



**Research Product 2010-01**

**Pilot Results - The Use of Real-time Preference  
Measurement Technology to Support the Retention of  
Enlisted Personnel**

**Bruce Bloss, Sev Keil, and Karl Rotstan**  
TrueChoice Solutions, Inc.

**March 2010**

**Personnel Assessment Research Unit**

**U.S. Army Research Institute  
for the Behavioral and Social Sciences**

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Technology to Support the Retention of Enlisted Personnel**

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PILOT RESULTS – THE USE OF REAL-TIME PREFERENCE MEASUREMENT  
TECHNOLOGY TO SUPPORT THE RETENTION OF ENLISTED PERSONNEL

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Until recently, the principal measure of success of the Army's efforts to retain Soldiers has been the achievement of planned end strength for the various manpower components (active Army, Guard, and Reserve). Programs and incentives, particularly cash bonuses, have been used extensively to encourage more Soldiers to remain in the Army. By this standard, these efforts have been successful, as the Army attained its manpower goals as outlined in the Grow the Army initiative, originally targeted for 2012, but achieved in early 2009.

Now, with less emphasis on sheer numbers retained, a U.S. budget facing historic deficits, and a somewhat reduced military combat presence overseas, the focus has shifted to managing retention programs and incentives more effectively, including identifying areas for cost reduction.

### **Problem**

A recent report from the Government Accountability Office (GAO), *Military Personnel - Army Needs to Focus on Cost-Effective Use of Financial Incentives and Quality Standards in Managing Force Growth*, is critical of the Army's ability to evaluate and cost-justify accession and retention bonuses (GAO, 2009). The report states that "(Army) officials told us that the Army is not able to determine whether it is paying more (bonus) than it needs to and therefore getting a cost-effective return on its investment. In light of the tighter fiscal environment expected in the next few years, it will become more important to determine whether it is paying bonuses to persons who would have joined or stayed in the Army without them" (GAO, p. 22).

The report suggests that one of the reasons for this shortcoming is that "while the Army has completed or contracted for extensive analysis of the effectiveness of various recruiting tools, it has not integrated the results of its research to calculate the most cost-effective bonus amounts" (GAO, p. 17). Given this backdrop and the current political and fiscal climate in Washington, it is reasonable to assume that the use and justification for current and future retention programs, benefits, and incentives will need to be data-supported.

### **Opportunity**

In late 2007, the Army Research Institute for the Behavioral and Social Sciences (ARI) contracted with New York City-based TrueChoice Solutions (TCS) to demonstrate the company's TrueChoice® Preference Measurement Technology (the "Pilot" project). Since 2001, TCS has provided its web-based product to companies looking to generate quantitative preference data from customers and employees for use in demand stimulation, lead generation, and employee benefits optimization. Within the Department of Defense (DoD), the product is currently in use by the U.S. Army Recruiting Command (USAREC) to produce recruiting insights from prospective recruits as part of the [goArmy.com](http://goArmy.com) recruiting web site.

The sponsor of the Pilot is the Enlisted Professional Development Branch, Military Personnel Management Directorate, G-1, under ARI's Applied Research Broad Agency Announcement (BAA) for FY2007. Using TrueChoice® technology, a sample of active duty enlisted Soldiers were web-surveyed about their preferences regarding various available reenlistment options and other aspects of continued military service.

## **Application Hosting**

When deployed in a civilian sector setting, the TrueChoice<sup>®</sup> product employs a software-as-a-service model. In other words, it is a web-hosted application. Respondents are directed to the application via a Uniform Resource Locator (URL) to the TCS host. In the present setting, the Army's privacy and security regulations concerning Soldier survey data obtained from the Pilot required that the ARI application be hosted behind a secure dot mil site.

Lack of available resources and several software incompatibilities meant that ARI could not use its own Information Technology (IT) web group for hosting. Eventually, the Defense Technical Information Center (DTIC) was identified and asked to host the application. DTIC agreed to do so for an inter-agency charge that covered its contractors. For the Pilot, Soldier respondents would use their Army Knowledge Online (AKO) account to access the DTIC-hosted application.

The set-up and testing of a third-party host represented a new operating environment for both TCS and DTIC. Although a number of issues arose which were eventually solved, this delayed live deployment for several months. One issue was that TrueChoice<sup>®</sup> source code had to pass security testing using software called Fortify. Several rounds of testing and correcting were necessary to effect a passing grade.

## **Respondent Selection and Notification**

Subjects who participated in the Pilot were Soldiers who were in their first or second term of enlistment and who were within 24 months of the expiration of their term of service (ETS). Subjects were contacted via their AKO email and invited to participate in a web-based survey accessible via the dot mil Internet. No incentives were offered for participation.

In order to make reliable inferences based on a representative sample, TCS recommended a sample size of 1,200 respondents, selected at random from the population of Soldiers who were classified as either initial-term or mid-term, and within 24 months of ETS. Based on ARI's previous experience with survey response rates, it was eventually decided to invite 12,000 Soldiers to participate in the Pilot. The email invitation sent to Soldiers is shown in Appendix A.

Data was gathered between March 11<sup>th</sup> and May 5<sup>th</sup>, 2009. The requests went out in several email "blasts". The first blast contained 1,000 Soldiers. This number was chosen so that the initial response rate could be monitored and to determine whether DTIC was configured to handle a large number of concurrent users.

However, only days prior to the initial mailing, a new policy prohibited sending Soldiers any mass communication – mass communication being defined as intended for 20 or more Soldiers – unless exceptions were granted. ARI was granted an exception based on procedures it developed for survey / communication purposes, but in the meantime there was a delay of almost two months in getting the first blast away.

Once sent, the response rate from the initial 1,000 was very low, less than 3%, so there were no concerns about concurrent usage. The remaining 11,000 names were sent in three additional blasts separated by about a week over the next several weeks. It was discovered that one of the reasons for the low response rate was that DTIC had assumed the Soldiers would be using Common Access Cards (CAC) with DOD computers to take the Survey. Thus, Soldiers could not respond to the Survey from off-base or home/personal Internet access points. At the joint request of TCS and ARI, these restrictions were removed. A follow-up email was developed and the 12,000 were re-invited to participate. Response was somewhat better.

By the end of the data collection period, 5.4% of the Soldiers (642) accessed the “Welcome Page” of the Survey. Because the survey email invitations were consistent with others used by ARI in previous web surveys, it was concluded that the low response was not a negative reaction to the technology, but a general indifference to non-mandatory requests for feedback from Soldiers.

However, for those Soldiers who did hit the “Welcome Page”, the results were impressive. Of the 642 Soldiers who began the survey, 587 (91.4%) completed the exercise – a number that was consistent with the vendor’s civilian experience. Despite the complexity of the options presented, the average time to complete was only 9 minutes. This suggests a high degree of “engagement” as provided by the Graphical User Interface (GUI).

The low response rate did somewhat hamper the technology’s ability to yield meaningful findings from some subgroups. However, because of the use of individual-level processing of preferences and the manner in which the validation is conducted, it is our belief that we were able to obtain accurate insights from much smaller sample sizes than are required by traditional methodologies.

### **Preference Measurement Process**

We believe the TrueChoice process represents an improved approach to preference measurement compared to conventional forced choice or conjoint exercises.<sup>1</sup> The objective of the developers was to create an interaction with respondents that is not perceived as a survey, but rather as an advisory dialogue. The original hypothesis was that such a data collection tool could be integrated in real decision situations, thereby generating more realistic responses and highly predictive preference data. Consequently, a process had to be developed that satisfies the following requirements: (1) personalized content and questions, (2) fast usage time that can be integrated in real customer or Human Resources (HR) dialogues, (3) real-time self-adaptation to improve perceived relevance of questions, and (4) generation and validation of individual level respondent profiles. The resulting proprietary technology is based on a decomposition approach that estimates individual preferences in a real-time iterative, econometric process.

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<sup>1</sup> Marketers sometimes have thought (or been taught) that the word “conjoint” refers to respondents evaluating features of products or services “CONsidered JOINTly.” In reality, the adjective “conjoint” derives from the verb “to conjoin,” meaning “joined together.” The key characteristic of conjoint analysis is that respondents evaluate product profiles composed of multiple conjoined elements (attributes or features).

The technology is widely used by civilian organizations in marketing and sales as well as human resources applications. The marketing application focuses on three use cases – personalized decision support and advice, sales lead generation, and customer insights for product development and pricing. The nature of the technology favors its use in product segments with complex information-rich characteristics, such as automotive, financial services (retirement plans, mutual funds, insurance), technology (laptops, cameras, LCD TVs, digital services), telecommunications (service plans, handsets) and business-to-business (B2B) and supply chain optimization (paper, chemicals, metals). Human resource applications revolve around the dual value proposition of decision support, education and guidance plus employee insights for offer and plan designs. The technology is used as part of benefits enrollment, total rewards and benefits design as well as recruiting.

In order to quantify preferences, all relevant factors that are part of the overall decision-making process are defined in what is termed a *value matrix*. The value matrix (VM) defines the scope of the decision-making process being studied and specifies all the variables being modeled. In essence, it is a multi-dimensional spreadsheet of all of the key characteristics involved in the decision, as well as all of the options available for those characteristics. These characteristics are called attributes, while the options available for each attribute are called levels.

The attributes and levels measured in this Pilot are defined in the VM. The final VM used for this Pilot was jointly prepared by TCS, ARI, and the Enlisted Professional Development Branch, and reviewed by TCS econometricians. The VM used for a Specialist in his/her initial term (Zone A SPC) is shown below. The attributes and levels are self-explanatory, with the possible exception of Additional Obligated Service (AOS) which controls the Selective Reenlistment Bonus (SRB) amounts that can be offered. VMs for the remaining zones and ranks can be found in Appendix B.

**VM2: Zone A, SPC**

Attribute	Levels						IMPLICIT ORDER?
Selective Reenlistment Bonus	\$4,000	\$8,000	\$12,000	\$16,000			Y
Deployment Reenlistment Bonus	\$5,000	\$15,000	\$25,000				Y
Basic Pay Increase	3%	3.50%	4%				Y
Combat / Hazard Pay Increase	3%	3.50%	4%				Y
Retirement Pay Increase	0%	1%	2%	3%	4%	5%	Y
Matching Funds to TSP	0%	12.50%	25%	37.50%	50%	62.50%	Y
Army Small Business Fund	\$ 0	\$ 20,000	\$ 35,000	\$50,000			Y
Army Home Ownership Fund	\$ 0	\$ 20,000	\$ 35,000	\$50,000			Y
Stabilization: Station / Unit of Choice	Unit of Choice	Station of Choice	Unit of Choice & 36 Months Stabilization	Unit of Choice & 48 Months Stabilization	Station of Choice & 36 Months Stabilization	Station of Choice & 48 Months Stabilization	N
Deferment Options	No Deferment	Deferment for 18 Months of Dwell	Deferment for 24 Months of Dwell	Deferment for 36 Months of Dwell			N
AOS (Months)	12	24	36	48	60		N
Education Options	No college leave	1 year college Leave	24 months year college Leave				N
MGIB Options	0% Transferability of MGIB to dependents	50% Transferability of MGIB to dependents	100% Transferability of MGIB to dependents				N

Individual Soldiers' preferences for these attributes were measured using TCS' proprietary survey technology and methodology. The TrueChoice® methodology for preference data measurement consists of three stages of interaction: Learn (level scaling), Compare (attribute ranking), and Decide (trade-offs). Explanation of each of these stages follows and is preceded by a screen shot from the application's GUI.

## Learn

The screenshot displays an interactive survey interface for the U.S. Army. At the top left is the U.S. Army logo. The main question is "How important are these Deployment Reenlistment Bonus (DRB) options?". There are three options, each with a vertical scale from 0 to 10. The \$15,000 option is selected, with a rating of 6.9. A tooltip says "You receive a \$15,000 Deployment Reenlistment Bonus." The interface includes navigation buttons (HELP, BACK, NEXT) and a progress bar (INTRO, STAGE 1, STAGE 2, STAGE 3, PREF). The interface is powered by TrueChoice.

DRB Option	Rating
\$5,000 Deployment Reenlistment Bonus	2.5
\$15,000 Deployment Reenlistment Bonus	6.9
\$25,000 Deployment Reenlistment Bonus	9.7

In the first stage (“Learn”) of the interactive dialogue, respondents are shown, on an attribute by attribute basis, the various levels available for each attribute. Respondents are asked to rate the relative desirability of each level for a given attribute on a scale of 0 to 10. Note that the system is not asking about the relative importance between attributes, but rather the preferences for each level within each attribute, in isolation from all other attributes.

## Compare

The screenshot displays the 'Compare' stage of a U.S. Army application. At the top left is the U.S. Army logo. To the right are navigation buttons: 'HELP', 'BACK', and 'NEXT'. The main heading is 'How Do They Compare?'. Below this, the interface is divided into two main sections: 'Compare these Attributes' and 'Your Preferences So Far'. The 'Compare these Attributes' section features three sliders, each with a numerical value and a star rating. The first slider is for 'DRB' with a value of 95 and 10 stars. The second is for 'Basic Pay Increase' with a value of 79 and 10 stars. The third is for 'Combat Hazard Pay Increase' with a value of 26 and 3 stars. The 'Your Preferences So Far' section shows two columns: 'Least Preferred' and 'Most Preferred'. For DRB, the least preferred is \$5,000 and the most preferred is \$25,000. For Basic Pay Increase, the least preferred is 3% and the most preferred is 4%. For Combat Hazard Pay Increase, the least preferred is 3% and the most preferred is 4%. At the bottom, a progress bar shows 'INTRO', 'STAGE 1', 'STAGE 2' (highlighted), 'STAGE 3', and 'PREF'. The 'POWERED BY TrueChoice' logo is in the bottom right corner.

In the second stage (“Compare”) of the application, respondents are shown the attributes, along with the individual respondent’s prior selection of the most preferred (“best”) and least preferred (“worst”) levels of each attribute as reference points. Here we are interested in determining how important the attribute is as a function of the difference between the respective best and worst levels.

TCS does not ask how the attributes alone compare to one another. The reason for this is that comparison of the attributes alone does not provide a sufficient basis for making a decision. For example, asking about the relative importance of attributes “enlistment term” versus “enlistment bonus” is an ambiguous question by itself, as the respondent does not know what term of service is being compared to what bonus amount. The difference between a 2 year enlistment and a 4 year enlistment is not the same as a difference between a 2 year enlistment and a 6 year enlistment. Likewise, a difference in enlistment bonuses between \$10,000 and \$20,000 is not the same as the difference between \$10,000 and \$40,000. Thus asking about a comparison of an enlistment bonus range of \$10,000 to \$20,000 vs. an enlistment term range of 2 years to 4 years is significantly different than asking about a comparison of \$10,000 to \$40,000 vs. 2 years to 6 years. Note that when ranking the attributes during this stage, pop-up instructions remind the respondent to scroll over all the attributes (with best and worst levels) rather than confine themselves to those seen on the screen. The personalized content of these comparison questions helps the respondent fine-tune his or her decisions and thus, we believe, ultimately leads not just to a more realistic and valuable

experience, but also higher data quality.

## Decide

The screenshot shows a preference survey interface for the U.S. Army. At the top left is the U.S. Army logo. The title is "Which Do You Prefer?". Navigation buttons for "HELP", "BACK", and "NEXT" are at the top right. The main content area compares two options:

- COMBINATION 1:** DRB of \$25,000 (Deployment Reenlistment Bonus) and a Basic Pay Increase of 3.5%.
- COMBINATION 2:** DRB of \$15,000 (Deployment Reenlistment Bonus) and a Basic Pay Increase of 4%.

A "VS" symbol is between the two combinations. Below them is a yellow box with the number "3". At the bottom, a slider is positioned between "MOST PREFERRED" on the left and "MOST PREFERRED" on the right, with "INDIFFERENT" in the center. The slider is currently positioned towards the right side. At the bottom of the interface, there are navigation buttons: "INTRO", "STAGE 1", "STAGE 2", "STAGE 3" (highlighted), and "PREF". The text "POWERED BY TrueChoice" is in the bottom right corner.

Once respondents have completed the second stage, the back-end will have calculated the perceived value and utility (i.e., satisfaction generated) for the entire individual preference matrix. This is done by multiplying the values gathered for the levels in Stage 1 by the attribute importance data gathered in Stage 2. The result is called the raw preference structure, or raw utilities. Once we have estimated the raw preference structure, the system can make predictions of individual behavior.

However, there may be cases of imprecise answers or other variance in the data. This can happen for a variety of reasons, but most typically it occurs because the respondent is just toying with the survey to see how it works, rather than thinking carefully about his or her answers. As a result, the raw preference structure of such a respondent will not reliably reflect his or her preferences and hence the data from that respondent is considered “flawed” or “invalid”.

In order to mitigate this problem and to ensure that only “valid” respondent data is included in any data analysis, the TrueChoice® methodology includes a patented preference validation and stabilization exercise using a set of personalized trade-offs unique to each respondent, based on the preferences provided in Stages 1 and 2.



While the respondent uses the tool, data goes back and forth between the front-end and the back-end of the technology and estimates and updates a multi-dimensional, individual preference matrix in real-time. The system then dynamically identifies out of all possible pairwise combinations the most relevant comparisons for a respondent, based on the raw utilities calculated in Stages 1 and 2. It calculates up to eight trade-offs that are relevant and have a similar total perceived value. The respondent is then asked to decide how much they prefer the options of this two attribute trade-off question.

Each trade-off is formed by comparing pairs composed of a level of attribute A and a “less desirable” level of attribute B versus a “less desirable” level of attribute A and a more preferred level of attribute B. For each trade-off, the respondent is asked to indicate which pair he or she prefers, and the degree to which he or she prefers that choice. As these trade-offs are system generated, it is possible that certain trade-offs might not make sense from a retention perspective. Thus the system can be configured to prohibit a list of specific illogical or counter-intuitive trade-offs. This list is known as the set of restricted trade-offs.

Importantly, the technology also predicts what the respondent’s answer should be based on the existing individual preference data collected from that respondent in Stages 1 and 2. After each answer, the system compares its prediction to the actual answer to determine how accurate the estimate is. This is used to calculate a reliability measure of the respondent’s preference matrix.

If the answers to the trade-off questions consistently diverge significantly from the predicted answers, then this is an indicator that the respondent was not seriously interacting with the system. Such a respondent receives a low “validity score” and can be excluded from analysis. By contrast, if a respondent’s answers consistently come close to the prediction, then this is an indication that his or her preferences are “valid”; hence their results are given a high “validity score”. This validity score is used as a filter during data analysis to ensure that only valid respondents are considered. This process is known as individual reliability validation.

The system also compares the respondent’s responses to those of other respondents and may further refine the preference structure based on statistically identified similarities in preferences among groups within the respondent population. This is known as preference profile stabilization.

Unlike traditional conjoint approaches, these trade-offs are not driven by the necessities of the research design, as they are not being used in a regression model to estimate utilities. Instead they are used to check the internal self-consistency of the respondent’s individual answers. Hence the TrueChoice methodology does not present the respondent with extreme choices to establish trade-off boundaries, but rather with realistic and relevant trade-offs.

The system generates additional trade-off questions as needed, up to a limit of eight questions, further refining its understanding of the respondent’s preferences. By the end of the trade-off stage, the system is able to determine whether or not a person’s answers provided in Stages 1 and 2 are internally self-consistent and “valid” reflections of the respondent’s preferences, or if the respondent was simply playing with the system. These refined preferences are collectively said to constitute the validated and stabilized preference structure. Based on these validated and stabilized preference structures, TrueChoice® is able to calculate a variety

of preference metrics, such as relative importance, willingness to pay, best choice, decision probability, offer optimization, expectation gap analysis, perceived value, preference dynamics, etc. The individual preference matrices are also used to populate a choice simulator which predicts how respondents will respond to a variety of possible retention offerings, using a perceived value/utility optimization algorithm.

### Data Analysis and Metrics

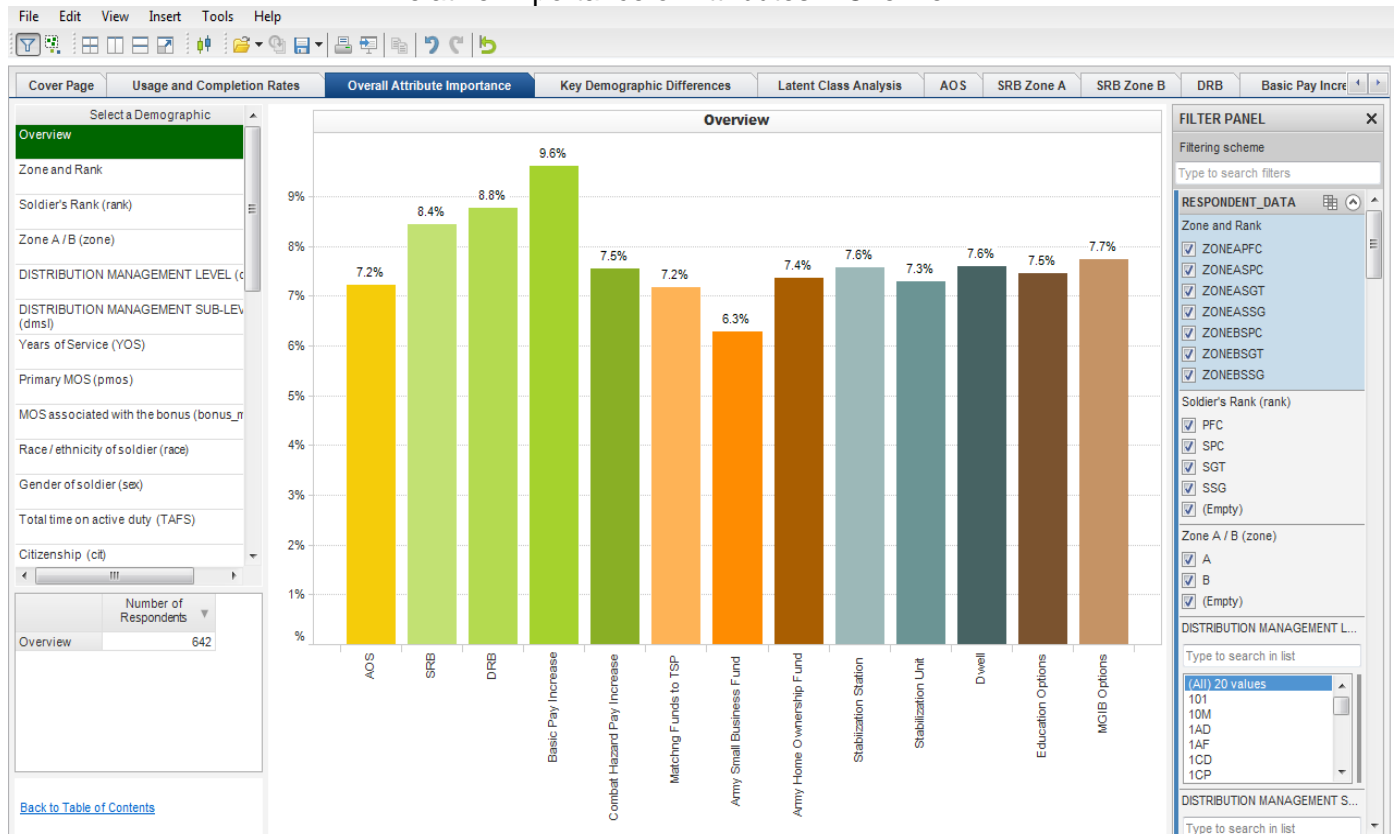
Data obtained from Soldiers in the Pilot were made available and analyzed using three different output media (Dashboard, Simulator, Career Counselor Decision Tool).

### Dashboard

A custom-designed “Dashboard” is the vendor's analytics platform providing users with real-time access to the data. A large number of available metrics facilitate a variety of analyses, including unlimited drill-downs, what-if simulations for return-on-investment (ROI) analysis/savings, strategy, new incentives, and benchmarking. The Dashboard is continuously updated as additional respondents are processed. Analyses are performed in a point-and-click fashion using a large array of relevant filters. Analyses can also be exported to presentation software (PowerPoint, etc.) in one-click as well.

Analyses for the Pilot were conducted using these metrics: relative importance of attributes, relative importance of levels, key demographic differences, and latent class analysis. They are illustrated by the following examples.

Relative Importance of Attributes – Overview



Metric explanation: Indicates how important attributes are to a respondent, relative to each other. This is expressed in percentage terms. The sum of the relative importance of all attributes is equal to 100%. It is calculated by comparing the utility range of a given attribute to the sum of the utility ranges of all attributes.

Key findings: Financial attributes such as Basic Pay Increase, Deployment Reenlistment Bonus and Selective Reenlistment Bonus are most important to Soldiers. Army Small Business Fund is relatively unimportant.

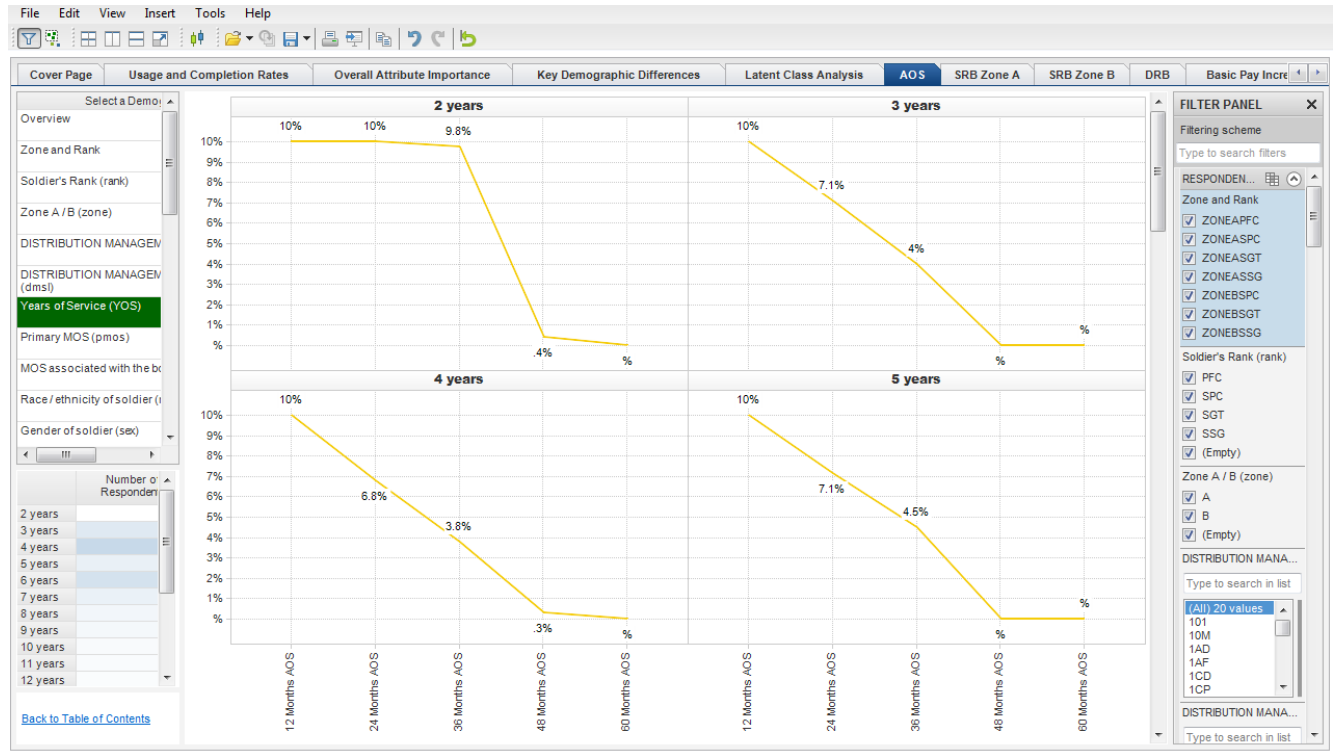
### Relative Importance of Attributes – by Years of Service



Metric explanation: Indicates how important attributes are to a respondent, relative to each other. This metric is expressed in percentage terms. The sum of the relative importance of all attributes is equal to 100%. It is calculated by comparing the utility range of a given attribute to the sum of the utility ranges of all attributes.

Key findings: Soldiers with 2 years of service find additional obligated service (AOS) to be extremely important, whereas Soldiers with more experience find it to be of average importance. Montgomery GI Bill (MGIB) options are least important to Soldiers with 2 years of service, but are of increasing importance as the number of years of service increases.

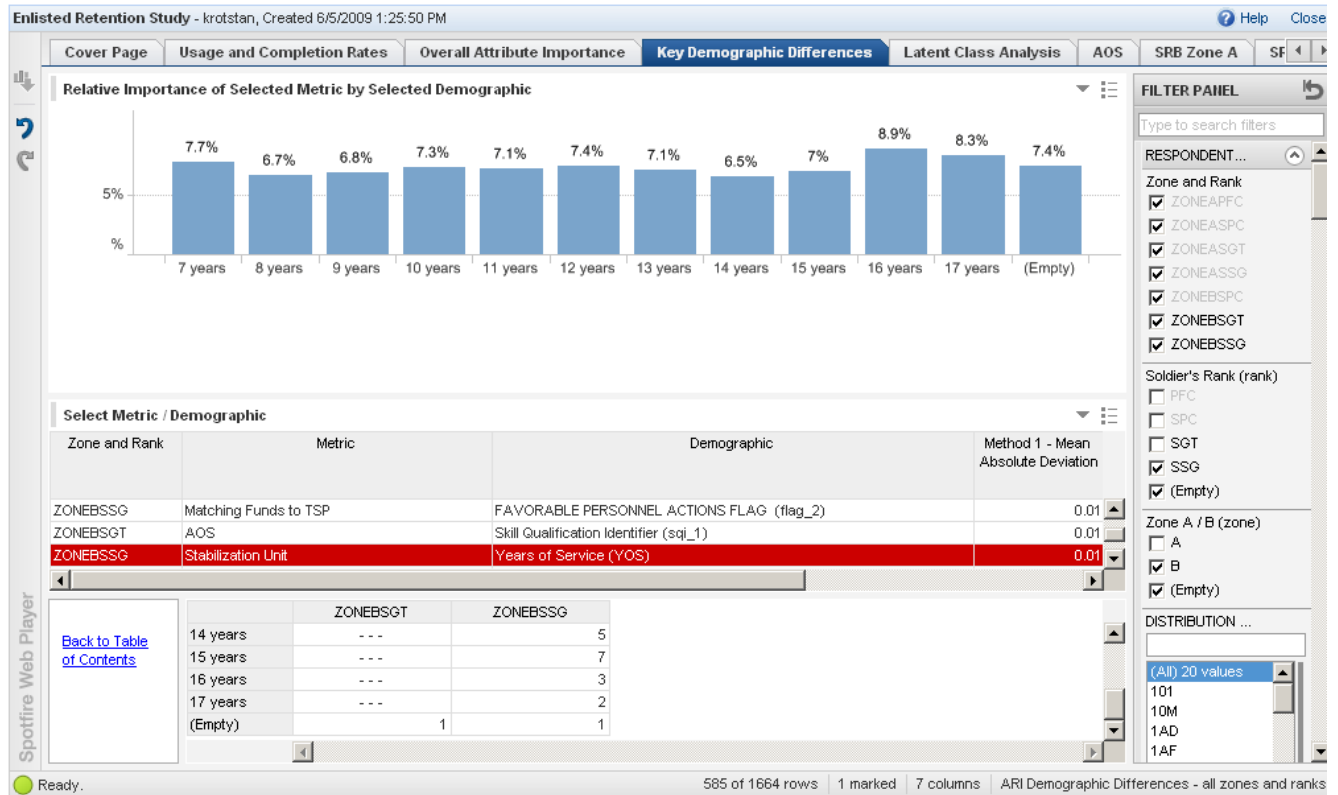
## Relative Importance of AOS Levels by Years of Service



Metric explanation: Indicates how important the levels of attributes are to a respondent, relative to each other. This information is expressed in percentage terms. It is calculated by comparing the utility range of a given level to the maximum utility across all levels of all attributes.

Key findings: Soldiers with 2 years of service are mostly indifferent to AOS terms between 12 and 36 months, whereas Soldiers with more experience have a much stronger preference for 12 months AOS to either 24 or 36 months.

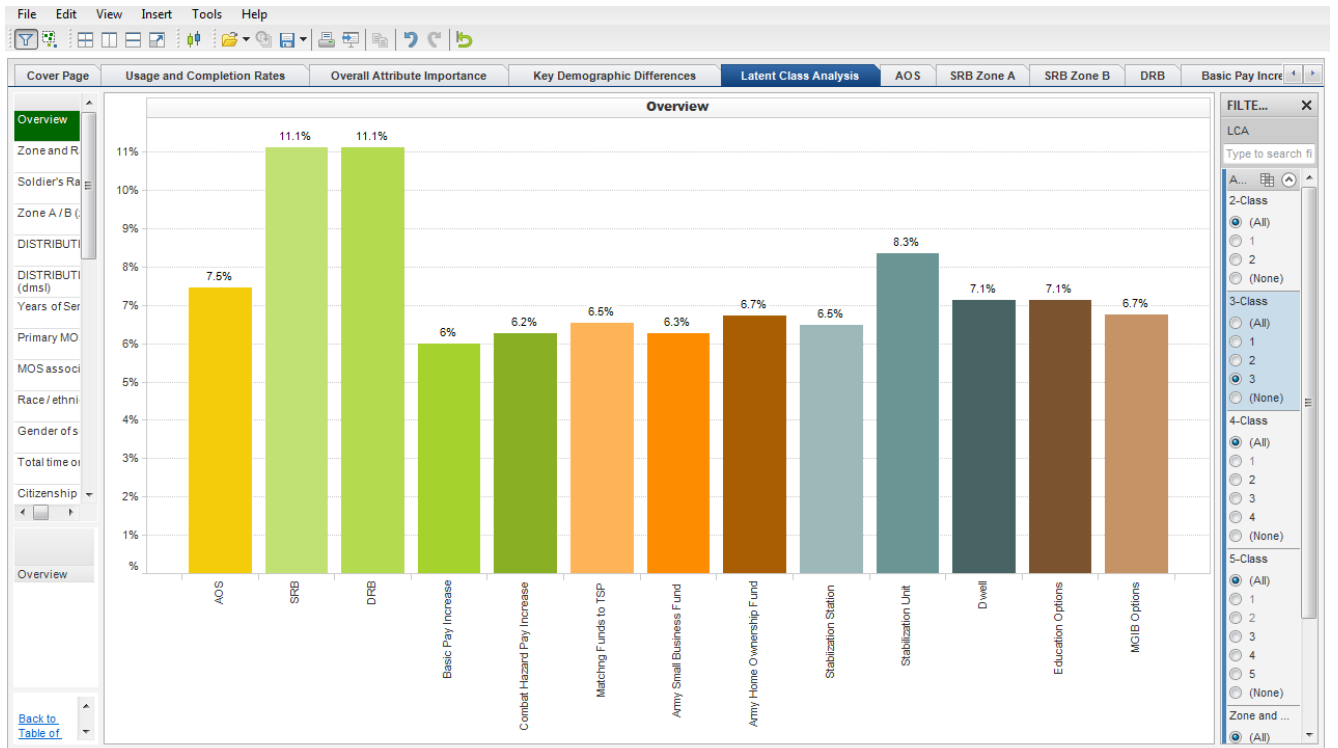
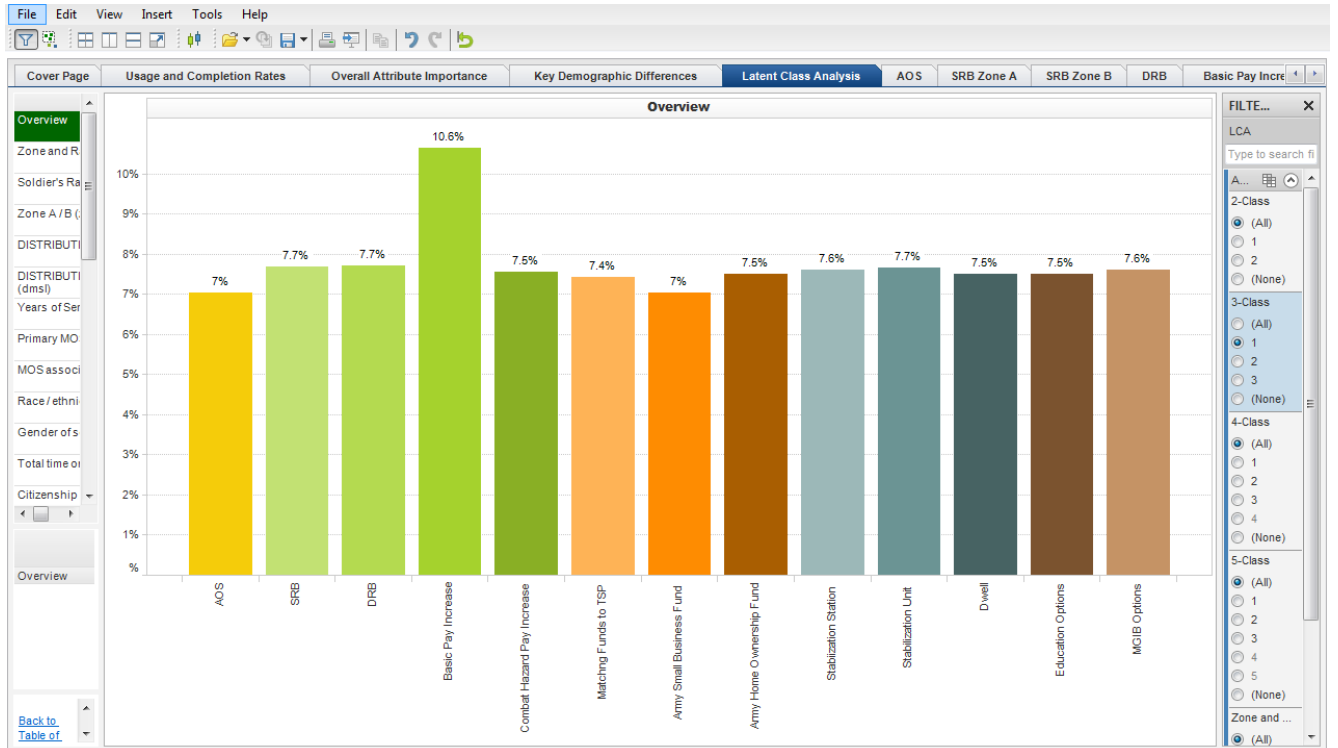
## Key Demographic Differences



Metric explanation: Key Demographic Differences highlight significant variation in preferences based on a respondent's demographics. Four different statistical methods are used, each of which yields a separate score for every pair of demographic question and attribute. Higher scores typically (but not always) indicate that there are significant differences in preferences between different demographic segments.

Key findings: The analysis of variance (ANOVA) method of identifying key demographic differences reveals that the importance of Unit Stabilization has significant differences depending on the years of service of a Soldier. It is relatively more important to the SSG Soldiers who are late in career (e.g. 16 – 17 years), but only of average importance to those in mid-career.

# Latent Class Analysis



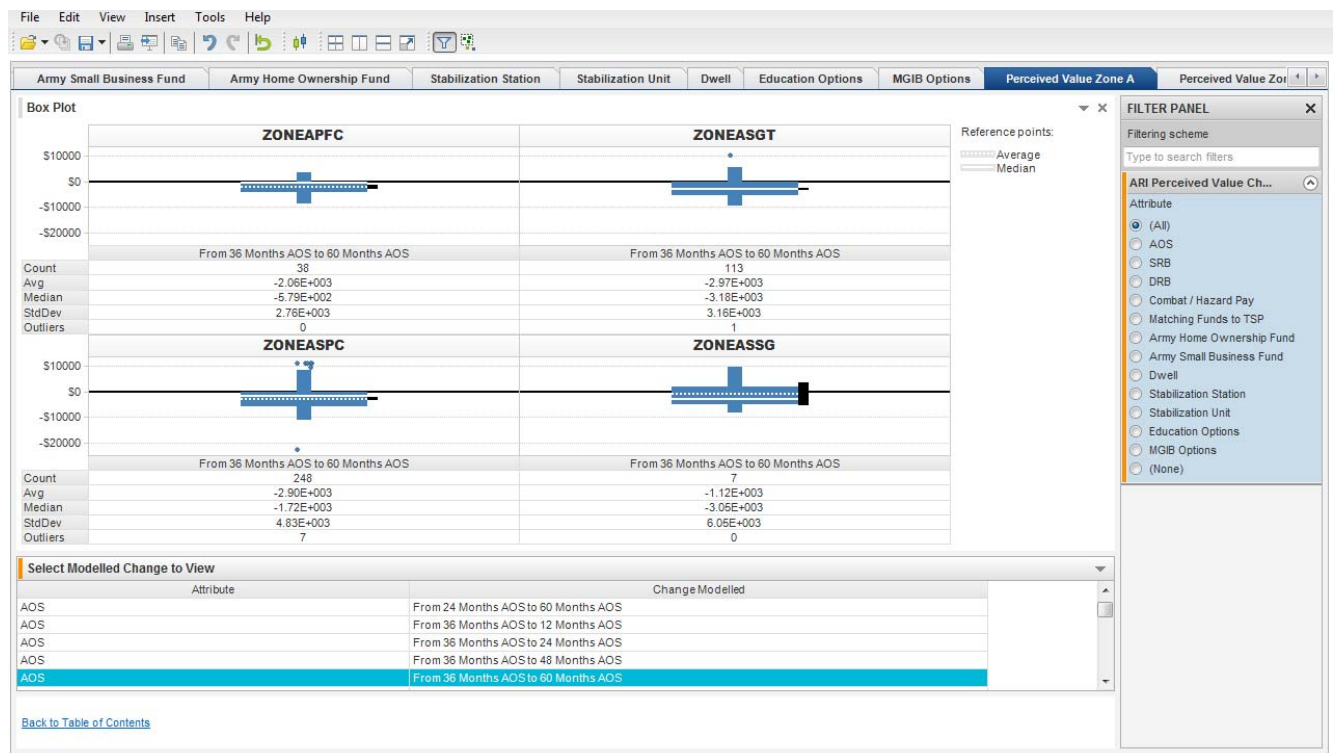
Metric explanation: Latent Class Analysis is a statistical method that identifies systematic patterns of preferences within the validated preference structures of all respondents. The LCA method identifies classes of respondents such that within each class, each variable is conditionally independent from all other variables.

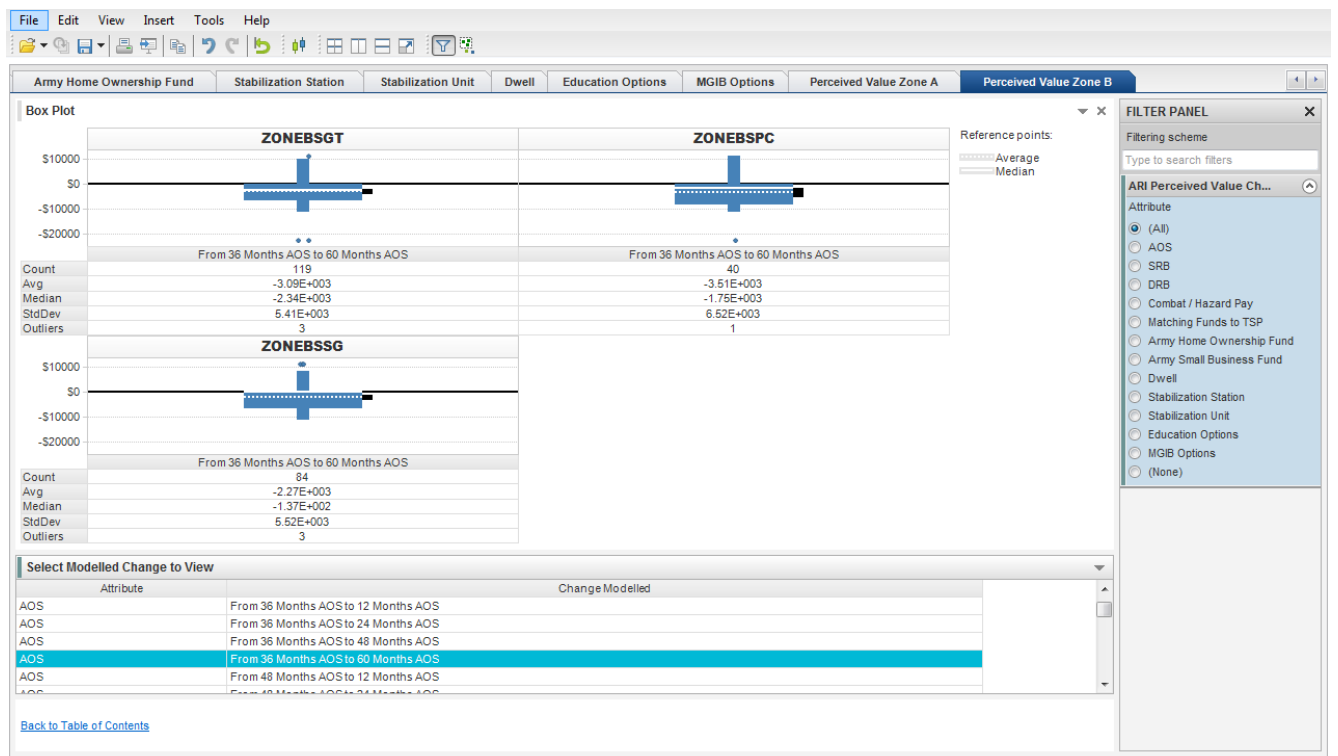
Key findings: In a three-class model, Class 1 was represented by Soldiers who place a high importance of Basic Pay Increase, with all other attributes being viewed as roughly equal. Class 3 is represented by Soldiers who rate SRB and DRB bonuses nearly twice as important as most of the remaining attributes. These two categories of Soldiers can be targeted with tailored messaging regarding reenlistment incentives, or perhaps offered differentiated packages.

## Simulator

The second output medium is TCS’s “Simulator”, designed to highlight cost and value considerations. These analyses depend upon provision of cost data by the Army. With the requisite cost data, “Perceived Value” can be examined for a variety of attributes; here we illustrate with AOS.

### Perceived Value



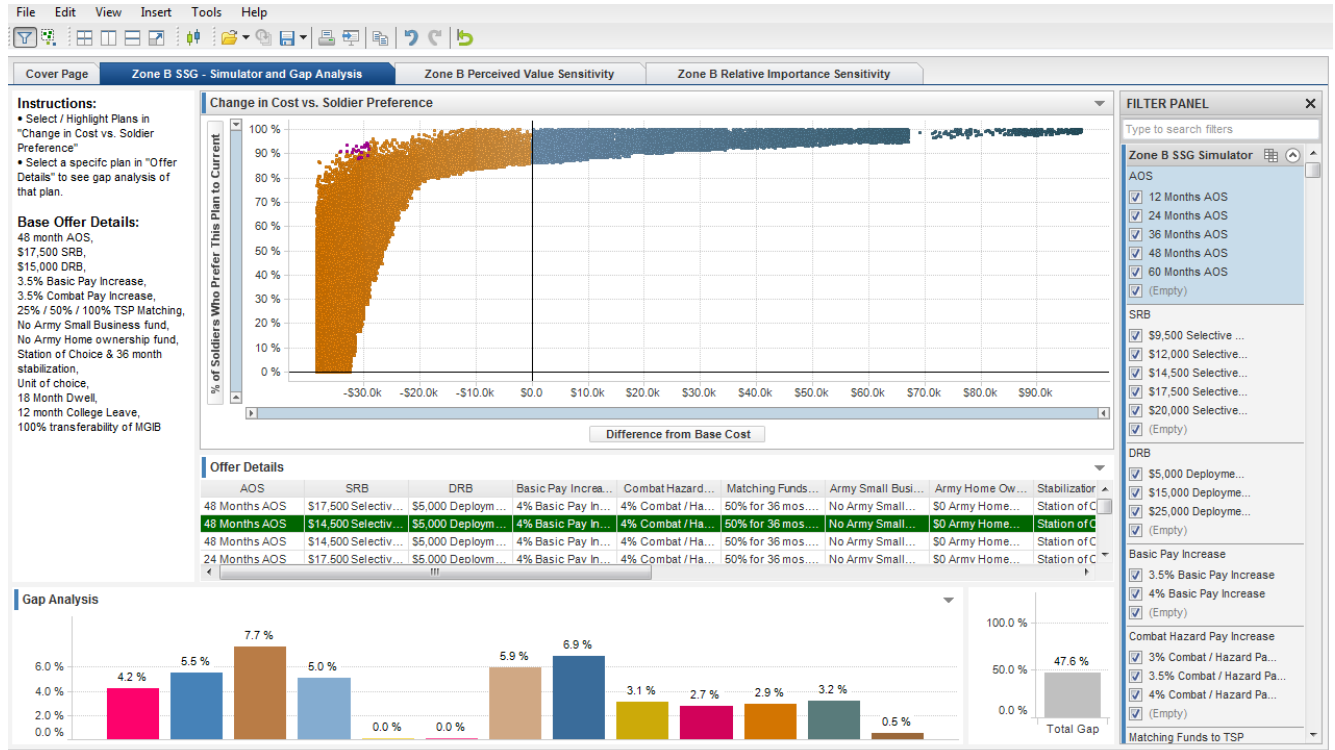


Metric explanation: Perceived Value calculates the monetary amount that a respondent perceives to be the value of a given change to an attribute. It is calculated by determining the change in the respondent's utility that results from the change in value of the attribute and then computing the amount of money that yields an equivalent utility value for the respondent, based on their preference functions for monetary attributes.

Key findings: Changing AOS from 36 months to 60 months is perceived on average as a negative change to all Ranks. For Zone A SGTs, it causes a median loss of utility that is equivalent to a monetary loss of \$3,178, while for Zone A SSGs, the median perceived loss is equal to \$3,049. However, for Zone B SGTs, the perceived loss is \$2,336 for the same change in AOS, but only \$137 for Zone B SSGs.



# Preference Simulator



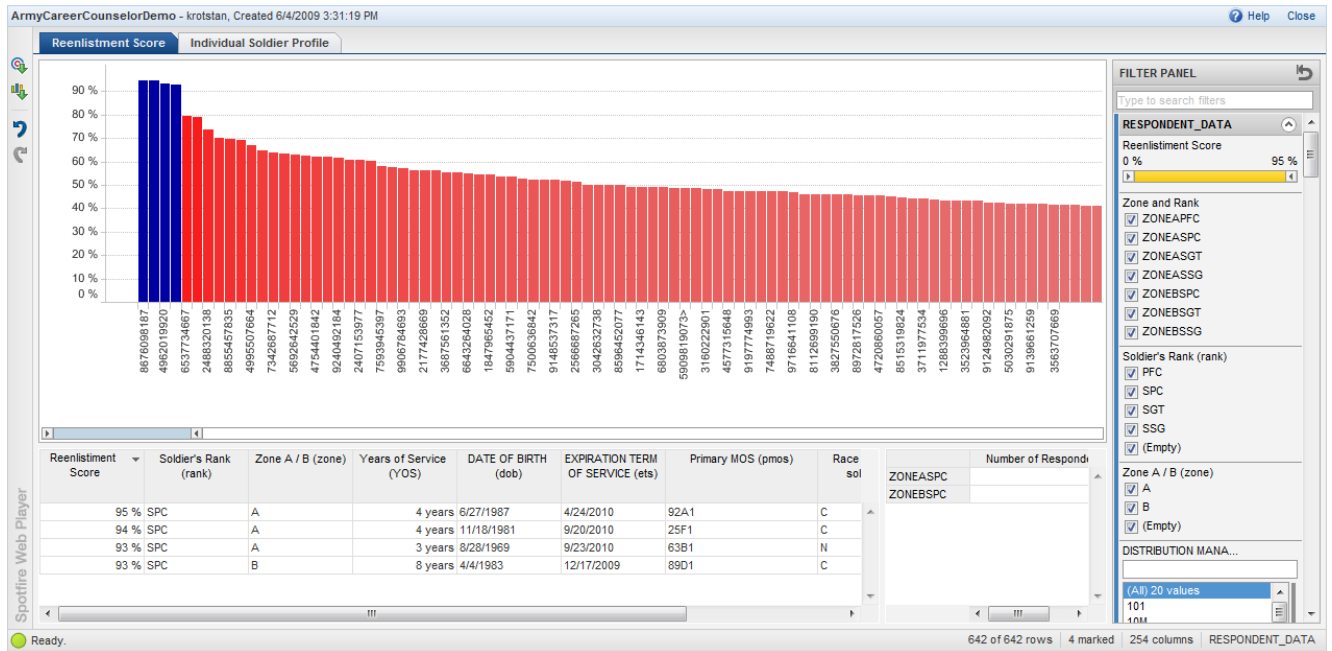
Metric explanation: The Preference Simulator models the cost impact and overall preferences for several thousand possible retention offers. For each alternate offer, the simulator indicates the difference in cost from a base offering, as well as the percentage of Soldiers who prefer the alternate offer and the overall satisfaction (compared to a theoretically optimal offer) that results.

Key findings: Caveat: The current ARI simulator is missing cost data for a number of attributes. Therefore these findings should be considered as indicative, rather than actionable results based on the results of the research. There are several hundred possible retention plans that both reduce costs per Soldier and are preferred by over 95% of respondents. Some attributes, such as Stabilization and Dwell, can greatly increase satisfaction at minimal cost.

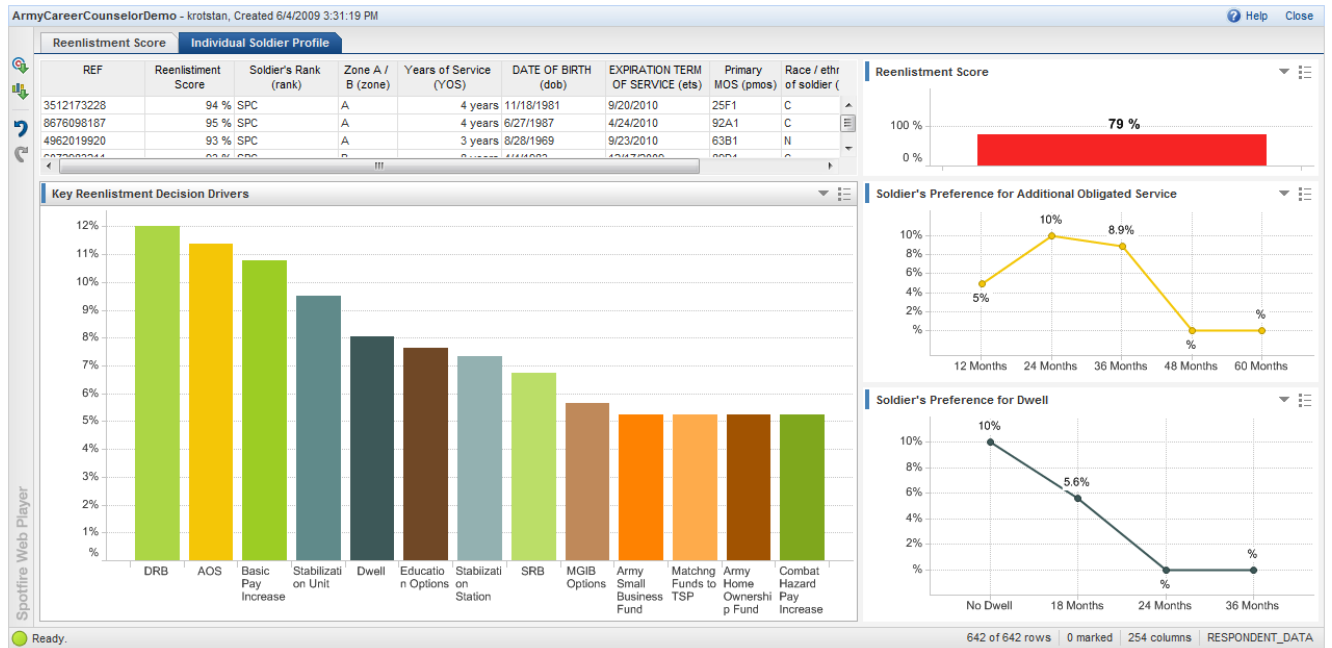
## Career Counselor Decision Tool

The "Career Counselor Decision Tool" is the third output deliverable. This demonstrates how preference data can be used by a Career Counselor to better understand the motivations of Soldiers and their personal drivers for reenlistment. Each Soldier is assigned a "reenlistment score" based on their preferences and available retention offers. Career Counselors can sort and filter based on combinations of reenlistment score and demographics to prioritize their work flow; they can now focus on Soldiers of interest who have a higher likelihood of accepting a reenlistment offer. Counselors can then drill down to see an individual Soldier's personalized preferences for key reenlistment decision drivers at-a-glance, in advance of any personal contact, providing guidance for the reenlistment conversation.

## Unit View (by descending re-enlistment score)



## Individual Soldier View



## Conclusions

Findings from the Pilot project supported the feasibility of applying TCS preference measurement technology in a military personnel setting and illustrated the usefulness of so doing. Preference measurement through the Perceived Value and other metrics moves a survey result to an actionable item, with the promise of identifying incentives with greater appeal to the Soldier and less cost to the Army.<sup>2</sup> This project stopped short of directly addressing validation issues. One approach to validation would be a side-by-side comparison: offer the TCS survey / game to the sample of those responding to a traditional survey (e.g., Sample Survey of Military Personnel – SSMP), and compare the results and insights gained. A quick comparison reveals, for example, the top three attributes found in recent SSMPs (spring 2005, fall 2005, fall 2006) were increased basic pay, station of choice, and more time with family. The TCS Pilot (fall 2009) reported similar results for the largest groups in its sample (SPC and SGT ranks): basic pay, deployment reenlistment bonus, and SRB were at the top, followed closely by station of choice and dwell time.

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<sup>2</sup> For example, the value of 18 months of dwell time over no dwell time was estimated at approximately \$4,780 to the Specialist; this would suggest additional possibilities under the right circumstances to Army policy makers when crafting reenlistment incentives.



## REFERENCES

U.S. Government Accountability Office (2009). *Military Personnel - Army Needs to Focus on Cost-Effective Use of Financial Incentives and Quality Standards in Managing Force Growth* (GAO-09-256, 4 May 2009). Washington, DC: GAO.



## Appendix A

Dear Soldier:

You are invited to participate in an online survey for research to identify incentives that improve the retention of Soldiers. We believe the survey design will provide the Army with better insights on what appeals to an individual Soldier. Your input will help shape future incentive packages for enlisted Soldiers.

You can begin the survey by clicking on the link found below this text. The survey will take approximately 15 minutes to complete. All of your responses will be confidential. Please take this opportunity to voice your preferences.

We ask that you complete the survey by Tuesday, 24 March 2009.

If you have any questions about the survey, please contact MSG Patrick Johnson at [patrick.johnson1@us.army.mil](mailto:patrick.johnson1@us.army.mil).

Thank you for your important contribution.

Very Respectfully,

MICHAEL D. ROCHELLE  
Lieutenant General  
Deputy Chief of Staff, G-1

Click

<https://arisurvey.dtic.mil/game/game.jsp?game=ZONEASPC&ZONEASPCQ1=1515534718>> here to take the survey.





## Appendix B

### Additional Value Matrices

#### VM 1: Zone A, PFC

Attribute	Levels						IMPLICIT ORDER?
Selective Reenlistment Bonus	\$ 3,000	\$ 6,000	\$ 9,000	\$12,000	\$15,000		Y
Deployment Reenlistment Bonus	\$ 5,000	\$ 15,000	\$ 25,000				Y
Basic Pay Increase	3%	3.50%	4%				Y
Combat / Hazard Pay Increase	3%	3.50%	4%				Y
Retirement Pay Increase	0%	1%	2%	3%	4%	5%	Y
Matching Funds to TSP	0%	25%	50%	75%	100%	125%	Y
Army Small Business Fund	\$ 0	\$ 20,000	\$ 35,000	\$50,000			Y
Army Home Ownership Fund	\$ 0	\$ 20,000	\$ 35,000	\$50,000			Y
Stabilization: Station / Unit of Choice	Unit of Choice	Station of Choice	Unit of Choice & 36 Months Stabilization	Unit of Choice & 48 Months Stabilization	Station of Choice & 36 Months Stabilization	Station of Choice & 48 Months Stabilization	N
Deferment Options	No Deferment	Deferment for 18 Months of Dwell	Deferment for 24 Months of Dwell	Deferment for 36 Months of Dwell			N
AOS (Months)	12	24	36	48	60		N
Education Options	No College Leave	12 months College Leave	24 months year College Leave				N
MGIB Options	0% Transferability of MGIB to dependents	50% Transferability of MGIB to dependents	100% Transferability of MGIB to dependents				N

**VM 3: Zone A, SGT**

<b>Attribute</b>	<b>Levels</b>						<b>IMPLICIT ORDER?</b>
Selective Reenlistment Bonus	\$5,000	\$8,000	\$11,000	\$14,000	\$17,000		Y
Deployment Reenlistment Bonus	\$ 5,000	\$ 15,000	\$ 25,000				Y
Basic Pay Increase	3%	3.50%	4%				Y
Combat / Hazard Pay Increase	3%	3.50%	4%				Y
Retirement Pay Increase	0%	1%	2%	3%	4%	5%	Y
Matching Funds to TSP	0%	12.50%	25%	37.50%	50%	62.50%	Y
Army Small Business Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Army Home Ownership Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Stabilization: Station / Unit of Choice	Unit of Choice	Station of Choice	Unit of Choice & 36 Months Stabilization	Unit of Choice & 48 Months Stabilization	Station of Choice & 36 Months Stabilization	Station of Choice & 48 Months Stabilization	N
Deferment Options	No Deferment	Deferment for 18 Months of Dwell	Deferment for 24 Months of Dwell	Deferment for 36 Months of Dwell			N
AOS (Months)	12	24	36	48	60		N
Education Options	No college leave	1 year college Leave	24 months year college Leave				N
MGIB Options	0% Transferability of MGIB to dependents	50% Transferability of MGIB to dependents	100% Transferability of MGIB to dependents				N

**VM4: Zone A, SSG**

<b>Attribute</b>	<b>Levels</b>						<b>IMPLICIT ORDER?</b>
Selective Reenlistment Bonus	\$6,000	\$9,000	\$12,000	\$15,000	\$18,000		Y
Deployment Reenlistment Bonus	\$ 5,000	\$ 15,000	\$ 25,000				Y
Basic Pay Increase	3%	3.50%	4%				Y
Combat / Hazard Pay Increase	3%	3.50%	4%				Y
Retirement Pay Increase	0%	1%	2%	3%	4%	5%	Y
Matching Funds to TSP	0%	12.50%	25%	37.50%	50%	62.50%	Y
Army Small Business Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Army Home Ownership Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Stabilization: Station / Unit of Choice	Unit of Choice	Station of Choice	Unit of Choice & 36 Months Stabilization	Unit of Choice & 48 Months Stabilization	Station of Choice & 36 Months Stabilization	Station of Choice & 48 Months Stabilization	N
Deferment Options	No Deferment	Deferment for 18 Months of Dwell	Deferment for 24 Months of Dwell	Deferment for 36 Months of Dwell			N
AOS (Months)	12	24	36	48	60		N
Education Options	No college leave	1 year college Leave	24 months year college Leave				N
MGIB Options	0% Transfersability of MGIB to dependents	50% Transfersability of MGIB to dependents	100% Transfersability of MGIB to dependents				N

**VM 5: Zone B, SPC**

Attribute	Levels						IMPLICIT ORDER?
Selective Reenlistment Bonus	\$5,500	\$8,500	\$11,500	\$14,500	\$17,500		Y
Deployment Reenlistment Bonus	\$ 5,000	\$15,000	\$25,000				Y
Basic Pay Increase	3%	3.50%	4%				Y
Combat / Hazard Pay Increase	3%	3.50%	4%				Y
Retirement Pay Increase	0%	1%	2%	3%	4%	5%	Y
Matching Funds to TSP	0%	12.50%	25%	37.50%	50%	62.50%	Y
Army Small Business Fund	\$ 0	\$ 20,000	\$ 35,000	\$50,000			Y
Army Home Ownership Fund	\$ 0	\$ 20,000	\$ 35,000	\$50,000			Y
Stabilization: Station / Unit of Choice	Unit of Choice	Station of Choice	Unit of Choice & 36 Months Stabilization	Unit of Choice & 48 Months Stabilization	Station of Choice & 36 Months Stabilization	Station of Choice & 48 Months Stabilization	N
Deferment Options	No Deferment	Deferment for 18 Months of Dwell	Deferment for 24 Months of Dwell	Deferment for 36 Months of Dwell			N
AOS (Months)	12	24	36	48	60		N
Education Options	No college leave	1 year college Leave	24 months year college Leave				N
MGIB Options	0% Transferability of MGIB to dependents	50% Transferability of MGIB to dependents	100% Transferability of MGIB to dependents				N

VM6: Zone B, SGT

Attribute	Levels						IMPLICIT ORDER?
Selective Reenlistment Bonus	\$8,000	\$11,000	\$14,000	\$17,000	\$20,000		Y
Deployment Reenlistment Bonus	\$ 5,000	\$ 15,000	\$ 25,000				Y
Basic Pay Increase	3%	3.50%	4%				Y
Combat / Hazard Pay Increase	3%	3.50%	4%				Y
Retirement Pay Increase	0%	1%	2%	3%	4%	5%	Y
Matching Funds to TSP	0%	12.50%	25%	37.50%	50%	62.50%	Y
Army Small Business Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Army Home Ownership Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Stabilization: Station / Unit of Choice	Unit of Choice	Station of Choice	Unit of Choice & 36 Months Stabilization	Unit of Choice & 48 Months Stabilization	Station of Choice & 36 Months Stabilization	Station of Choice & 48 Months Stabilization	N
Deferment Options	No Deferment	Deferment for 18 Months of Dwell	Deferment for 24 Months of Dwell	Deferment for 36 Months of Dwell			N
AOS (Months)	12	24	36	48	60		N
Education Options	No college leave	1 year college Leave	24 months year college Leave				N
MGIB Options	0% Transferability of MGIB to dependents	50% Transferability of MGIB to dependents	100% Transferability of MGIB to dependents				N

**VM7: Zone B, SSG**

Attribute	Levels						IMPLICIT ORDER?
Selective Reenlistment Bonus	\$9,500	\$12,000	\$14,500	\$17,500	\$20,000	\$22,500	Y
Deployment Reenlistment Bonus	\$5,000	\$15,000	\$25,000				Y
Basic Pay Increase	3%	3.50%	4%				Y
Combat / Hazard Pay Increase	3%	3.50%	4%				Y
Retirement Pay Increase	0%	1%	2%	3%	4%	5%	Y
Matching Funds to TSP	0%	12.50%	25%	37.50%	50%	62.50%	Y
Army Small Business Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Army Home Ownership Fund	\$ 0	\$ 20,000	\$ 35,000	\$ 50,000			Y
Stabilization: Station / Unit of Choice	Unit of Choice	Station of Choice	Unit of Choice & 36 Months Stabilization	Unit of Choice & 48 Months Stabilization	Station of Choice & 36 Months Stabilization	Station of Choice & 48 Months Stabilization	N
Deferment Options	No Deferment	Deferment for 18 Months of Dwell	Deferment for 24 Months of Dwell	Deferment for 36 Months of Dwell			N
AOS (Months)	12	24	36	48	60		N
Education Options	No college leave	1 year college Leave	24 months year college Leave				N
MGIB Options	0% Transferability of MGIB to dependents	50% Transferability of MGIB to dependents	100% Transferability of MGIB to dependents				N