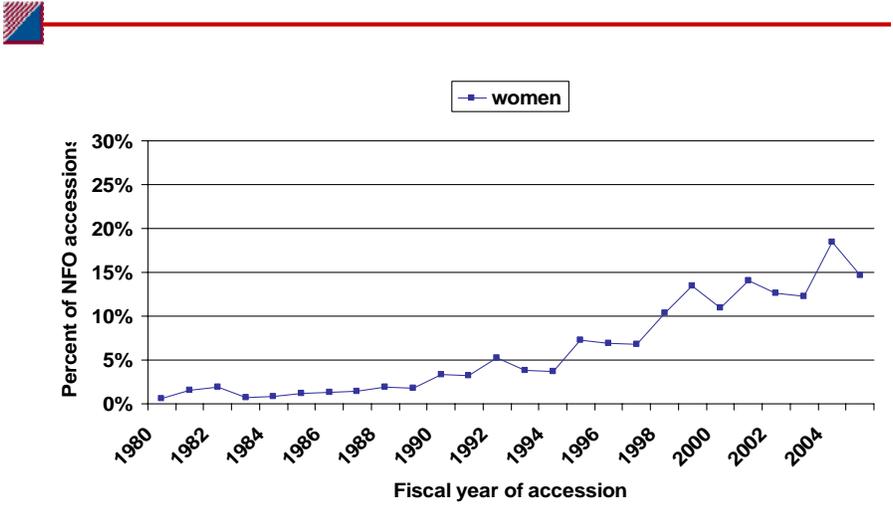
Female pilot accessions



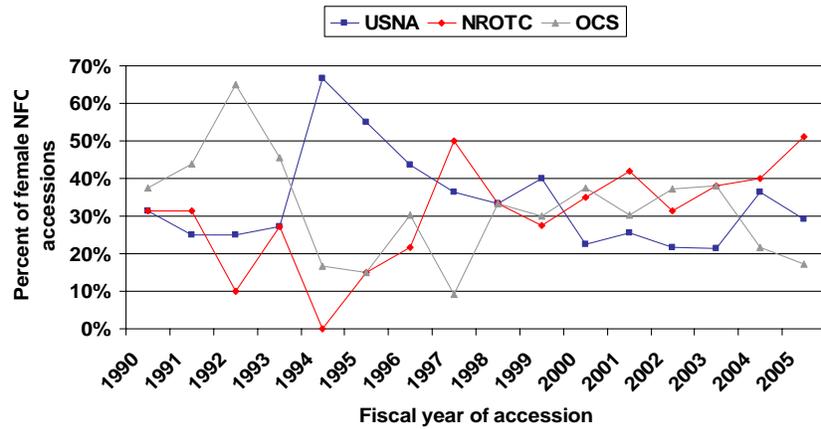
Female pilot accessions by accession source



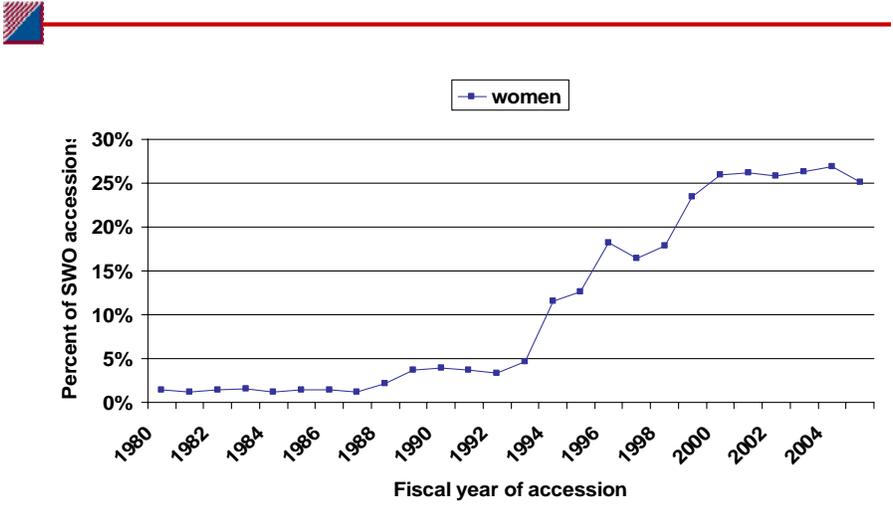
Female NFO accessions



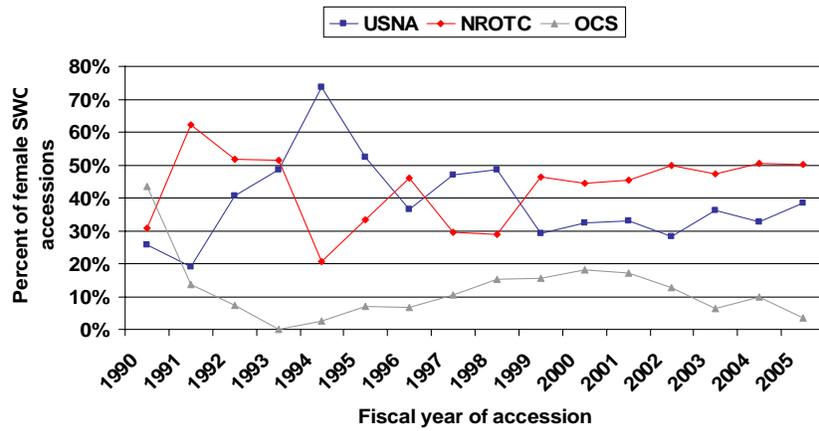
Female NFO accessions by accession source



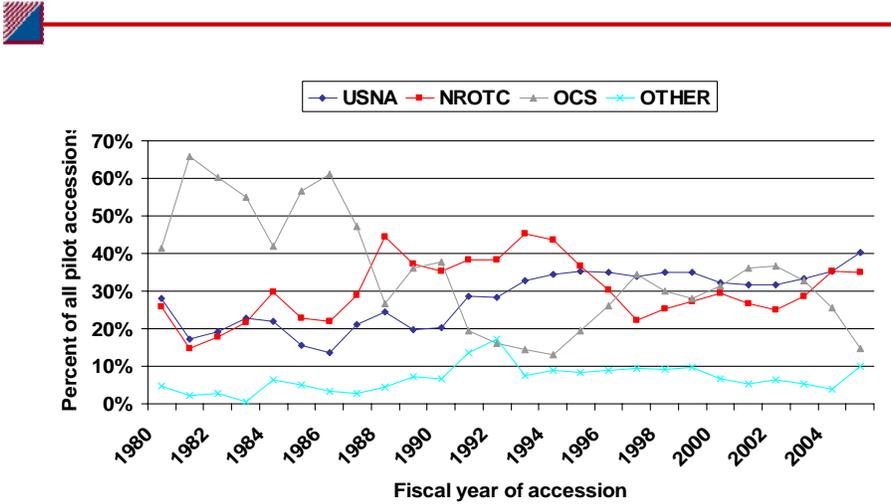
Female SWO accessions



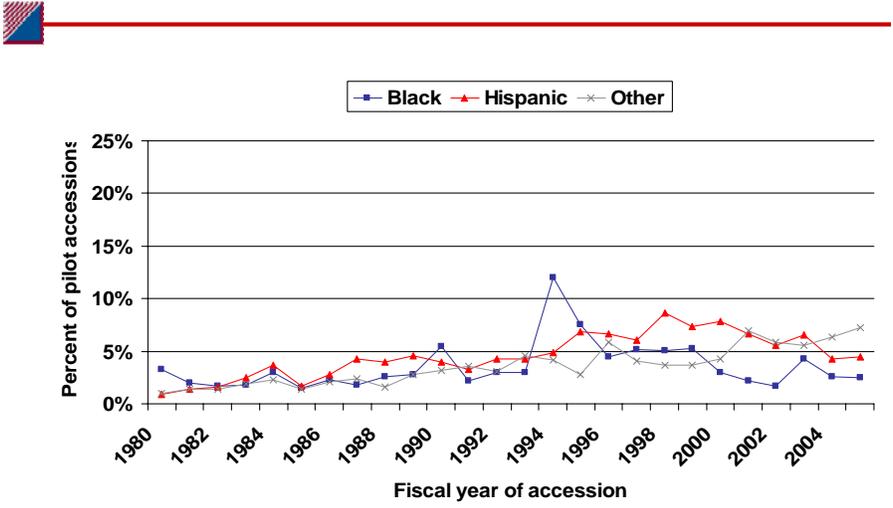
Female SWO accessions by accession source



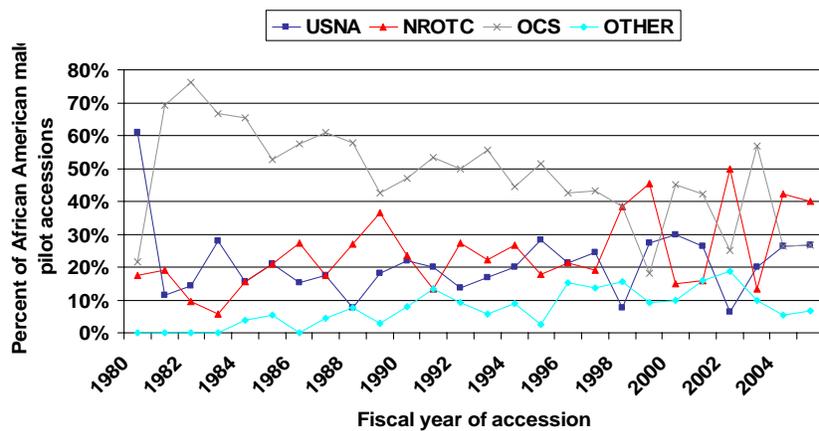
Pilot accessions by source



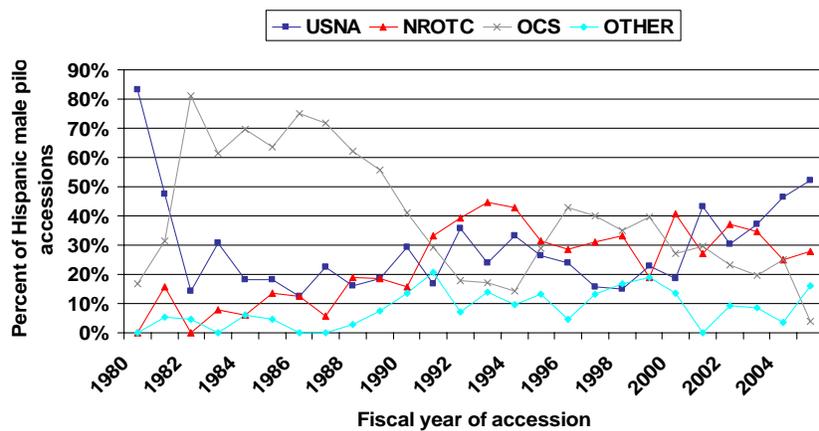
Pilot accessions by race/ethnicity



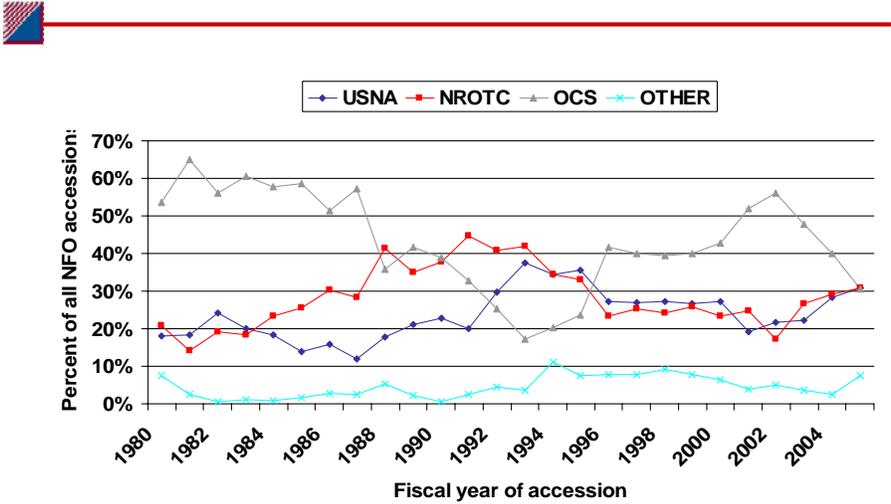
African American male pilot accessions by accession source



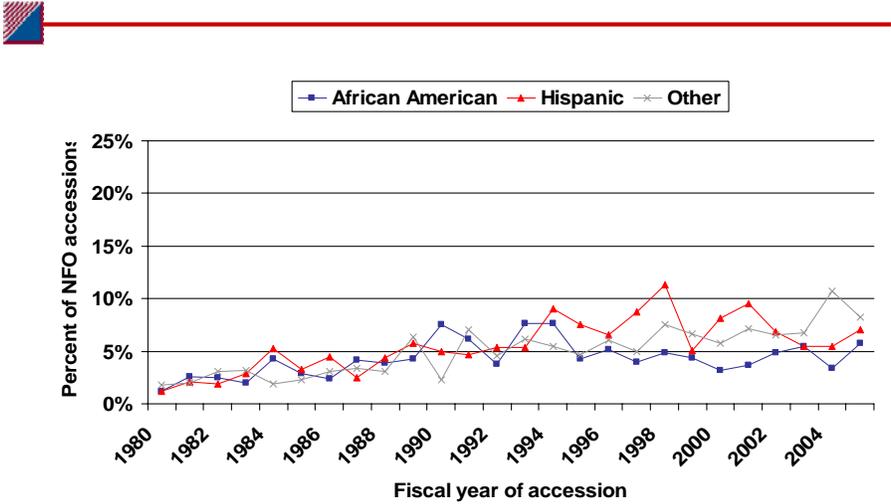
Hispanic male pilot accessions by accession source



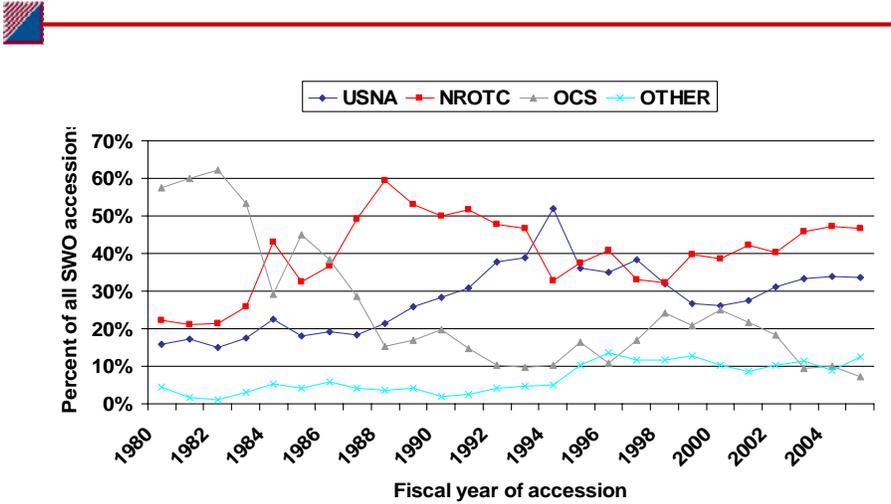
NFO accessions by source



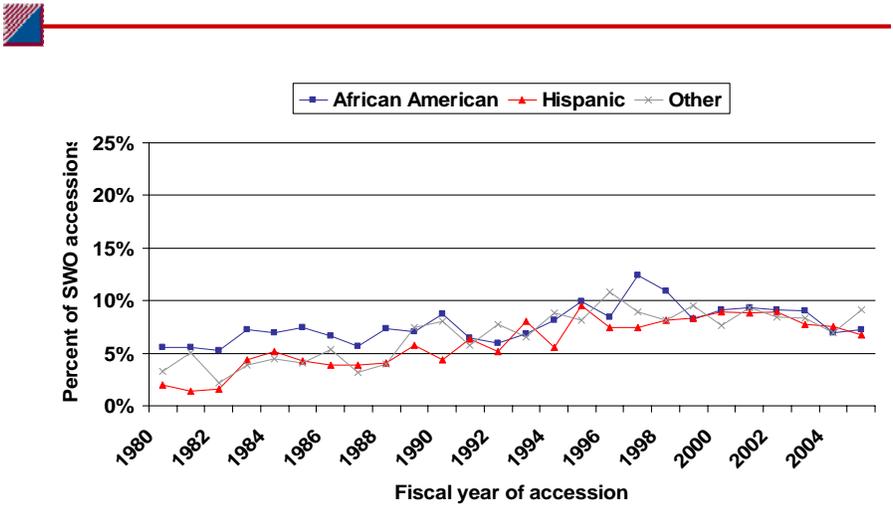
NFO accessions by race/ethnicity



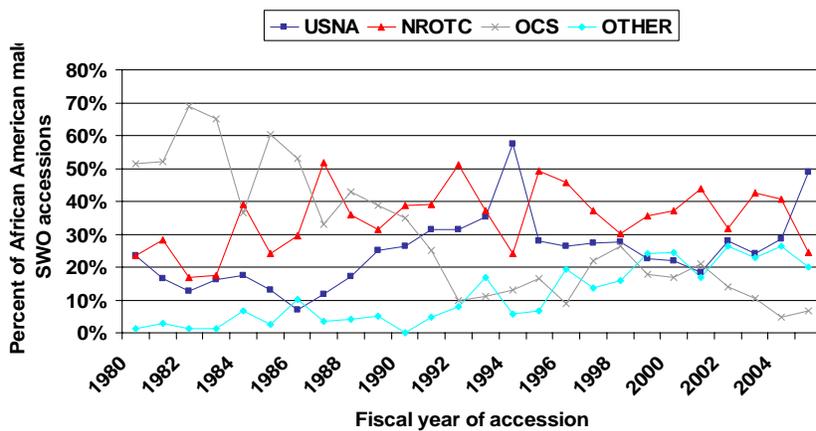
SWO accessions by source



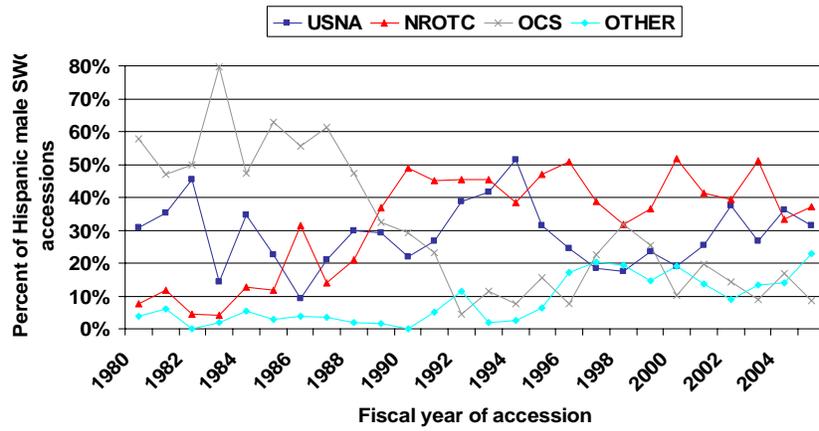
SWO accessions by race/ethnicity



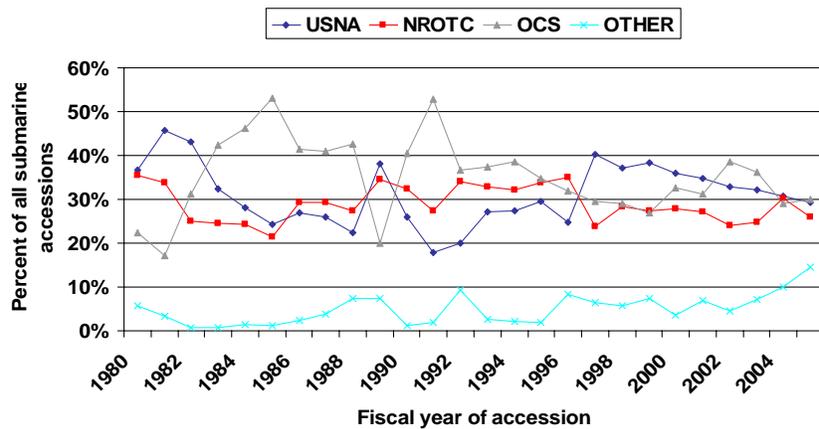
African American male SWO accessions by accession source



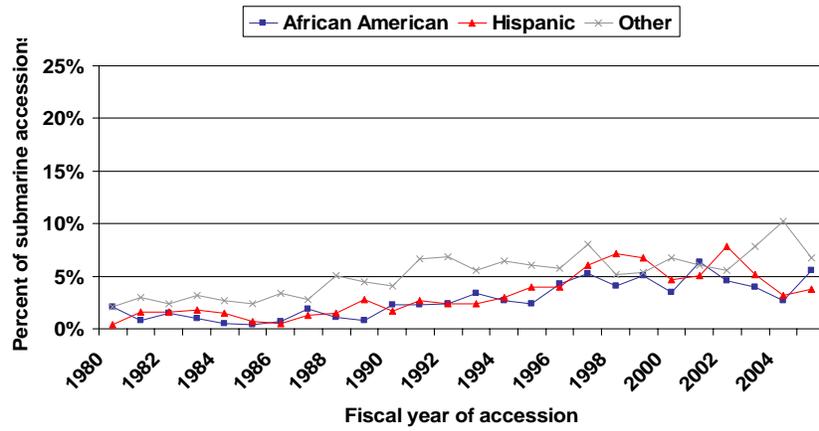
Hispanic male SWO accessions by accession source



Submarine officer accessions by source



Submarine officer accessions by race/ethnicity



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