WACABA Presents

Harness the Power of HR Analytics
Presented by PwC
About our presenters

Nik Shah is a Partner with PwC and leads the PwC’s People Analytics Practice. He has proven experience in workforce analytics, employee research and Saratoga benchmarking. He specializes in developing and implementing strategic human resource programs to improve the HR function’s performance and effectiveness. Nik also assists his clients with creating programs that attract, retain and motivate employees.

Rana Dalbah, PMP, is the Senior Manager of Workforce Intelligence & Processes at BAE Systems, Inc. headquartered in Arlington, Virginia. Ms. Dalbah leads the creation and maintenance of the HR Dashboard, process improvements, data governance, predictive analytics and modeling in relation to the HR Strategy.
## The business imperative for people analytics

### Executives expect data and insight

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>79%</td>
<td>Say they make a big decision at least once every three months</td>
</tr>
<tr>
<td>72%</td>
<td>Say familiarity with data-driven decision making is a prerequisite for senior management</td>
</tr>
<tr>
<td>64%</td>
<td>Say big data has changed decision making at their organizations</td>
</tr>
<tr>
<td>54%</td>
<td>Say that getting timely data is an issue</td>
</tr>
<tr>
<td>52%</td>
<td>Say they have previously discounted data they don’t understand</td>
</tr>
</tbody>
</table>

### To solve key talent issues

- **Attract and retain key talent**
- **Develop and reward key talent**
- **Agility and mobility of talent**
- **Supply and demand of the workforce**

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1. Gut & gigabytes: Capitalising on the art & science in decision making, sponsored by PwC
2. Based on participants in PwC Saratoga’s annual benchmarking survey
Highlights in people analytics

1. Building a people analytics function
2. Strategic reporting and data visualization
3. Advanced analytics
Building a people analytics function

1. Building a people analytics function

2. Strategic reporting and data visualization

3. Advanced analytics

86%

Percent of PwC Saratoga members who reported that creating or maturing their people analytics function is a strategic priority over the next 1-3 years
People analytics journey at glance

Pre-Foundational
We’ve got some good people who do everything in Excel
It always takes three weeks
The results aren’t always credible

Foundational
I need basic analytics
I need the data to be right
Analytics should be easy to produce
And I need analytics now

Advanced
I need analytics to solve business problems
All of my data should be in one place
We need analytics to make a strong impact on how HR partners with the business

Leading Edge
HR has an opportunity to transform the enterprise through analytics
To rethink our approach to talent and execute differently
And bring our businesses and functions together
Polling question – At what stage are you now in your people analytics journey?

1. Pre-Foundational
2. Foundational
3. Advanced
4. Leading edge
Polling question – At what stage in your people analytics journey do you aspire to be 2 years from now?

1. Pre-Foundational
2. Foundational
3. Advanced
4. Leading edge
Building a people analytics function

Maturing People Analytics requires progression across several components

- What types of reports and dashboards do we need?
- How can we use advanced analytics on people data?

People analytics programs

- Should we build or buy an analytics tool?
- How can we leverage existing technology and low-tech interim solutions?

HR technology strategy

- What skillsets do we need?
- What is our analytics governance and operating model?

Analytics team

- How do we train HR and business leaders to be more savvy with workforce data?
- How do we build partnerships with other functions?

Adoption and sustainability

PwC
Strategic reporting and data visualization

1. Building a people analytics function
2. Strategic reporting and data visualization
3. Advanced analytics
The metrics map can be used to define the workforce metrics that matter and deliver the metrics via dashboards.

<table>
<thead>
<tr>
<th>Sample Business Strategies</th>
<th>Sample HR/Talent Strategies</th>
<th>Sample HR Initiatives</th>
<th>Representative HR Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>High quality and differentiated products</td>
<td>Understand customer needs then hire &amp; deploy talent</td>
<td>Increase employee retention</td>
<td>High performer separation rate</td>
</tr>
<tr>
<td>Improve customer retention and success</td>
<td>Empower employees and develop processes for innovation</td>
<td>Recruit high quality talent</td>
<td>First year turnover rate</td>
</tr>
<tr>
<td>Advance reputation in the marketplace</td>
<td>Create a strong employer brand</td>
<td>Recognize employees for high-caliber work</td>
<td>Recognition index</td>
</tr>
<tr>
<td>Improve operating efficiency and effectiveness</td>
<td>Develop a nimble, highly talented workforce</td>
<td>Train employees</td>
<td>L&amp;D hours per employee</td>
</tr>
<tr>
<td>Ensure compliance to regulatory requirements</td>
<td>Foster a culture of integrity</td>
<td>Foster productive work environment</td>
<td>Revenue per FTE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engage employees</td>
<td>Employee engagement index</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offer competitive employee rewards</td>
<td>Reward efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Build succession pipeline for the future</td>
<td>Pipeline depth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure compliance against HLC policies</td>
<td>Training completion rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Encourage real-time feedback</td>
<td>High performer promotion rate</td>
</tr>
</tbody>
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<table>
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<td></td>
<td></td>
<td>Encourage real-time feedback</td>
<td>Encourage real-time feedback</td>
<td>High performer promotion rate</td>
</tr>
</tbody>
</table>
# Selecting the metrics for answering business questions

<table>
<thead>
<tr>
<th>Business objectives</th>
<th>Desired outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grow current markets/resorts and execute on targeted</td>
<td>Deliver maximum value to increase sales</td>
</tr>
<tr>
<td>expansion strategy</td>
<td></td>
</tr>
</tbody>
</table>

## Key Business Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Related HR Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do we have a strong employment brand in our key markets to enable growth?</td>
<td>Offer Acceptance Rate, Compensation &amp; Benefits Satisfaction Index</td>
</tr>
<tr>
<td>Do our hiring practices support our growth objectives?</td>
<td>Hiring, Compensation Revenue Index</td>
</tr>
<tr>
<td>Are we hiring quality talent to enable successful growth?</td>
<td>Internal/External Hiring Rate, Salary Range Exception Rate</td>
</tr>
<tr>
<td>Will we have the right talent to support our growth initiatives in five years?</td>
<td>Succession Pipeline Depth, Performance Bonus Pay Percent</td>
</tr>
</tbody>
</table>

## Impact to business outcomes

↑ Occupancy Ratio  
↑ Average Daily Rate
**Reporting the metrics by visualization**

Metrics tied to Business and HR strategies enabled and visualized through technology to drive insights

- KPIs
- Targets
- Benchmarks
- Trends
- Geographic coverage

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**Illustrative Dashboards**

- Attract Talent Dashboard
- Retain Talent Dashboard

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PwC
Advanced analytics

1. Building a people analytics function

2. Strategic reporting and data visualization

3. Advanced analytics
   - Predictive Analytics
   - Total Reward Analytics
   - Employee Surveys & ONA
Addressing critical talent issues through deeper insights

Do we have the right talent to execute on our business strategies?

How effective are our compensation programs in supporting our business strategies?

How successful are our compensation and benefits programs in retaining our key talent?

Are our compensation packages attractive enough to candidates in such a competitive talent market?

C-suite

HR Leadership

HR Business Partners

Business and Operations Leaders
Implementing predictive analytics...Attrition Risk example

1. Assess Overall Attrition
   - Assess the organization's attrition through reports and visualizations

2. Estimate Total Attrition Cost
   - Estimate the direct and indirect costs of voluntary turnover

3. Hypothesize Causes of Attrition
   - Develop hypotheses and determine the relevant data points to extract from multiple sources

4. Extract and Build Models
   - Extract appropriate data, create predictors and build statistically robust models

5. Predict Risks by Individual
   - Predict attrition risks at an employee level and visualize through business intelligence tools

6. Implement Retention Strategies
   - Develop retention strategies, action plans and change management programs

Retention analytics measures the risk of voluntary attrition in your workforce down to the individual level. Retention analytics is measured using both internal HR and external market data, such as economic factors.

PwC
Building an attrition risk model

Multivariate modeling is carried out to test hypotheses and identify statistically significant predictors

Client Case Example

448 Hypothesized Predictors—includes 118 derived predictors

Predictor profiling—80+ predictors shortlisted

Iterative Modeling—Multivariate analysis of predictors

7 final predictors for Model 1*

1. **Salary:** Change in salary over the last 2 years in comparison to peers
2. **Training:** Total number of training sessions in the last 2 years
3. **Performance rating:** Negative change in annual rating over the last year
4. **Structure:** Total time spent by the employee in an offsite (client site) location
5. **Awards:** # of performance awards rewarded to employees in last 2 years
6. **Bonus:** Annual performance bonus compared to peer group
7. **Recruiting:** Internship with the firm

* These seven predictors are custom to case client not necessarily true for other organizations
Moving beyond the predictive analytics output

<table>
<thead>
<tr>
<th>Name</th>
<th>Tenure</th>
<th>Line of Service</th>
<th>Level</th>
<th>Pivotal Role</th>
<th>Number of Promotions</th>
<th>Local Area Unemployment Rate</th>
<th>Confidential Engagement Score**</th>
<th>2014 Performance Score</th>
<th>Competency Rating (0-10)</th>
<th>2015 Expected Performance Rating</th>
<th>Probability of Departure</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Burman</td>
<td>4</td>
<td>BU 1</td>
<td>Manager</td>
<td>Yes</td>
<td>1</td>
<td>4.5%</td>
<td>3.5/4.0</td>
<td>7.1</td>
<td>3.8/4.0</td>
<td>78%</td>
<td></td>
</tr>
<tr>
<td>Dave Boyle</td>
<td>2</td>
<td>Marketing</td>
<td>Staff 1</td>
<td>No</td>
<td>0</td>
<td>12.5%</td>
<td>2.3/4.0</td>
<td>7.5</td>
<td>2.7/4.0</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>Lisa Tang</td>
<td>5</td>
<td>Operations</td>
<td>Staff 2</td>
<td>No</td>
<td>0</td>
<td>10.2%</td>
<td>1.8/4.0</td>
<td>5.6</td>
<td>1.8/4.0</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Eve Mitchell</td>
<td>6</td>
<td>BU 2</td>
<td>Associate</td>
<td>Yes</td>
<td>1</td>
<td>6.5%</td>
<td>2.1/4.0</td>
<td>8.3</td>
<td>2.6/4.0</td>
<td>45%</td>
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<tr>
<td>Steve Kaplan</td>
<td>3</td>
<td>BU2</td>
<td>Manager</td>
<td>Yes</td>
<td>1</td>
<td>10.1%</td>
<td>2.9/4.0</td>
<td>8.0</td>
<td>3.1/4.0</td>
<td>32%</td>
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<tr>
<td>Linda Peters</td>
<td>7</td>
<td>Operations</td>
<td>Sr. Manager</td>
<td>Yes</td>
<td>3</td>
<td>3.5%</td>
<td>2.7/4.0</td>
<td>7.6</td>
<td>2.7/4.0</td>
<td>64%</td>
<td></td>
</tr>
<tr>
<td>Albert Pho</td>
<td>1</td>
<td>BU1</td>
<td>Staff 1</td>
<td>No</td>
<td>0</td>
<td>8.6%</td>
<td>1.5/4.0</td>
<td>4.8</td>
<td>1.5/4.0</td>
<td>35%</td>
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<tr>
<td>Margaret Tom</td>
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<td>BU2</td>
<td>Manager</td>
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<td>4.9%</td>
<td>3.1/4.0</td>
<td>8.9</td>
<td>3.3/4.0</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>Ling Stark</td>
<td>9</td>
<td>Marketing</td>
<td>Associate</td>
<td>No</td>
<td>1</td>
<td>6.9%</td>
<td>1.9/4.0</td>
<td>4.5</td>
<td>2.0/4.0</td>
<td>27%</td>
<td></td>
</tr>
</tbody>
</table>

A sophisticated response requires some understanding of analytics but a stronger ability to extract and act on the insight

- Caution: Fundamental analytic error -
Optimizing reward programs

Total rewards analytics, or TRA, is an analytics process you can use to gain insight into your employees’ preferences for compensation and benefits, and maximize value accordingly.

Creating a dialogue with employees and analyzing real-time preference analytics can optimize the total rewards package that meets your HR and fiscal needs.

TRA is used in a variety of applications, including:

<table>
<thead>
<tr>
<th>Executive compensation strategy</th>
<th>Salary and short-term/long-term incentives tradeoff</th>
<th>Healthcare design and strategy</th>
<th>Defined benefit to defined contribution migration</th>
</tr>
</thead>
<tbody>
<tr>
<td>401(k) plan structure</td>
<td>Wellness plans and incentives</td>
<td>Work-life balance &amp; paid leave policies</td>
<td>Training and development</td>
</tr>
</tbody>
</table>
**TRA overview**

Measures in real-time ‘how’ individuals make decisions, their preferences, decision drivers, perceived values, and choice likelihood. Generate highly predictive employee insights that can drive performance improvements and satisfaction while decreasing cost.

**LEARN**
*Educate employees on offers, services and features*

**COMPARE**
*All relevant aspects of the employer value proposition*

**DECIDE**
*Personalized feedback & value proposition*

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**Employee insights**

- Decision support for cost optimization
- Retention strategy for scarce resources, key employees
- Benchmarking and impact prediction during workforce adjustment phases

**Execution**

- Guidance on optimized messaging, personalized value proposition
- Employee education on available programs

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PwC
Informed trade-offs

TRA plots different reward plans in terms of their cost and employee preference.

It can also show you how your current plan compares to other total rewards options.

This allows you to identify the structure that best fits both your fiscal and human capital needs.
Highlight Plans Above to See Details and D...
<table>
<thead>
<tr>
<th>Perceived value &gt; cost</th>
<th>Positive return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived value &lt; cost</td>
<td>Negative return</td>
</tr>
</tbody>
</table>
Beyond Employee surveys

Data-Driven Decisions
• Provides data to better inform decisions across a number of programs
• For example survey data can help inform pay and benefit options, performance management, manager selection and development

Business Linkage
• Help show relationship to key business outcomes (e.g., sales)
• Impact processes and people management have on these outcomes

Predictive Models/Advanced Analytics
• Results often a key predictor in flight risk and other models
• Surveys themselves can also be used for advanced analytics such as Organization Network Analysis and Causal Models

Dashboards
• Data from exit and onboarding surveys become key metric on retention and staffing dashboards
Organization network analysis

Organizational Network Analysis (ONA) maps out the various informal social networks in your organization and can be integrated with your engagement survey through the addition of a few questions.

Knowledge Awareness and Information Sharing - who do people go to for information?

Access - Who are your experts, the people others need access to in order to be effective?

Energy - Who motivates and re-charges (engages) others about work?

Collaboration - Who is working together, and who is not?

Boundary Spanners bridge gaps across multiple types of groups in knowledge sharing, collaboration, and access networks

Energizers motivate others and leave them feeling positive about change initiatives
Polling question – Which component of people analytics needs the most attention at your organization?

1. Data Visualization/ Dashboards
2. Predictive Analytics
3. Total Rewards Analytics
4. Next Generation Employee Surveys/ONA
5. Building an Analytics Strategic Roadmap
The BAE Systems, Inc. Journey
BAE Systems, Inc.

BAE Systems, Inc. is the U.S. subsidiary of BAE Systems plc, a global defense, security and aerospace company which delivers a full range of products and services for air, land and naval forces, as well as advanced electronics, security, information technology solutions and customer support services.

BAE Systems, Inc. provides support and service solutions for current and future defense, intelligence, and civilian systems; designs, develops and manufactures a wide range of electronic systems and subsystems for both military and commercial applications; produces specialized security and protection products for law enforcement and first responders; and designs, develops, produces, and provides service support of armored combat vehicles, artillery systems, and munitions.
BAE Systems, Inc.

35,000 employees in the US, Sweden, UK and 24 other countries

$26 billion in Sales*

* Sales for BAE Systems, plc as a whole
Mission of HR at BAE Systems, Inc.

- Attract and retain the best talent
- Promote a diverse workforce
- Develop an engaging and execution-focused work environment
- Develop our company’s future leaders
HR Structure

SVP of HR&A

Executive Assistant

Sector HR VP’s

COE VP’s

HR Business Partners

HR Resource Center

Administration
# Workforce Intelligence Team

<table>
<thead>
<tr>
<th>VP of Workforce Relations &amp; HR Compliance COE</th>
<th>Workforce Intelligence &amp; Processes</th>
<th>Data Scientist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Data Visualization/Metric Specialist</td>
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<tr>
<td></td>
<td></td>
<td>Data Analyst/Architect</td>
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<tr>
<td></td>
<td>HR Business Partner</td>
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<td></td>
<td>Safety, Healthy and Environment</td>
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<td></td>
<td>Affirmative Action &amp; Employee Relations</td>
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</table>
Role of People Analytics

Analytics & Reporting

Workforce Intelligence Team

- Basic and Advanced Analysis
- Data Visuals
- Interpretation / Story Telling

HRIS/Reporting Team

- Governance (Definitions, Deliverables and Data)
- Standard Reports
- Ad Hoc Reports
**PwC and BAE working together**

Over the past 4 years, BAE has worked with PwC People Analytics on developing, implementing and delivering analytics to help inform HR and leadership on key people issues and their impact on the business.

Most recently, PwC and BAE have worked on two exciting projects:

1) **Strategic dashboards** and

2) **Predictive models**

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### Our analytics journey to date:

- **Saratoga Benchmarking: 2010- Present**
  - Benchmarks for 300+ metrics across industry, size, revenue
  - Federal contractor consortia benchmarks

- **Surveys: 2011- Present**
  - Exit surveys—analyzing employees that voluntarily left the organization

- **Dashboards: 2014- Present**
  - Analysis and visualization of data across key workforce initiatives: geographic headcount, employee movement, turnover, employee rewards
  - Integration of Saratoga benchmarks, internal targets, exit survey

- **Predictive Analytics- 2015**
  - Predicting the likelihood that an employee is to voluntarily leave the organization in the next 12 months
  - Analysis of hundreds of data points across all talent systems
Strategic dashboards

PwC worked with the Workforce Intelligence team at BAE Systems to integrate and visualize HR data across its talent suite of systems covering a wide span of people topics that include geographical headcount, employee movement (i.e., hiring, terminations, transfers), exit survey data, diversity, pay and awards.

To assist with interpreting results and decision making, Saratoga benchmarks in addition with internal BAE targets and benchmarks were also embedded within each metric.

These dashboards are currently used by HR Business Partners, Sector Presidents, Sector HR VP’s, and the Diversity & Inclusion team.
Example: Employee Engagement Dashboard

**Audience**
- HR Business Partners

**Purpose**
- Award distribution
- Budget implications

**Current**
- Track the type of awards
- Track the budget spend
- Track the distribution of awards

**Future**
- Further drill down
- Link to finance
- Include 401K participation
Example: Incentive Compensation Planning

- **Audience**
  - Compensation
  - Sector Senior Management
  - HR Business Partners
  - HR VP's

- **Purpose**
  - High level salary roll up
  - Insight on IC eligibility
  - Budget availability

- **Current**
  - Weekly distribution throughout the annual planning process
  - Further analysis done by comp analysts
  - Final dashboard distributed after process is finalized

- **Future**
  - YTD comp dashboard
  - Dynamic/current data
  - Create ad-hoc based on requests

**Budget Summary-Sector Lev**

<table>
<thead>
<tr>
<th>Sector Lev</th>
<th>2015 Budget</th>
<th>Spend</th>
<th>Remaining</th>
<th>Elig EE</th>
<th>IC Partic</th>
<th>% Partic</th>
</tr>
</thead>
<tbody>
<tr>
<td>GG16&amp;Below</td>
<td>$15,097,527</td>
<td>$15,516,310</td>
<td>$2,217</td>
<td>1,628</td>
<td>963</td>
<td>53.6%</td>
</tr>
</tbody>
</table>

By PDR: % of Eligible

<table>
<thead>
<tr>
<th>PDR</th>
<th>No Rating</th>
<th>1</th>
<th>N</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>Total</th>
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<tr>
<td>No IC</td>
<td>2.7%</td>
<td>33.3%</td>
<td>31.7%</td>
<td>46.2%</td>
<td>66.1%</td>
<td>30%</td>
<td>6%</td>
<td>0%</td>
<td>0%</td>
<td>1,628</td>
</tr>
</tbody>
</table>

By Plan: % of Eligible

<table>
<thead>
<tr>
<th>Plan</th>
<th>No IC</th>
<th>2015 IC Partic</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>47.0%</td>
<td>53.0%</td>
<td>78.0%</td>
</tr>
</tbody>
</table>

Status at a Glance

Color shows details about Budget Status. The bars are labeled by % Partic of Elig.
**Example: Salary Planning**

**Audience**
- Compensation
- Planning Managers
- BA/Functional Leads
- Sector Senior Mngt
- HR BP’s and VP’s

**Purpose**
- High level salary roll up
- Avg planned merit vs. guidelines
- PDR distribution in reference to pay for performance

**Current**
- Weekly distribution throughout the annual planning process
- Further analysis done by comp analysts

**Future**
- Promotion tracking in YTD comp dashboard
Predicting Attrition Risk

PwC worked with BAE Systems to develop an analytical model for predicting flight risk within 12 months for the Systems Engineering population.

- **Predictor profiling**: 50 + predictors shortlisted
- **Iterative Modeling**: Multivariate analysis of predictors
- **9 final predictors**

Modeling population was analyzed based on data from different categories including compensation, benefits, and total rewards.

- **102 hypotheses** on why the modeling population voluntarily attrites were created.
- **226 predictors** were identified to test the 102 hypotheses.

A short list of predictors were created by looking at how each predictor correlated with one another as well as attrition. The most impactful predictors are then shortlisted for modeling.

Multiple iterations of the predictive model were run until the model that best explained attrition for systems engineers was selected.

In total there were 9 unique predictors that explain attrition risk for systems engineers, which salary change from previous year, salary grade, and retirement balances.
Compensation and benefits predictors are integral in BAE’s flight risk predictive model

Compensation, benefits and total rewards data played a major role during all phases of the predictive modeling.

**Predictor Categories**

- Demographics
- Performance & Career Development
- Compensation & Benefits
- Work Environment
- Supervisor Factors
- Employee Engagement

**Compensation & Benefits Predictors Shortlisted**

- Original Predictors
  - Impact Awards
  - Retirement plan eligibility
  - 401k deferral
  - Comp-ratio
  - Benefits premium
  - Tuition reimbursement

- Derived Predictors
  - Change in salary*
  - Ratio of 401k balance to salary
  - Yearly change in 401k balance
  - Benefit changes*

79 of the 226 predictors identified were compensation & benefits related predictors

*Predictor in final model of attrition risk
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