Developing an Officer Retention Report Part I: Analysis of URL Communities

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Approved for distribution:

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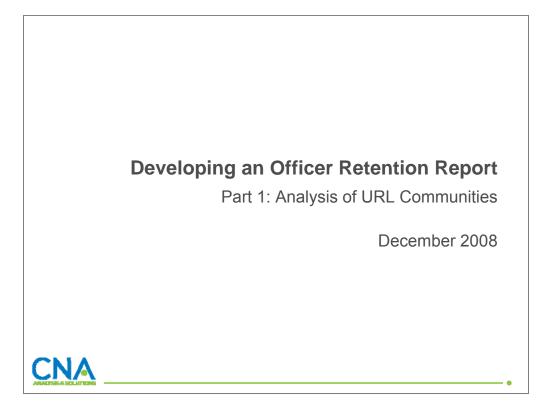
Henry S. Griffis, Director Defense Workforce Analyses Team Resource Analysis Division

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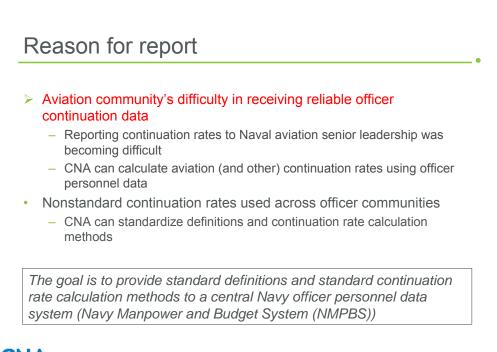
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December 2008



This study is sponsored by N10, the Manpower, Personnel, Training, and Education (MPTE) Resource Management Division. Our POC is N104, but we also worked with the head community manager (BUPERS-3) and the officer community managers (OCMs) from the various unrestricted line (URL) communities.

N10 staff asked CNA to provide periodic officer retention reports similar to those that we produce quarterly on the Navy enlisted force. For officers, we plan to produce a semiannual report because we believe that changes in officer continuation can be monitored effectively by reporting twice a year.



CNA

Our sponsor noted two areas of concern to be addressed. First, the aviation community has had difficulty receiving accurate data about the continuation patterns of aviators with 7 to 12 years of commissioned service (YCS)—key stay/leave decision points for aviators. Using data from officer personnel files, we calculated cumulative continuation rates (CCRs) for aviators. We also provided details of the calculation so that others could replicate or modify the results as needed. Second, the current CCR calculations are not standardized across officer communities. OCMs may use different definitions of beginning and ending officer inventories—inputs that are fundamental to the CCR calculation. The head OCM, who prepares briefs for the Navy senior leadership on officer continuation, collects community-level CCRs from each OCM. Because the CCRs across communities are not calculated using standard definitions and methods, however, they may not provide a useful picture of overall officer retention. Thus, our second task was to provide the Navy with standardized definitions of starting and ending inventories and a standardized calculation method for CCRs.

This does not mean that communities must abandon their own continuation analyses; those analyses were developed to address critical internal community-specific management issues. Nor does it mean that a standard definition of the CCR must be applied over the same portion of the officer career by all communities. We understand that, while one community may focus on continuation from YCS 7–12, other communities may choose to calculate CCRs from YCS 3–9 to reflect the key stay/leave decision points for their officers. Instead, we offer a continuation rate definition that can be calculated between any two points in the officer career and need only be used for purposes of presenting a cross-community picture of officer retention that uses standard definitions and methods.

Our sponsor's goal is to provide these definitions and calculation methods to those who use the Navy Manpower and Budget System (NMPBS). Thus, all of the continuation rates may ultimately be calculated by a single, internal Navy source.

For Officer Master File dates:	Gain loss indicator (GLI) value	Gain loss strength indicator (GLSI) value
Sep 1972 through Sep 1976	Blank or "S"	
Sep 1977 through Mar 1995		Blank
Sep 1995 to present		"S"

CNA receives periodic extracts from the Officer Personnel Information System (OPINS), which we call the Officer Master File (OMF) extracts. Until the last few years, we received an OMF extract containing personnel records of the entire active officer inventory as of the end of September and as of the end of March each year. For the past several years, we have received OMF extracts containing officer personnel records at the end of each quarter. Our OMF extracts date back to September 1972.

We include only active officer records when computing continuation rates. Thus, we eliminate records for officers or officer candidates who will join the inventory as regular officers in the future (pending gains).

To identify an active officer record, we examine the GLI or the GLSI, depending on the year. The table above shows which values the GLI or SGLI may take to indicate an active officer. Our study sponsors are most interested in continuation rates (and the underlying definitions of beginning and ending inventories) for much more recent periods. For completeness, however, we report how to identify active records since 1972.

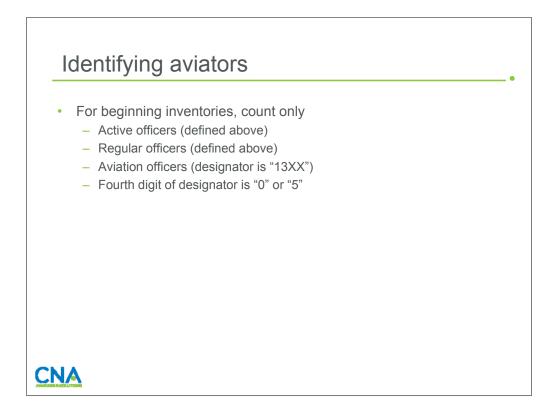
Sep 1972 through All Sep 1994	l officers		(ADSW)	GLI = S)
		SPC = "T" or 4 th digit of the designator = "7"		
Sep 2004 pro coo is b	pecial rogram ode (SPC) blank = "5"	SPC = "T" or 4 th digit of the designator = "7"	SPC is not blank and is not = "5"	SPC is not blank and is not = "5"
After Sep 2004 SP	PC is blank	SPC = "T" or 4 th digit of the designator = "7"	SPC is not blank	SPC is not blank; GLSI = "N" and GLI = "S"; reservist called up to active duty

Next, we identify regular officers. These officers may hold a regular or a reserve commission, but they are part of the active component and are not reservists. If nonregular officers are included, such as reservists who have been mobilized for a contingency, it could change the measured continuation behavior in ways that do not reflect the behavior of regular officers. For the time being, we have also eliminated full-time support (FTS) officers from the definition of regular officers.

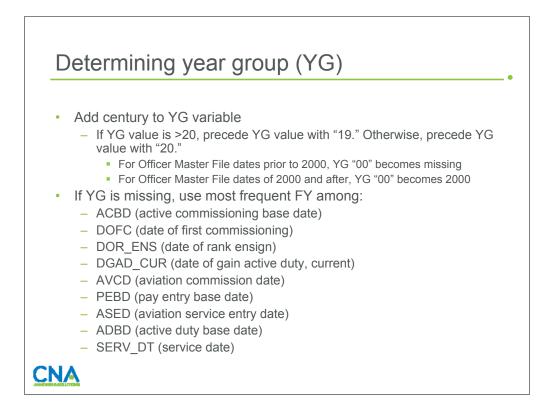
From FY 1972 to FY 1994, officers could only be categorized as regular and FTS (then called Training and Administration of Reserves (TARS)). To identify FTS officers in that time period, the SPC took a value of "T" and/or the fourth digit of the officer community designator took a value of "7."

From September 1995 to September 2004, a regular officer had an SPC value of "5" or the SPC value was blank. FTS officers had an SPC value of "T" and/or the fourth digit of the designator was 7. To identify active duty special work (ADSW) officers, a special category of reserve callups, the SPC could take any value other than 5 but could not be blank.

Since September 2004, regular officers are identified by a blank SPC value. FTS officers are identified by an SPC of "T" and/or the fourth digit of the designator is 7. ADSW officers are identified by a nonblank SPC, while ADSW-NS officers have a nonblank SPC, a GLSI = "N," and a GLI = "S." This latter group of officers are still considered ADSW, but it appears that they are mobilized for a contingency.

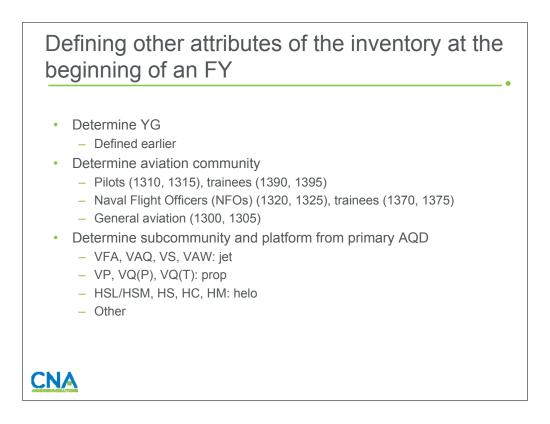


We then identify which of the regular active officers are aviators. For this, we limit the sample to officers holding designators 13X0 or 13X5.



To calculate aviation continuation rates, each aviator's YG must be known. A YG is assigned to each officer for purposes of defining promotion zones. In general, the YG and the FY of commissioning are the same; occasionally they are not, such as when officer candidates finish their undergraduate studies several months after the rest of their class. They would likely be part of the same YG, but their FY of commissioning may be different.

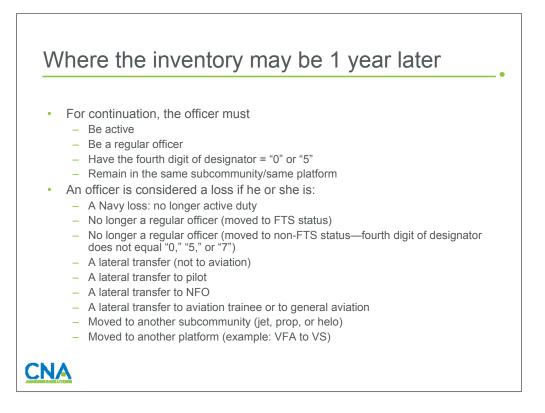
In most cases, the YG variable field for regular active officers is reported and appears to be consistent with other dates on the personnel record, such as ACBD or DOFC. In a minority of cases, the YG value is missing or appears to be inconsistent with other dates on the record. In this case, we examine the YG, ACBD, DOFR, and DOR_ENS variables for a common date. If all of these dates are missing or are inconsistent, we expand our search for a date comparable to YG by examining DGAD_CUR, AVCD, PEBD, ASED, ADBD, and SERV_DT. We choose the most commonly reported date.



After establishing the YG to which each aviator belongs, we compute the YCS that each aviator has achieved at the beginning of each FY.

Once the YG/YCS has been established, we break down the 13X0 and 13X5 designators by pilots (fully trained and trainees), NFOs (fully trained and trainees), and general aviation. In addition, we use the primary additional qualification designation (AQD) to determine each aviator's subcommunity (jet, prop, or helo) and to which platform he or she has been assigned within each subcommunity (see descriptions above).

At the beginning of an FY, there are aviators who have at least 7 YCS but no more than 8 YCS. Likewise, at the beginning of that same FY, there are aviators who have at least 8 YCS but no more than 9 YCS, and so on. We identify aviators with YCS 7 through YCS 12 at the beginning of each fiscal year.

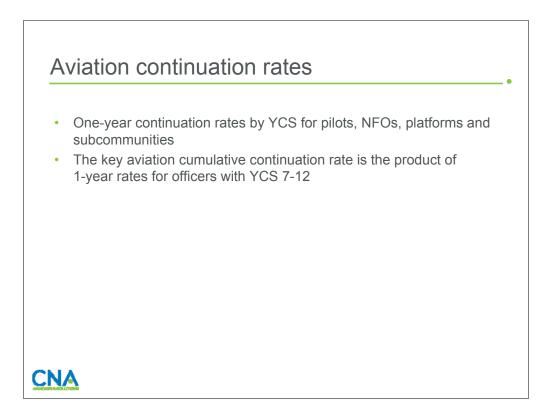


Each aviator has a unique social security number (SSN), which can be followed from one OMF extract to another. In earlier years, we followed officers from the beginning to the end of an FY. More recently, we can follow officers from quarter to quarter.

A 1-year continuation rate is the ending inventory divided by the beginning inventory. We compute a 1-year continuation rate for the subcommunity and platform. In particular, we focus on the 1-year calculations for aviators with YCS 7 through YCS 12 at the beginning of a fiscal year.

The beginning and ending inventory can be expanded or contracted depending on the level of continuation rate needed. For example, to calculate an overall YCS 7-12 aviation continuation rate we include all aviators in the beginning inventory regardless of designator, subcommunity, or platform. If the aviator is no longer in the Navy, is no longer a regular officer, or is no longer in the aviation community, the aviator is considered a loss from the aviation community. However, to calculate a platform level continuation rate, we determine which of the aviators are still in the Navy in the same subcommunity and assigned to the same platform. If an aviator is no longer in the Navy, is no longer an active or regular officer, is no longer in the same subcommunity, or is no longer assigned to the same platform, the aviator is considered a loss from his platform group.

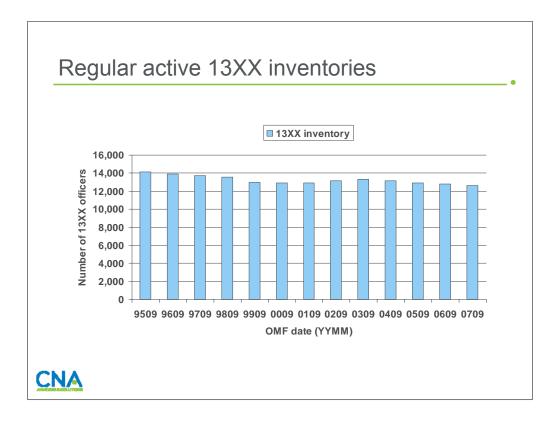
Navy senior leadership may be most interested in an overall aviation continuation rate, or perhaps separate pilot and NFO continuation rates. The aviation community, however, needs the subcommunity and platform level detail.



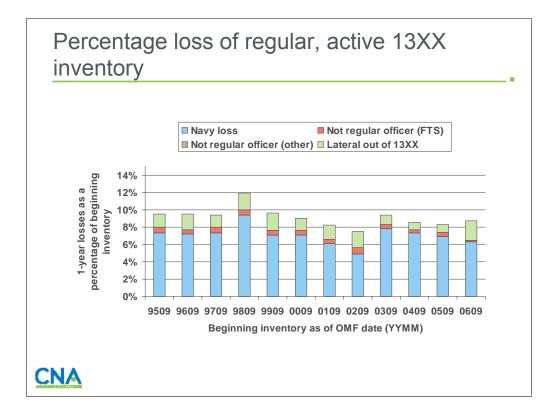
Once the 1-year rates are calculated for the aviators with YCS 7 through YCS 12, the 1-year rates are multiplied together to produce a YCS 7–12 cumulative continuation rate. For example, the YCS 7–12 CCR for FY 1996 uses beginning inventories as of September 1995 and ending inventories as of September 1996. It is the product of 1-year continuation rates for the following officers with the following years of commissioned service:

- YG 1989 officers with YCS 7 to 8
- YG 1988 officers with YCS 8 to 9
- YG 1987 officers with YCS 9 to 10
- YG 1986 officers with YCS 10 to 11,
- YG 1985 officers with YCS 11 to 12
- YG 1984 officers with YCS 12 to 13.

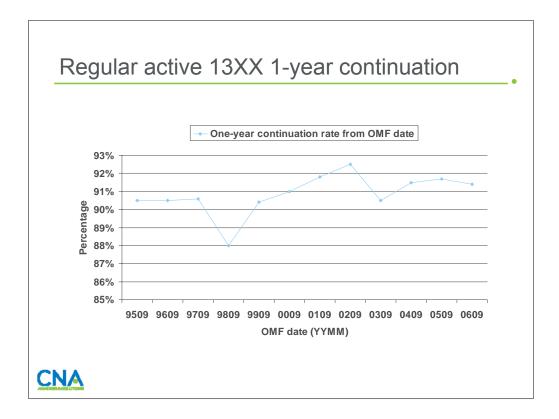
Note that the YCS 7–12 CCR for aviators uses the continuation behavior from different YGs. Although the calculation is feasible, we do not track the CCR for a single aviator YG in this report.



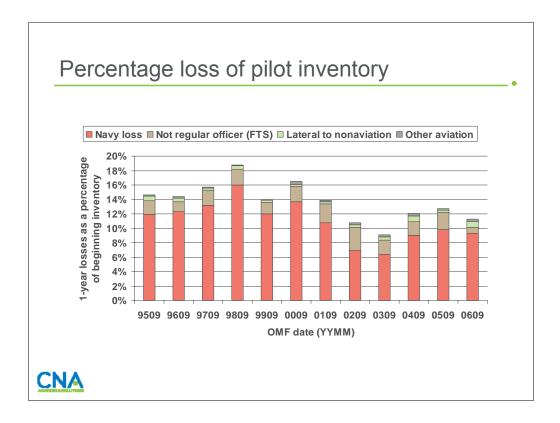
To put the aviation community CCRs in context, we provide a few background slides on the size of the community and the 1-year flow out of the community. This slide shows how the size of the aviation officer corps continued to decrease slowly after the drawdown in the early 1990s. The corps decreased from 14,125 officers as of the end of September 1995 to 12,628 officers as of the end of September 2007—a decrease of about 11 percent.



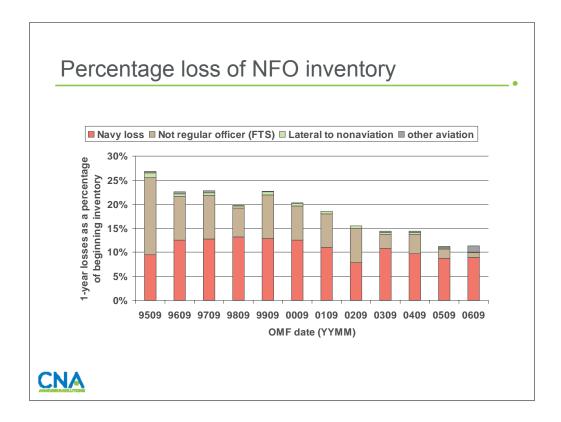
Here we show how annual losses from the aviation inventories are distributed by type of loss as a percentage of the beginning inventory. Each year, the largest percentage of officers who leave the aviation community also leave the Navy entirely. A smaller percentage of officers stay in the Navy but lateral out of aviation. Finally, a small percentage of aviators each year become FTS or make another change from being a regular officer. Because we have not yet limited losses to officers with YCS 7–12, these loss figures include types of losses not typically associated with mid-career aviators, such as retirements.



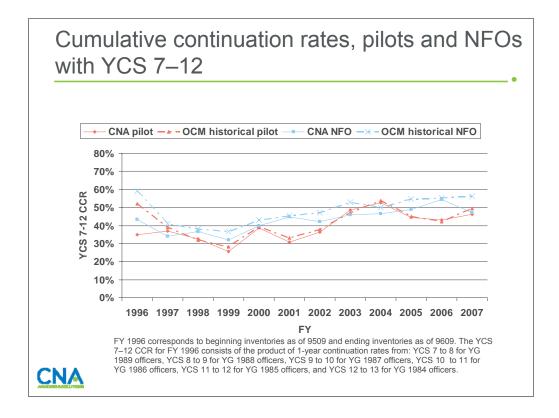
Using the starting inventories from slide 10 and the total losses on slide 11, we see that in most years the losses amount to less than 10 percent of the beginning inventory each year. Continuation was especially low in FY 1999 (OMF date September 1998 (9809) through 1 year later) but rose back to historical levels in subsequent years.



In this slide, we distribute the annual losses of pilots from the aviation community as a percentage of the starting inventory of pilots. Losses from the pilot community are dominated by officers who leave the Navy entirely.



The reasons for NFO regular officer community losses are more varied. A substantially higher percentage of NFOs change to nonregular status (typically FTS) than occurs in the pilot community.

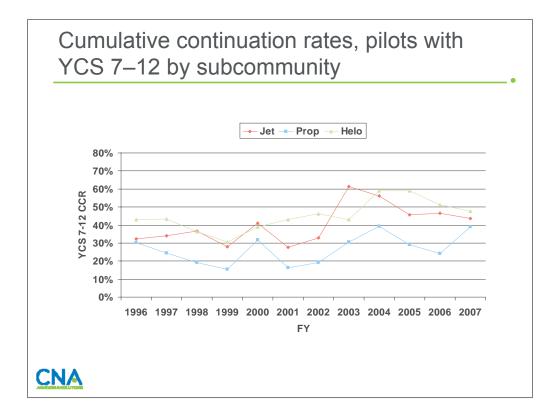


The cumulative continuation rates for pilots, NFOs, and various subcommunities over time are of particular importance to the aviation community. As we have already pointed out, the key stay/leave decision points for aviators typically occur in the YCS 7–12 range.

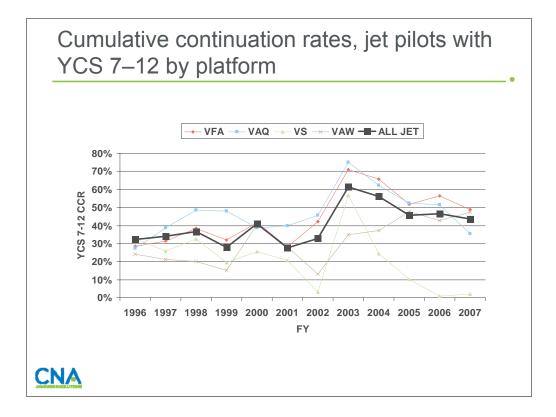
The aviation OCMs were relying on data provided by sources other than CNA in the past. In recent years, it has become clear that the data on aviation beginning and ending inventories provided to the OCM are not complete. In particular, new AQDs representing new platforms were introduced (e.g., some of the F/A-18 platforms). The data that the OCM received did not appear to include all of the aviators holding these new AQDs, especially for the NFOs.

This slide shows the CNA results for the YCS 7–12 CCRs. The pilot CCR time series is nearly identical to the historical CCR time series used by the OCM except for FY 1996. The CNA results for the NFO CCR time series, however, are nearly always lower than the historical OCM time series, and the difference is quite large in certain years, especially for FY 1996 and FY 2007.

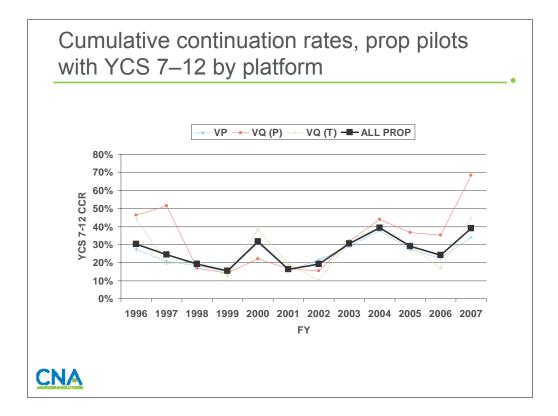
To fully understand the differences in the historical OCM and CNA CCR series, we would need to compare beginning and ending inventory aviator records by SSN. Unfortunately, the aviation OCM does not have that information, and we were not able to obtain aviator records by SSN from any source other than our own OMF extracts.



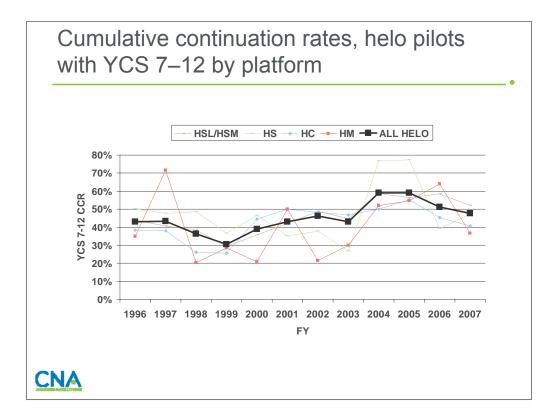
This slide presents the CNA calculations of YCS 7–12 CCRs for the jet, prop, and helo subcommunities. In general, the CCRs for all three subcommunities have increased from the beginning to the end of the time series.



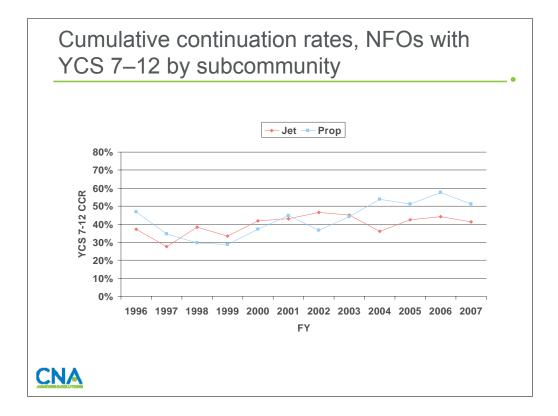
This slide shows the time series of continuation for jet pilots by platform through the critical stay/leave decision career point. The black line shows the YCS 7–12 CCR for all jet pilots over time, while the other data presented represent the YCS 7–12 CCR for jet pilots by specific platform. Note that the VS platform was taken out of service after 2003.



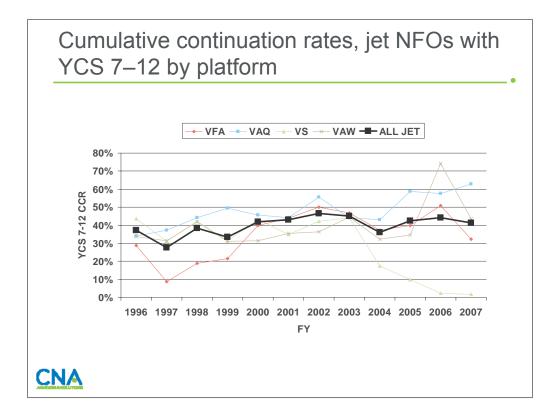
Here we show the YCS 7–12 CCRs by platform for prop pilots over time.



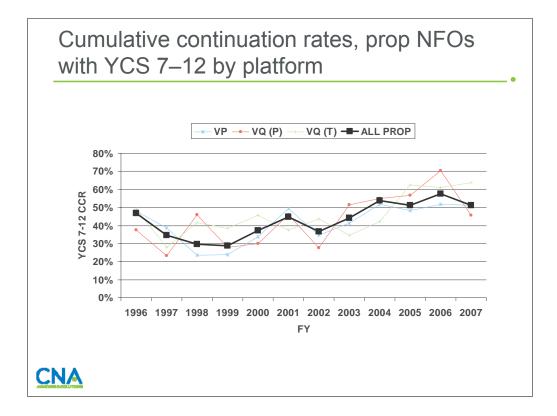
Finally, this slide shows the YCS 7–12 CCRs by platform for the last pilot subcommunity—helicopters.



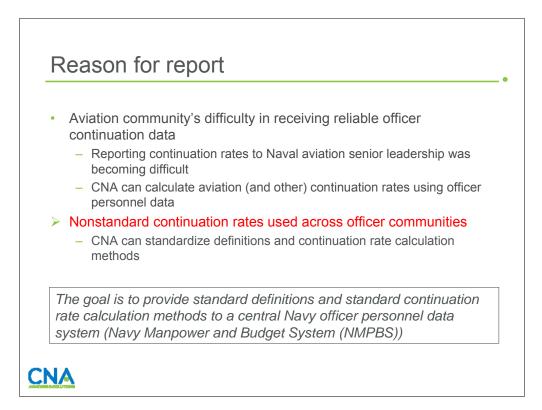
This slide shows the YCS 7–12 CCRs for NFOs displayed by the jet and prop subcommunities. Although the jet subcommunity experienced increasing CCRs for a period of time in the middle of the time series, the CCR at the beginning and end of the period was about the same (about 40 percent). The CCR for the prop NFOs decreased initially, but since FY 1998, there has been an upward trend in continuation.



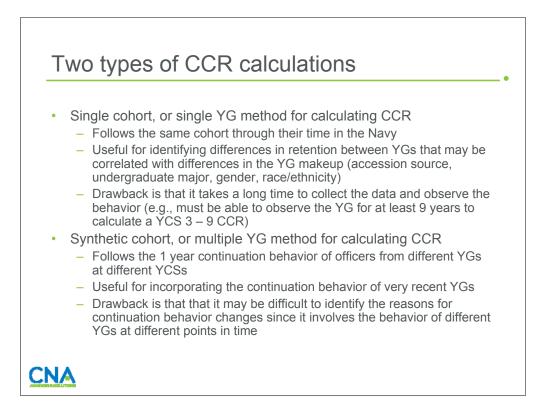
Here we see the jet NFO CCRs displayed by platform. Again, note that the VS platform was taken out of service after 2003.



Finally, we present the YCS 7–12 CCRs for prop NFOs by platform. In general, over the period displayed, the continuation trend has been upward.



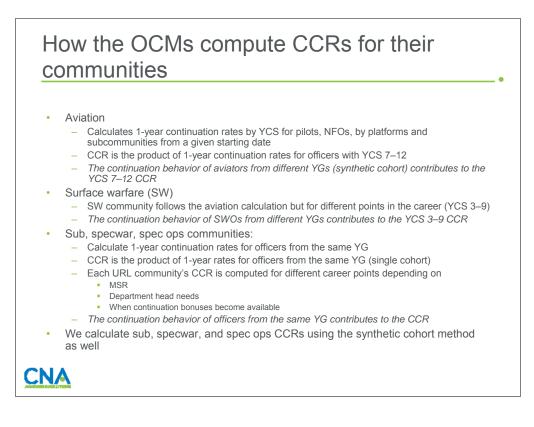
In this section, we apply our calculations of CCRs to other URL communities. Because of differences in MSR and the timing of career milestones, none of the other communities focuses on exactly the same YCS points as the aviation community, but we have provided a CCR for each that is calculated in exactly the same way as the aviation community for the relevant stay/leave decision points.



There are two methods of CCR calculations that are typically produced for continuation reports. The first is the single cohort, or single YG method. Here the continuation pattern over some YCS period is computed for officers from the same YG. The advantage of this method is that it is especially useful for analyzing differences in the CCR across YGs. For example, when this method is used, differences in continuation across YGs are easily identified, and differences in observable YG characteristics can be easily examined for correlation with the differences in continuation. These characteristics might include the percentage of the YG coming from each accession source, the percentage of the YG who took a particular course of study in college, and the percentage of the YG with certain demographic characteristics. The drawback to the single cohort method is that it takes a long time to collect the data on continuation, and it only reflects behavior of older YGs.

The second is a synthetic cohort, or multiple YG method. Here the CCR is calculated using the continuation behavior of multiple YGs, each at a different YCS. The advantage of this method is that the continuation behavior of much more recent YGs is included in the calculation. The drawback to this method is that when changes in the CCR occurs over time, it is difficult to understand why the change occurred. In other words, it is difficult to disentangle the effect of different YGs at different YCS points who are potentially responding to different personnel policies on continuation behavior.

To summarize, the first method is especially useful for analysis of past changes in continuation and the second method is especially useful as a leading indicator of changes in continuation.

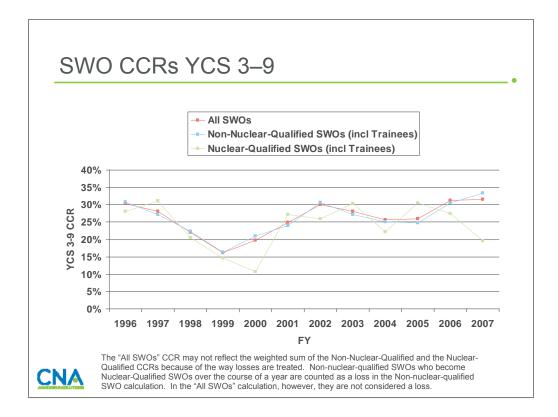


The aviation and surface warfare communities use similar techniques to produce continuation rates; each uses the synthetic cohort method to compute their community's CCR. The YCS period over which the CCR calculation is made is different for aviation and for the surface community; a key stay/leave decision point for aviators is YCS 7–12, and a key stay/leave decision point for SW officers (SWOs) is YCS 3–9.

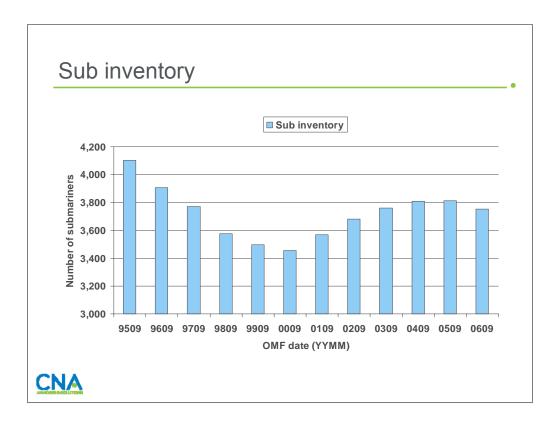
The submarine, special warfare, and special operations communities typically produce a single cohort, or single YG CCR. In this annotated briefing, we calculate these communities' CCRs using both the single cohort and synthetic cohort methods.



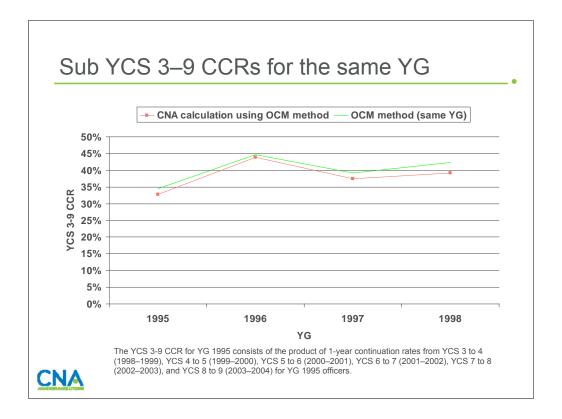
For background, we show the size of the SW officer inventory at the beginning of each FY for 1996 through 2007.



The CCRs for all SWOs has more recently recovered to its FY1996 level after a precipitous decline early in the period. The SWO continuation pay (SWOCP) likely helped increase the CCR after FY 1999, although other factors, such as the events of 9/11/01, may have changed SWO continuation behavior as well. More recently, the nuclear-qualified SWOs have experienced a decline in their CCR.

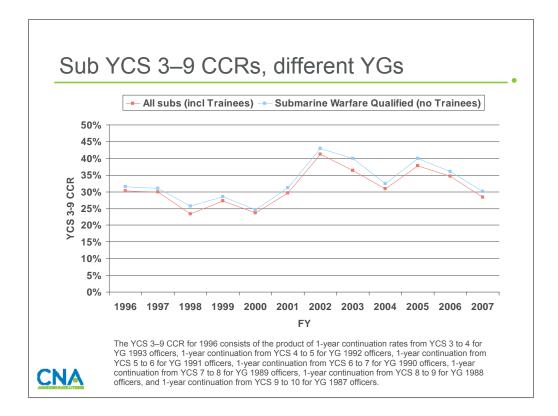


This slide shows the beginning-of-year inventories for FY 1996 through FY 2007 for the submarine community.



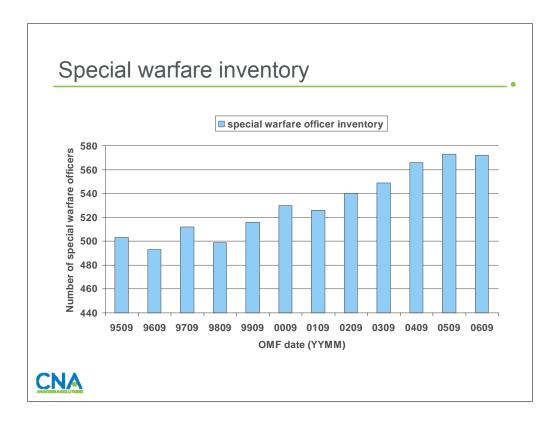
The submarine community computes CCRs for officers with YCS 3–9 but uses the continuation behavior of only one YG at a time. This is a single cohort (or single YG) method of calculating continuation.

We computed the CCR in this manner and compared our data with those of the submarine OCM. The CNA-computed CCRs are slightly lower than those of the OCM, although the pattern is the same over time. Our beginning and ending inventories do not match exactly, which may be due to small differences in the underlying OMF extracts. The submarine OCM did not have beginning and ending inventories by SSN, so we were unable to determine more precisely why our results differed.

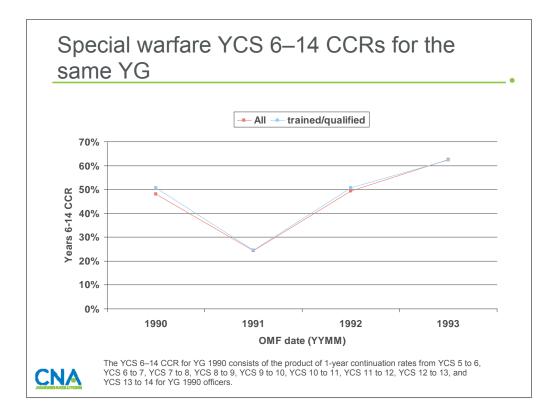


Here we show the YCS 3–9 CCRs for submariners for FY 1995 through FY 2006 calculated in the same manner as the aviation CCRs. This is the synthetic cohort method of CCR calculation because the continuation behaviors of multiple cohorts (multiple YGs) contribute to this CCR. Note that, because this CCR considers officers with no less than YCS 3, the CCRs for all submariners vice fully qualified submariners are not very different.

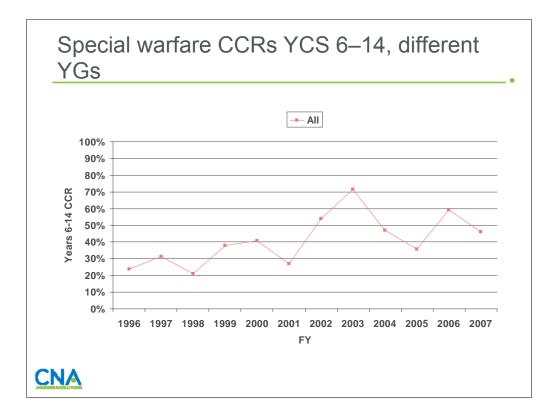
If Navy senior leadership wanted an overall CCR for the URL, or one that used standard definitions and calculation methods across communities, we would use this submarine officer CCR. To include all of the key career points in the URL in one CCR, we would to extend the YCS range from YCS 3 to YCS 12, or even to YCS 14. However, in addition to a single CCR for the URL that covered such a wide YCS range, it would be useful to present separate slides on the CCR for each URL community that spanned the relevant YCS range for that community.



The special warfare community is a substantially smaller community than other communities in the URL, but it has increased more than most in the last decade.



This is the CCR calculation that is used by the special warfare community. Each CCR summarizes the continuation behavior of a single YG. Because the key stay/leave decision points for the special warfare officer community occur in the range of YCS 6–14, we can only review a few YGs from the last few decades because we must be able to observe the YG continuation behavior through YCS 14. In addition, note that the sample sizes for special warfare officer YGs are quite small. This can cause the CCRs to vary a lot from year to year.

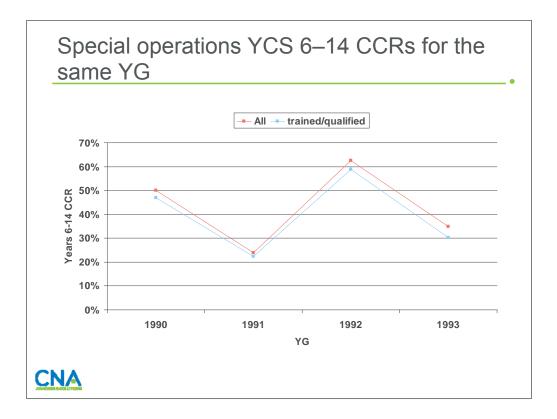


This slide shows the YCS 6–14 CCRs for special warfare officers for FY 1995 through FY 2006 calculated in the same manner as the aviation CCRs. As described earlier in the brief, the continuation behavior of multiple YGs contributes to this CCR.

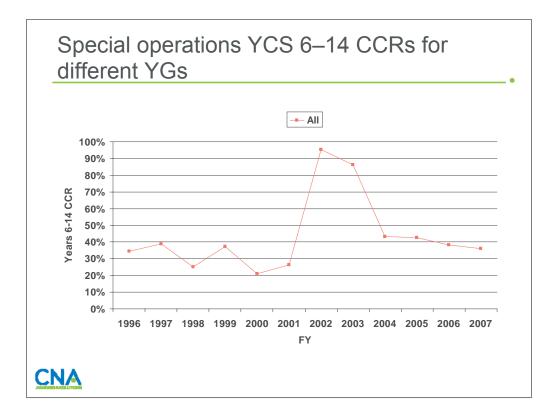
If Navy senior leadership wanted an overall CCR for the URL, or one that was used standard definitions and calculation methods across communities, we would use this CCR. However, as we mentioned above, we would to extend the YCS range from YCS 3 to YCS 12, or even to YCS 14. In addition, we would also present separate slides on the CCR for each URL community that spanned the relevant YCS range for that community.



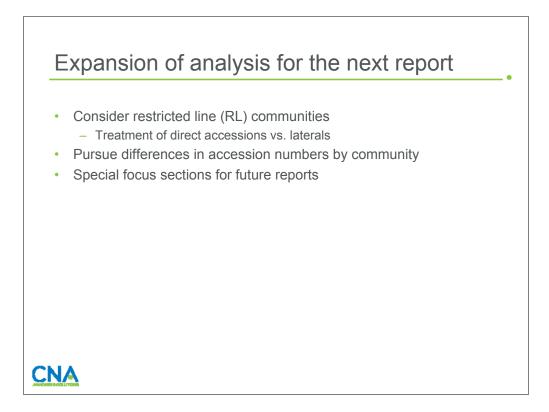
The special operations community is even smaller than the special warfare community. Although the inventory decreased in the second half of the last decade, it has increased in size rapidly since 9/11/01.



This is the CCR calculation that is used by the special operations officer community; it is the same that is used by the special warfare officer community. Each CCR summarizes the continuation behavior of a single YG. Again, we caution that small sample sizes can create large changes in the CCR.



Here we use the continuation behavior of several special operations officer YGs to calculate the YCS 6–14 CCRs annually for each of the last 10 FYs. Except for FY 2002 and 2003, when stop loss policies allowed few officers to leave the community, the YCS 6–14 CCRs have mostly been between 30 and 40 percent.



The next phase of the report development is to calculate the CCRs for the RL communities. In addition, we found in the production of this report that there are some discrepancies in the officer accession numbers from the OMF and other data sources for most communities. Although this does not tend to affect the CCRs for YCS 3 and after, we need to determine which are the best sources of data for officer accessions.

Finally, as the officer retention report development progresses, we will sometimes include special focus sections as we do in our enlisted reports from time to time. These will provide "quick looks" of emerging topics that can be initially examined using officer personnel data.

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