Assessing the Effects of Individual Augmentation on Navy Retention

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What is Individual Augmentation?

• Individual sailors and officers sent to augment other (often non-Navy) units

• Differs from usual deployments
  – Individual vice unit deployment
  – Often with little notice

• Then-CNO Admiral Mullen:

  “I see this as a long-term commitment by the Navy. I’m anxious to pitch in as much as we possibly can, for the duration of this war. Not only can we do our share, but [we can] take as much stress off those who are deploying back-to-back...”

Number Starting IA Deployment by Year
(Active Component Only)
Deployments Predominantly to Iraq, Afghanistan & the Middle East

Deployment Locations
(Active Component Only)

- Oth Mid East: 3863
- OCONUS: 2550
- Iraq: 8166
- CONUS: 1764
- Afghanistan: 3071
Research Question:
Does IA Affect Navy Retention?

• With almost 20,000 AC sailors and Navy officers IA deployed in the past 6 years, Navy leadership interested in whether it’s hurting retention

• RADM Masso, Deputy Chief of Naval Personnel:

  “Since 2002, 82 percent of our IA’s have come from the Reserve component, yet I see letters of resignation from officers listing a fear of IA duty as being the reason they are getting out. IA duty affects two percent of the surface warfare officer (SWO) community, yet if you speak to a junior officer on the waterfront, you would think that half of their wardroom are IA’s.”

Almost 20,000 AC Navy Personnel IA Deployed Since March 2002

Officer vs. Enlisted

Warrant Officer Ranks

Officer Ranks

Enlisted Pay Grades
Previous Work on Deployment Effects

- From prior studies of effects of Perstempo:
  - Some deployment positively related to retention, too much can be negative
  - Hostile deployments generally positively related to retention

- See:
  - Hosek and Totten (1998, 2002) for enlisted personnel studies
  - Fricker (2001) for study of military officers
• Approach: Model individuals at their reenlistment decision point or end of initial service obligation
  – Compare between those that had an IA deployment prior to their decision versus those that did not

• Relevant cohort: those “at risk” of (1) an IA and (2) leaving the Navy
  – Also subset to only those with deployment experience

• “IAer:” An individual who made a stay-in/get-out decision after an IA deployment
  – If stay-in/get-out decision observed prior to IA, then individual was a “non-IAer” at that time
The Data

• **IA data (OPNAV Pers-4)**
  - Information on Navy personnel deployed as IAs
    • 21,340 records (Mar 02 – Mar 08 + future IAs)
  - Relevant fields
    • Identifiers: Name, rank, SSN
    • IA scheduling: Date deployed, est. BOG, est. return date
    • Other IA information: Location, billet title, UIC

• **USN data (DMDC)**
  - Information on all Navy personnel for past decade
    • 893,461 records (Oct 97 – Sept 07)
  - Relevant fields
    • Identifiers: Name, rank, SSN
    • Demographics: rate/designator, gender, race, family status
    • Deployment experience
Modeling the Decision Point: Stay In or Get Out of the Navy

• Model a binary decision point
  – Function of fixed (e.g., gender) and variable (e.g., family status) characteristics

All must have at least one deployment pre-decision

IAers must have IA pre-decision

Variable data values

Stay-go decision point

1 year

• Examples:
  – IAer:
  – Non-IAer:
  – Non-IAer:
Analytical Issues

• Analysis based on observational information from administrative datasets
• Can’t identify volunteers versus non-volunteers
• Must (imperfectly) infer some critical data on decision points
  – Expiration of enlistment contract or end of initial service obligation period
  – Deployment experience
Junior Officer Results: Comparing Raw Rates

- Odds IAer retained = 1.94
- Odds non-IAer retained = 0.76
- Odds ratio = 2.56
- “Statistically significant” result ($p<0.0001$)

<table>
<thead>
<tr>
<th>IA Deployment?</th>
<th>No</th>
<th>Yes</th>
<th>Left Navy</th>
<th>Retained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9,659</td>
<td>310</td>
<td>9,969</td>
<td>7,317</td>
</tr>
<tr>
<td>Left Navy</td>
<td>7,317</td>
<td>601</td>
<td>7,918</td>
<td>601</td>
</tr>
<tr>
<td>Retained</td>
<td>16,976</td>
<td>911</td>
<td>17,887</td>
<td>12,918</td>
</tr>
</tbody>
</table>
**Junior Officer Logistic Regression Model Results**

<table>
<thead>
<tr>
<th></th>
<th>Log odds (β)</th>
<th>Std. error</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>-0.235</td>
<td>0.146</td>
<td>-1.61</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.356</td>
<td>0.042</td>
<td>-8.47</td>
</tr>
<tr>
<td>White</td>
<td>0.286</td>
<td>0.119</td>
<td>2.39</td>
</tr>
<tr>
<td>Black</td>
<td>0.585</td>
<td>0.132</td>
<td>4.41</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.392</td>
<td>0.132</td>
<td>2.96</td>
</tr>
<tr>
<td>Indian</td>
<td>0.441</td>
<td>0.197</td>
<td>2.23</td>
</tr>
<tr>
<td>Asian</td>
<td>0.326</td>
<td>0.134</td>
<td>2.43</td>
</tr>
<tr>
<td>Other</td>
<td>0.549</td>
<td>0.208</td>
<td>2.64</td>
</tr>
<tr>
<td>Married</td>
<td>-0.176</td>
<td>0.077</td>
<td>-2.28</td>
</tr>
<tr>
<td>Single w/dep</td>
<td>-1.243</td>
<td>0.096</td>
<td>-12.98</td>
</tr>
<tr>
<td>Single w/o dep</td>
<td>-1.154</td>
<td>0.080</td>
<td>-14.39</td>
</tr>
<tr>
<td>DesigOther</td>
<td>0.235</td>
<td>0.046</td>
<td>5.14</td>
</tr>
<tr>
<td>DesigSub</td>
<td>0.171</td>
<td>0.072</td>
<td>2.36</td>
</tr>
<tr>
<td>DesigSupply</td>
<td>0.573</td>
<td>0.077</td>
<td>7.44</td>
</tr>
<tr>
<td>DesigSurface</td>
<td>0.231</td>
<td>0.052</td>
<td>4.47</td>
</tr>
<tr>
<td>IA</td>
<td>0.944</td>
<td>0.074</td>
<td>12.74</td>
</tr>
</tbody>
</table>

- Model for junior officers:
  - Coefficient for IA = 0.944, so adj. O.R. = 2.57
  - Virtually equivalent to raw O.R. = 2.56
Enlisted Personnel Results: Comparing Raw Rates

- Odds IAer retained = 2.01
- Odds non-IAer retained = 1.55
- Odds ratio = 1.30
- “Statistically significant” result \((p<0.0001)\)
Enlisted Personnel Logistic Regression Model Results

• Model controlled for pay grade, gender, race/ethnicity, family status, AFQT, education, and year of decision
• Model for all IAers:
  – Coefficient for IA_Deployer_Ind = 0.427, so adjusted O.R. = 1.53
• Model just Iraq and Afghanistan IAers:
  – Coefficient for IA_Deployer_Ind = 0.660, so adjusted O.R. = 1.93
• Remember raw O.R. = 1.30
Comparing Retention Rates by Pay Grade

PCT Retained by Pay Grade and IA Status

- Non-IAer: E1 35.28%, E2 52.23%, E3 44.44%, E4 49.33%, E5 57.14%, E6 55.5%
- IAer: E1 67.8%, E2 66.72%, E3 66.64%, E4 71.73%, E5 63.66%, E6 73.51%, E7 56.85%, E8 72.73%, E9 54.71%

- Non-IAer: E1 100%, E2 n=1, E3 n=9, E4 n=13
- IAer: E1 67.8%, E2 n=13

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Weighted Simple Linear Regression of $\Delta$ Pct Retained on Pay Grade

<table>
<thead>
<tr>
<th>Pay Grade</th>
<th>$\Delta$ Percent Retained</th>
<th>Number IAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>64.72</td>
<td>1</td>
</tr>
<tr>
<td>E2</td>
<td>-7.79</td>
<td>9</td>
</tr>
<tr>
<td>E3</td>
<td>7.81</td>
<td>56</td>
</tr>
<tr>
<td>E4</td>
<td>-0.88</td>
<td>373</td>
</tr>
<tr>
<td>E5</td>
<td>-1.08</td>
<td>604</td>
</tr>
<tr>
<td>E6</td>
<td>5.09</td>
<td>573</td>
</tr>
<tr>
<td>E7</td>
<td>9.85</td>
<td>268</td>
</tr>
<tr>
<td>E8</td>
<td>15.88</td>
<td>66</td>
</tr>
<tr>
<td>E9</td>
<td>-0.86</td>
<td>13</td>
</tr>
</tbody>
</table>

$\Delta$ Pct Retained = -12.8 + 2.9 * Pay Grade
Conclusions

• Thus far, IA deployment generally associated with higher retention rates
  – Consistent effects for both junior officers and enlisted personnel
    • Perhaps a paygrade effect for enlisted?
  – Self-selection and other effects present
    • Paygrade correlated with volunteer status?

• Thus far, hypothesis seemingly untrue: IA deployment causes significant decrease in propensity to stay in the Navy
Directions for Future Research (1)

• Repeat this effort annually to assess aggregate effects
  – Outcomes for most of those on or recently returned from IA not yet observed
    • E.g., only 1,963 IAd sailors out of 13,928 have made a stay-in/get-out decision as of 9/07

• Compare non-volunteers to rest of fleet to assess retention impacts on them
  – I.e., expect higher retention rate for volunteers
    • Masking a lower rate for non-volunteers, particularly with junior enlisted?
• Did not evaluate AC (1) mid-grade officers, (2) warrant officers, and (3) prior enlisted
  – Would not expect to find negative effects
  – Regardless:
    • Need more time to pass to evaluate (1)
    • And (2) and (3) are smaller populations

• Should assess IA effects for reservists
  – No reason to believe results for AC personnel apply/translate to reservists
• Once enough data available, evaluate whether IA sailors have higher rates of involuntary separation

• Collect pre- and post-deployment attitudinal data via a survey
  – How does IA experience affect propensity to reenlist/stay in the Navy?
  – NPRST working this?

• Link survey attitudinal data to outcome data: do attitudes translate into actions?