Work Force of the Future & Human Capital Analytics
An Air Force Perspective

Dr Jerry Diaz
Chief, Force Management Analysis Division

Every number is an Airman...
<table>
<thead>
<tr>
<th>Percentage</th>
<th>Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>80%</td>
<td>Of US CEOs say they need critical talent-related insights to make business decisions</td>
</tr>
<tr>
<td>73%</td>
<td>Of CEOs believe the availability of key skills is a threat</td>
</tr>
<tr>
<td>60%</td>
<td>Of the millennials leave a job in under three years</td>
</tr>
<tr>
<td>86%</td>
<td>Of organizations are still focused on reporting</td>
</tr>
<tr>
<td>30%</td>
<td>Of HR Executives list difficulties assessing which data is truly useful</td>
</tr>
<tr>
<td>9%</td>
<td>Say that data analytics is helping to identify future talent gaps</td>
</tr>
<tr>
<td>63%</td>
<td>Of HR Leaders think they draw insight from data, but…</td>
</tr>
<tr>
<td>20%</td>
<td>Of their non-HR peers share this confidence</td>
</tr>
</tbody>
</table>
Introduction

- The Services has long worried about the Human Capital Lifecycle
- Managing our work force or *Force Management*, the AF has long practiced Human Capital Analytics (HCA)
- We use models to help determining the numbers to attract, recruit, on-board, train, and to promote
- Competing with the private sector is always a challenge; more so as the economy improves
- But, it all comes down to sustaining the force through accessing (on-boarding) and managing retention
What’s the Problem?

- The active duty Air Force has ~317,000 service men and women
  - ~254,000 Enlisted and ~63,000 Officers
- There are 424 different “occupations” or job series in the AF
- To sustain the Enlisted and Officer force we annually access about
  - 30,000 Enlisted and 4,200 Officers
- Sustaining the force only works if we can model retention
Officer Retention Profile

% of Officers that stay another year in the AF

If we brought in 6,000 new officers every year for the next 30 years…
- What’s the curve look like?
- What’s the total end strength?

End Strength = 90,000

Area under the curve is total number of officers
**Officer Retention Profile**

* Viewed through the lens of End Strength (e/s)

- Varying the number of new officers can lead to different end strengths
- Recasting formula gives the number of new officers required for different end strengths

```
4,050 new officers needed to support e/s of 61,000
Area beneath green curve is 61,000

3,200 new officers needed to support e/s of 48,000
Area beneath blue curve is 48,000
```

- End Strength of 61,000
- End Strength of 48,000
But Different Career Fields Retain Differently…

One is Operations Research Analysts
One is Pilots
And one is Chaplains…

90 Different officer specialties all with different retention behavior
Air Force Develops its Budget Submission

- Officer Sustainment Optimization Model
- Historical STP by specialty
- Projects unit authorizations by specialty & rank
- FYDP End Strength
- Weapon Systems/P EUs
- Skills provisioning Model / MAJCOM inputs

Number of people needed by occupation/grade

- Number of:
  - New Officers by occupation
  - Retraining
  - Bonus Pgm
  - Continuation

Number of people retained by occupation

- Officer Sustainment Optimization Model
- FYDP end Strength
- Number of people needed by occupation/grade

How people retain by occupation

- 90 Officer AFSCs
- POM/PB Skills Projection Model / MAJCOM Inputs
- FYDP End Strength
- Weapon Systems/P EUs
- Projects unit authorizations by specialty & rank
- Historical STP by specialty

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What about Inventory?

Total - Officer Air Force

Career Field Health as of 29 Feb 2016

**NOTE:** Cumulative Continuation Rates (CCR) from X-Y = probability an airman that begins year X will stay through year Y. Year groups with less than 5 members use sustainment curve not actual.

**Accession Targets**

<table>
<thead>
<tr>
<th>FY Target</th>
<th>Actual</th>
<th>CrossFlow</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY14/15/16</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>FY16/17</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Grade Structure - FY16**

<table>
<thead>
<tr>
<th>Grade Structure - FY16</th>
<th>Grade</th>
<th>Requirements</th>
<th>Sustainment</th>
<th>Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-1/0-2</td>
<td>18%</td>
<td>5%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>0-3</td>
<td>31%</td>
<td>18%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>0-4</td>
<td>31%</td>
<td>5%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>0-5</td>
<td>5%</td>
<td>5%</td>
<td>31%</td>
</tr>
</tbody>
</table>

**Retention (CYOS) - 1 year & 4 month trend (includes force-shaping losses)**

By year retention goals

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Setting Enlisted AFSC Sustainment Levels and Accessions

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Air Force Develops its Budget Submission

FYDP End Strength

Weapons Systems/PEOs

Skills Projection Model / MAJCOM Inputs

Funded unit authorizations by specialty & rank

Historical STP by AFSC, by Grade

Draft IST Production Targets

Enlisted Sustainment Model

Enlisted Retraining

Air Force Develops its Budget Submission

Number of people needed by occupation/grade

Number of:

- New Enlisted by occupation
- Retraining
- Bonus Pgm
- Continuation

How people retain by occupation

AETC Capacity

Enlisted Retraining

Draft IST Production Targets

I n t e g r i t y  -  S e r v i c e  -  E x c e l l e n c e
What about Inventory?

Total - Enlisted Air Force

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Managing the People

- We manage Officers by Rank which closely correlates to Year Group
  - Retraining
  - Promotions
  - Development

- We manage Enlisted by Grade which does not correlate to years of service

Line Air Force Officers

Air Force Enlisted

TSgts span 4 to 21 years of service
- We allow some Officer retraining
- Driven by overages in specialty by year group
- Given Enlisted rank spread, determining retraining is more complex
Enlisted Promotions
Why Human Capital Analytics?

**Bottom Line…**

Your Competition*

- 4,500 Companies have employees focused on HCA
- 43% of Fortune 100 have People Analytics Teams
- 55% of all HCA functions have started w/in last 5 years
- 70% of all HCA functions only have 1-2 team members

Yet**

- 1 in 3 Business Leaders don’t trust the information they use to make decisions
- 27% of Respondents were unsure of how much of their data was inaccurate
- $3.1 Trillion is estimated amount of money that poor data quality costs the US Economy per year

Source: *LinkedIn. Estimates based on member reported job titles and skills

**McKinsey, Global Institute, Twitter, Cisco, Gartner, EMC, SAS, IBM, MEPTEC, QAS
Rise of Human Capital Analytics

What happened?
- Data & Basic Reporting
  - Standard dashboards & reports
  - Historical reporting
  - Make your own conclusions

Why is it happening?
- Cross-process and Functional Analysis
  - Monitor in-house KPIs
  - Intelligence in context, insights
  - Manual drill downs to take action

What can be improved?
- Predictive & Exploratory Analysis
  - Draw upon internal & external data
  - Big Data; real time triggered actions
  - Enterprise Performance Management
  - Optimize business & service models

Past
- Transactional Analyses

Present
- Increasing Business Value

Future
- Strategic Analyses

Integrity - Service - Excellence

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Why Human Capital Analytics?
Questions For You…

- How long does your average employee retain?
- How many are thinking about retiring?
- How many are thinking about leaving?
- Where are these employees w/ respect to talent and pay scale?
- Can you calculate ROI of your development programs?
- Are you retaining your developed talent?
- Do you have a Data driven culture?
- Do you have the right Human Capital Analytics team?
Civilian Application
Employee Makeup

- AF Audit Agency
  - 3,800 Employees
  - Spanning 44 years of service
Grade distribution 10 years prior to retirement eligible, seems proportional to the years post eligibility
• The AF Audit Agency consists of the GS-0511 series, which is... wait for it... Auditing
• 18 years is the average time an employee spends at the AF Audit Agency.
  • What is the average career length at your company?
  • Why do they leave?
  • Who’s thinking about leaving?
  • What HR policies influence this?
AF Retention/Exit Survey
- Assess factors influencing decision to remain/leave the AF
- Link those factors to policies and programs

Two-fold approach
- Retention Survey – Why are you staying or thinking about leaving?
- Military Exit Survey – Why have you decided to leave?
Linking AF Survey Results to Policy and Programs

AF Retention and Exit Surveys
- ~100 question survey
- Written to align questions with AF HC programs

"I think you should be more explicit here in Step Two."
### AF Retention Survey Example

**Top 10 Influences Married Airmen Stay**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Male/Female</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male</strong></td>
<td>• Choice of job assignment</td>
<td>• Opportunities to command/lead</td>
<td>• Tricare benefits upon retirement</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Ability to contribute to the mission</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Retirement Program</td>
<td></td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td>• Overall Compensation and Benefits Pkg</td>
<td></td>
</tr>
<tr>
<td><strong>Enlisted</strong></td>
<td></td>
<td>• Overall Job Satisfaction</td>
<td></td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td>• Patriotism</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Job Security</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• A GI Bill which transfers benefits to dependents</td>
<td></td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td>• Your child(ren)’s needs</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• BAH</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Joint spouse considerations</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Opportunities to further your academic education</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Choice of location</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Medical specialty care for dependents</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td>• Your child(ren)’s needs</td>
<td></td>
</tr>
<tr>
<td><strong>Common influences to all married:</strong></td>
<td>All Airmen</td>
<td>All Male or Female Airmen</td>
<td>All Officers or Enlisted</td>
</tr>
</tbody>
</table>

**Integrity - Service - Excellence**

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Using Surveys for ROI An Illustrative Example

- If we asked our enlisted to rank the following reasons for staying
  - Job satisfaction, GI Bill, Reenlistment Bonus program

- The following *may be* the %s of #1 rankings
  - Job Satisfaction: 55%
  - GI Bill: 30%
  - Reenlistment Bonus Program: 15%

- If 65,000 of 85,000 airmen reenlisted, then we can claim that:
  - Job Satisfaction: 35,750
  - GI Bill: 19,500
  - Reenlistment Bonus Program: 9,750

- ROI calculated from the cost of the Bonus program against the
cost of recruiting, accessing, training, and aging 9,750 airmen.
Big Data

**Gartner**

- **Big data** is **high-volume, high-velocity and high-variety** information assets that demand cost-effective, innovative forms of information processing for enhanced insight and decision making.

**Forbes**

- **Big data** is a collection of data from traditional and digital sources inside and outside your company that represent **a source for ongoing discovery and analysis.**

**Big Data Roadblocks**

- Lack of support and sponsorship from top executives: 27%
- Ineffective processes for governing data: 27%
- Dependency on legacy systems for data processing: 31%
- Ineffective coordination of different data teams: 35%
- Lack of clear business questions, business case: 39%
- Data scattered in silos across various units: 46%

*Integrity - Service - Excellence*
The term “Big Data” is a noun, not a verb

“I don’t know what the hell this logistics is that General Marshall is always talking about, but I want some of it.” Admiral E.J. King, USN

Big Data methodology is different from the Scientific Method:

- More so than the Scientific Method, Big Data demands the researcher be wary of unconscious bias…
  - 1.1M hits in 0.73 Secs

Consider a Data Stewart
Building your Analytic Team

Team Skills

- Operations Researcher
- HR professional
- Data scientist
- Graphics guru
- Mathematician
- Team Lead...speaks “cleartext”

Road to Success

- Clear Purpose & Vision of Future
- Take an Enterprise-Wide Perspective to Data
- Cultivate a Data Driven Culture
- Focus on Projects that Solve Key Business Challenges
Problem Solving Tips

- Rephrase the Problem... When a Toyota executive
  - Asked employees to brainstorm “ways to increase their productivity,” all he got back were blank stares
  - Rephrased his request as “ways to make their jobs easier,” he could barely keep up with the amount of suggestions

- Expose and Challenge Assumptions

- Change the problem...
  - Generalize the problem...“What’s this a part of?”, “What’s this an example of?” or “What’s the intention behind this?”
  - Break up the problem into smaller pieces

- Make it positive...Focus on how it can be done, not why it can’t

- Serendipity is powerful

- Develop the method and then look for the data... OR
  Look at the data and determine the method. https://litemind.com/problem-definition
Random Thoughts…

- Predictive analytics
  - “If You Meet the Buddha On the Road Kill Him!” by Sheldon Kopp 1972

- Understand the Problem
  - Abraham Lincoln said, “If I had six hours to chop down a tree, I’d spend first four hours sharpening the axe.”
  - Einstein is reported to have said, “If I had one hour to save the world, I would spend fifty-five minutes defining the problem and five minutes finding the solution.”

- A good analyst turns data into information, but
- A great analyst turns information into knowledge
  - Answer the “So what?” question
- It shouldn’t take an analyst to read a chart
Final Random Thoughts…

- Resist the urge to build big models
- George E.P. Box,
  - “…all models are wrong, but some are useful.”
  - “The practical question is how wrong do they have to be to not be useful”
- Accuracy, not precision
- Bad analyses is when you don’t know how wrong you can be
- Numbers versus numerals
- Three legs to the analyses…
- Three rules of analysis…
Where We’re Headed

- OSD Office of People Analytics
  - AF Office of Human Capital Analytics
- AF Human Capital Annex to AF Strategic Plan
- AF Human Capital Analytic Strategy
- Initiatives that need analytic insights
  - Web-based talent assignment system
  - Stronger linkage between surveys and HR policies/programs
  - Blended retirement system
  - Mobility between civilian, industry, and military jobs
  - Improve predictive analytics capability
    - Between Retention, and the Economy
    - ROI on Specialty/Retention pays
Thanks to Diego Gomez, VP HC Mgt Transformation, ORACLE, for letting me borrow a few slides.