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Library/Reading Slip 2005 BRAC Commission Analysis  
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# Defense Finance and Accounting Service Base Realignment and Closure 2005

HSA JCSCG Analysis Team  
8 July 2005

Transforming Through Base Realignment and Closure

7/8/2005 11:09 AM



# ***Briefing Agenda***

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- Military Value Model**
- Sensitivity Analysis**
- Metric Questions**
- Spreadsheet MV Model**
- COBRA Questions**



## Analytical Support of HSA JCSG

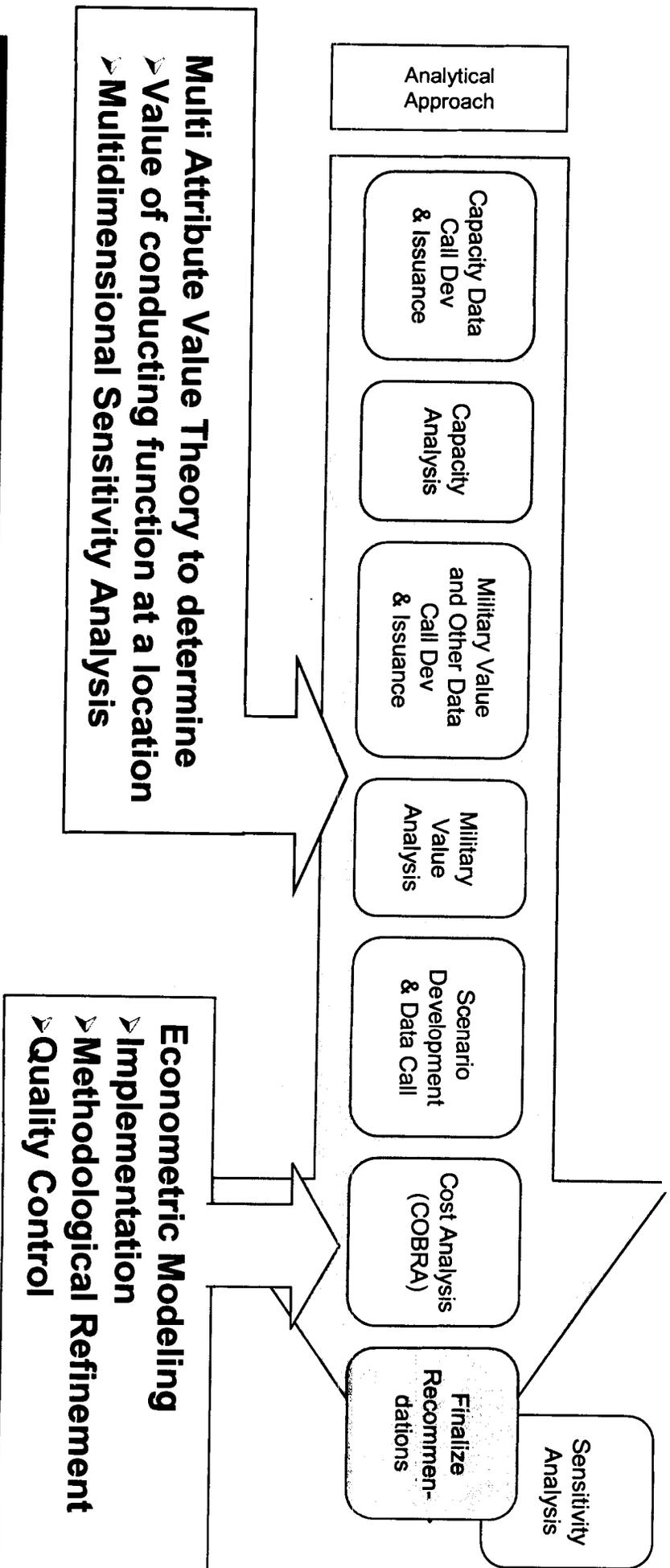
### Data Analysis to Determine:

- Targets
- Requirements
- Capacity

### Optimization (MLP):

- Max Military Value
- s.t. Capacity, etc.

### Sensitivity Analysis & Quality Control



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## ***Calculating Military Value***

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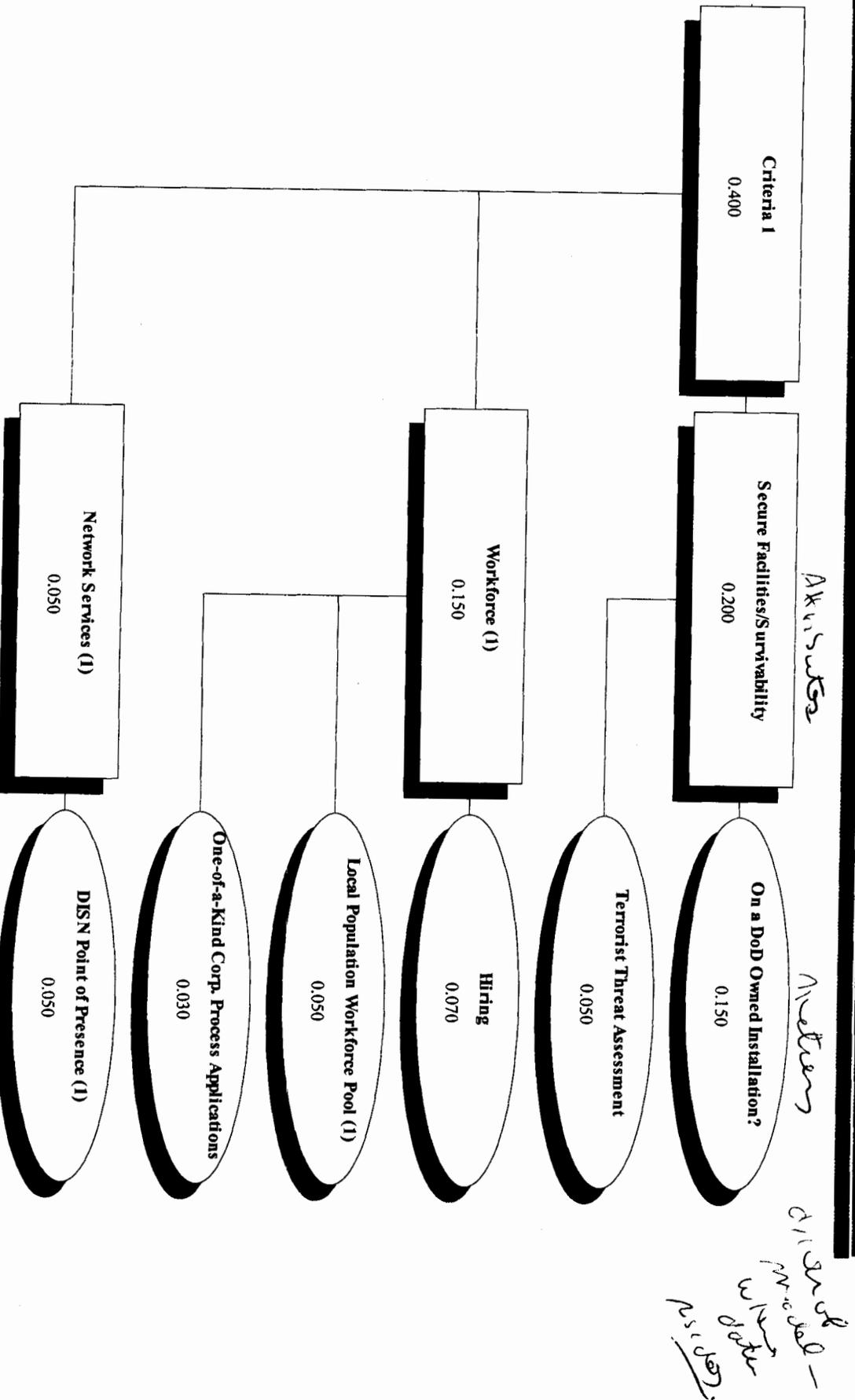
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- Prepare data for use according to documentation for each metric**
- MV models are a hierarchy of metrics weighted by importance**
- MV score is sum of metric input values \* weighted importance**

$$MV = \sum (metric\_value) * (metric\_weight)$$



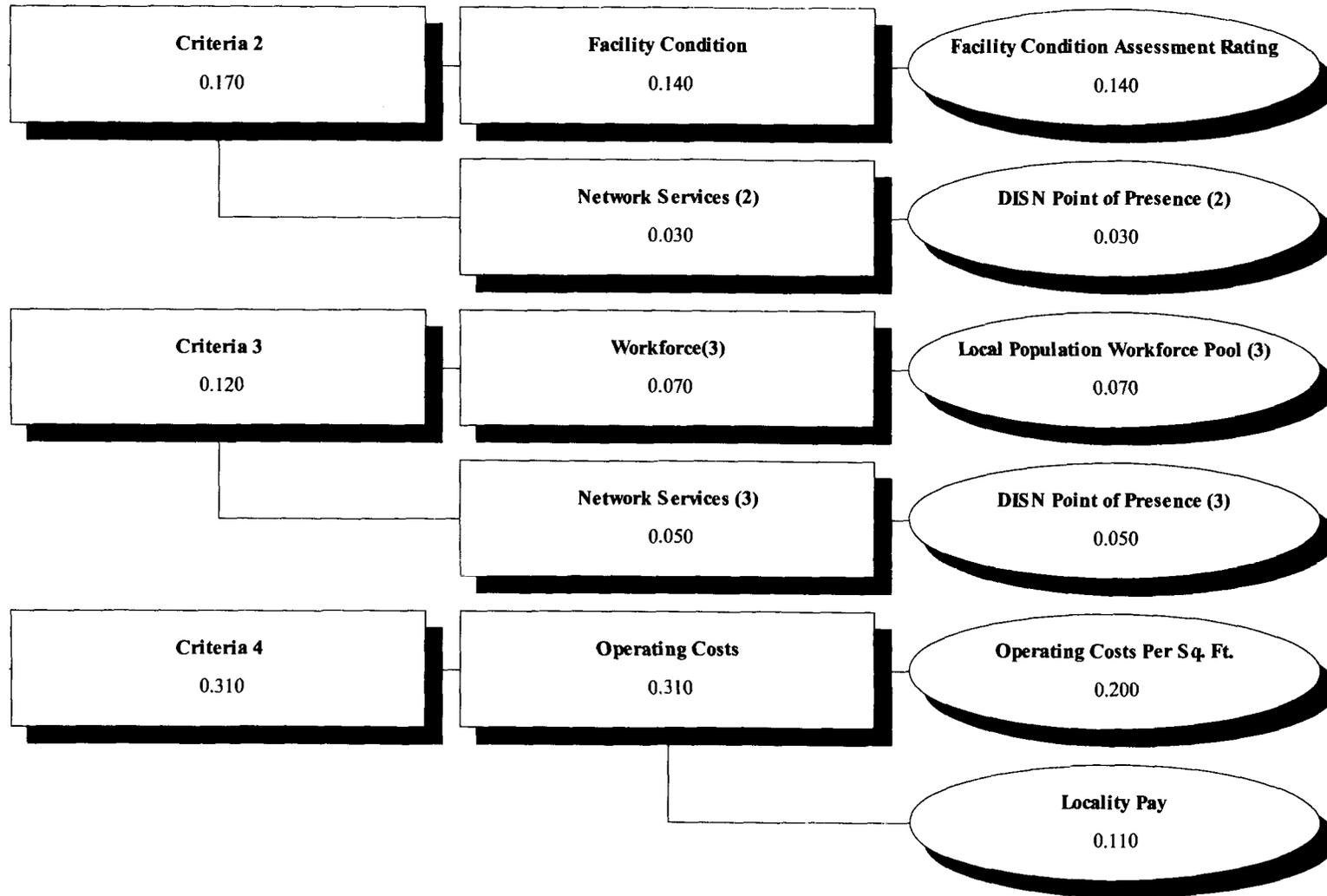
# Background



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# Background





# Evolution of DFAS MV Model

- Metrics and Attributes developed in an evolutionary manner
- Weights
  - Group Input
  - Smarter Method (rank order centroid)
- Approval and Coordination—HSA Members, MILDEPS, OSD BRAC, ISG
- Final version has 12 metrics (9 unique types)

*functionality -  
dependencies -  
DCS & doc  
(rank)*

Metric Name	Weight	Rank
Operating Costs Per Sq. Ft.	0.20	1
On a DoD Owned Installation	0.15	2
FCC <i>Facility Condition Code</i>	0.14	3
DISN POP (3)	0.13	4
Local Population Workforce (2)	0.12	5
Locality Pay	0.11	6
Hiring	0.07	7
Terrorist Threat Assessment	0.05	8
One-of-a-Kind	0.05	9
<b>Total:</b>	<b>1</b>	

*APPLICATION*



# Military Results and Rankings

Rank	MV Score 14 Jun 05	Location	MV Score Final Report	Rank	Delta
1	0.856	Denver	0.803	3	2
2	0.853	Rock Island	0.846	1	-1
3	0.821	Norfolk Naval Station	0.787	4	1
4	0.813	Pensacola Saufley Field	0.805	2	-2
5	0.789	Lawton	0.787	5	0
6	0.727	Pensacola Naval Air Station	0.72	6	0
7	0.725	Columbus	0.688	7	0
8	0.690	Omaha	0.673	8	0
9	0.688	Indianapolis	0.651	9	0
10	0.670	St Louis	0.612	11	1
11	0.644	Dayton	0.625	10	-1
12	0.633	Cleveland	0.587	12	0
13	0.631	San Diego	0.569	14	1
14	0.621	San Antonio	0.586	13	-1
15	0.587	Pacific Ford Island	0.569	15	0
16	0.581	Orlando	0.54	20	4
17	0.565	Patuxent River	0.565	16	-1
18	0.559	Charleston	0.546	18	0
19	0.548	Limestone	0.548	17	-2
20	0.547	Rome	0.542	19	-1
21	0.543	Lexington	0.532	21	0
22	0.500	San Bernardino	0.429	24	2
23	0.493	Kansas City	0.451	22	-1
24	0.441	Seaside	0.433	23	-1
25	0.433	Arlington	0.313	25	0
26	0.295	Oakland	0.243	26	0

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# ***Sensitivity Analysis***

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- Considered significant drivers**
  - **Operating Costs—20%**
  - **On DOD Installation—15%**
  - **Locality Pay—11%**
  - **DISN PoP—13%**
  
- No issues affecting candidate recommendations**
  
- Some sensitivity**
  - **Primarily in the lower half of the location rankings, but not significant**
  - **Pacific Ford Island and Lexington had some sensitivity**



# DFAS Sensitivity

	Operating Cost		On DoD Installation		Locality Pay		DISN PoP	
	-20%	20%	-20%	20%	-20%	20%	-20%	20%
Rank Deviations <=2	2	3	1	0	2	3	1	1
Rank Deviations > 2	0	1	1	1	1	0	1	0
Highest Deviation	1	-3	-5	3	3	-2	4	1
High Deviation ID		Patuxent River	Pacific Ford Island	Pacific Ford Island	Pacific Ford Island		Lexington	

- Most rank deviations were minimal
- Top and bottom of list were very stable
- Quartile groupings were very consistent



## ***Workforce Population***

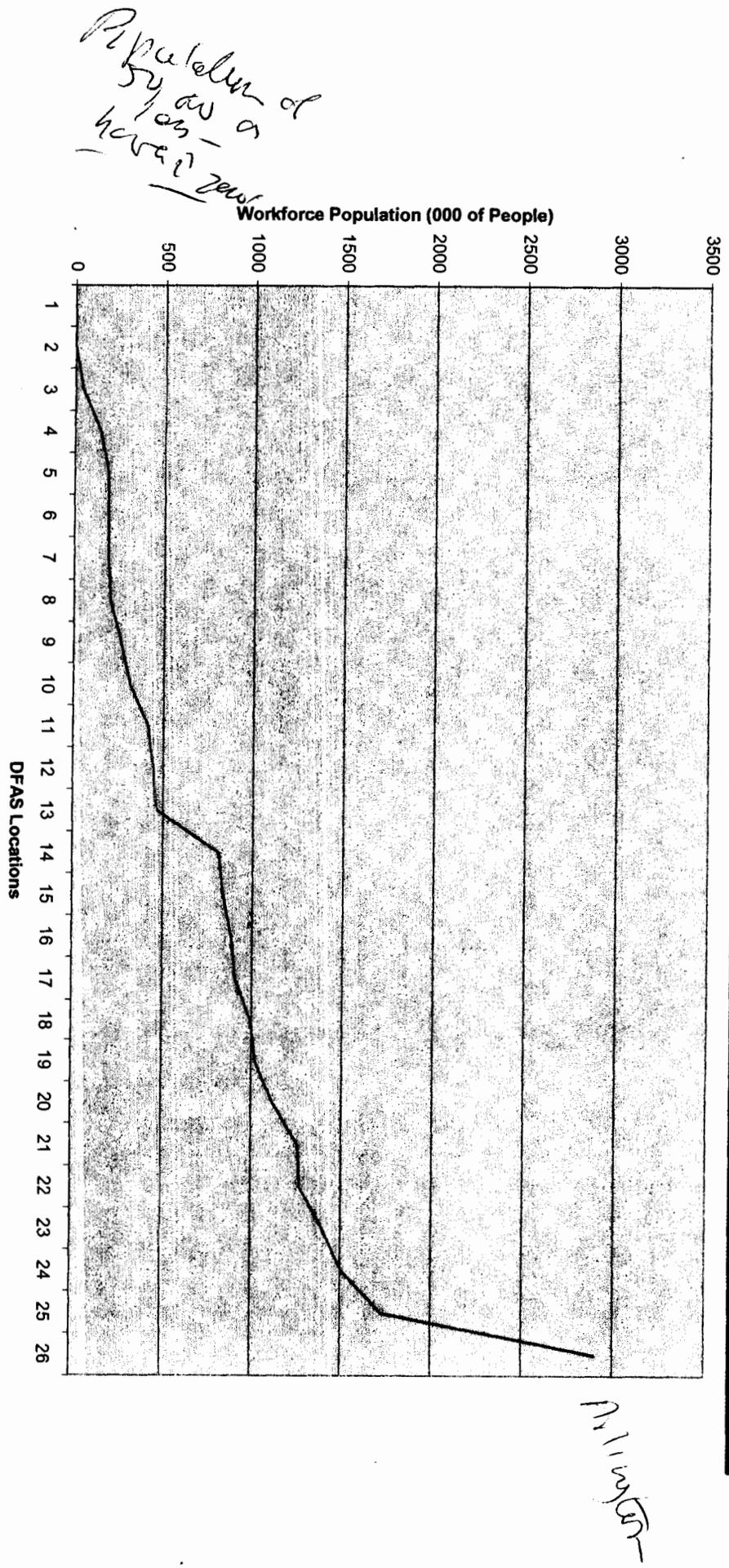
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- Limestone & Patuxent River locations valued as described in scoring plan and associated memorandum
- Statistical Areas define an area with a substantial population nucleus, combined with adjacent communities having a high degree of economic and social integration
- MSA/PMSA definitions as January 2002 were used to match data sources
  - The Office of Management and Budget (OMB) issued new definitions in June 2003, but there is no data to support the new definitions.
- Workforce populations for the counties where these sites are located for the May 2004 timeframe:
  - Limestone                    38,104
  - Patuxent River            59,487



# Workforce Population



- Responses to workforce population question arrayed in order
- Metrics accounts for 12% of MV model



## ***Local Population Sensitivity Analysis***

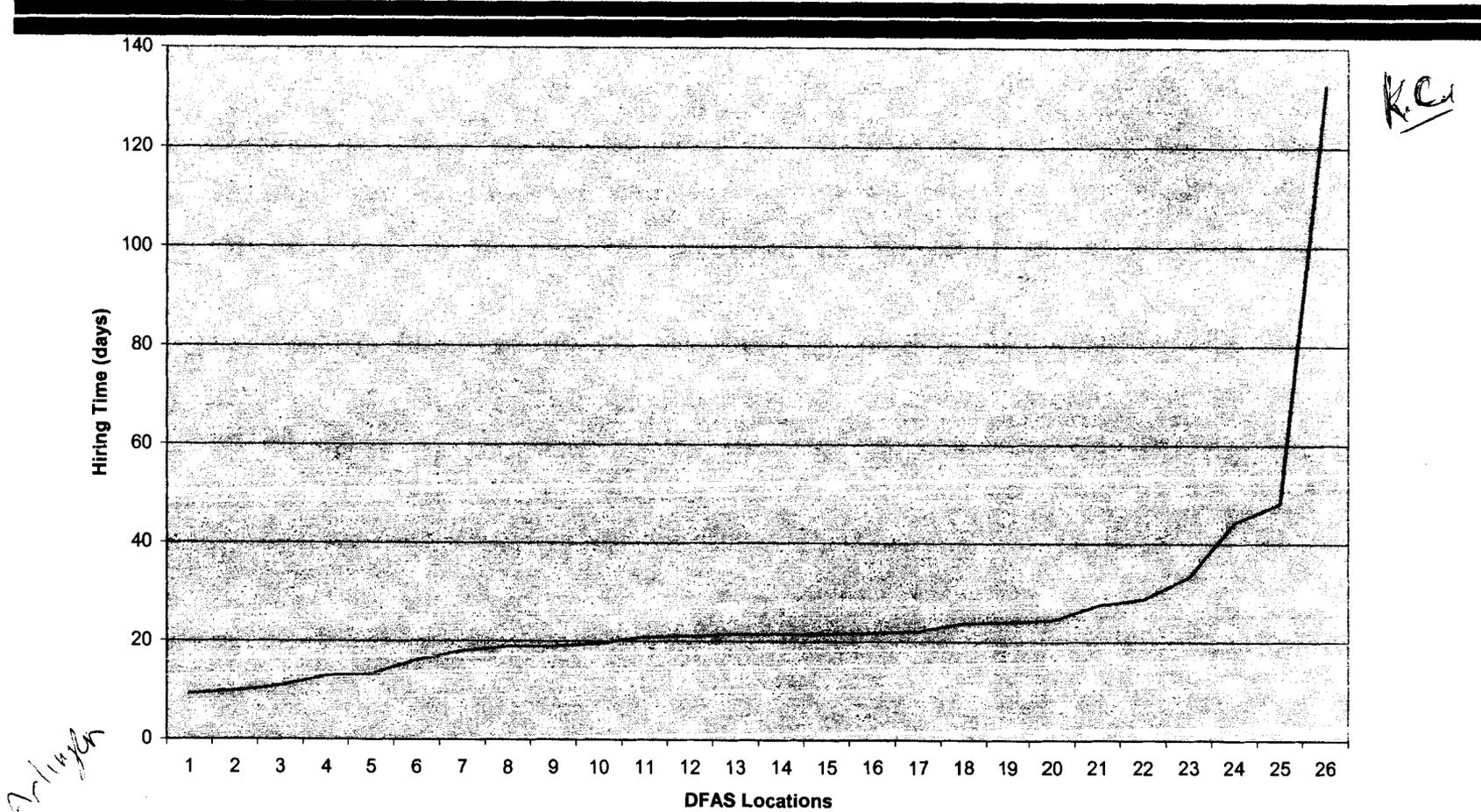
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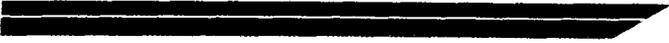
- Contrived data—changing from 0.0 to county population
  - Limestone
    - ✓ Population—38,104
    - ✓ No change in MV rank (0.002 increase in MV score)
  - Patuxent River
    - ✓ Population—59,487
    - ✓ No change in MV rank (0.002 increase in MV score)
- 20 percent weight swing
  - 2.6 percent—one rank deviation
  - 5.6 percent—five rank deviations of one position
  - Limestone drops one position in 5.6 percent case
- The metric is not sensitive



# Hiring Time Data



- Responses to question on hiring time arrayed in order
- Metric accounts for 7% of MV model





# ***Hiring Sensitivity Analysis***

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- Contrived data change for Kansas City**
  - **From 132.5 to 48.2**
  - **Changes rank from 23 to 22 (+1)**
  
- 20 percent weight swing**
  - **8.4 percent—one rank deviation of one position**
  - **5.6 percent—two rank deviations of one position**
  
- This metric is not sensitive**



## **Basic Steps—Military Value Calculation**

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- Review Scoring Plan and Methodology documentation
- Retrieve data according to documentation
- Prepare data for MV analysis according to documentation
- Run MV application
- Scoring Plans and Methodology Documentation are available in the BRAC Reading Room or from the BRAC website
- Data sources are identified in the documentation for each metric and are available in the BRAC Reading Room or from the BRAC website



# **COBRA**

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# Assumptions

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- HSA0115 Scenario is the base for the current Proforma COBRA runs
  - Eliminations and new impacts at NMMC Bethesda (due to USUHS not closing) were added
- Eliminations
  - Collocations assumes 7% cut from AF Med, BUMED and OTSG
  - Consolidations assume 14% cut from all organizations involved
  - Both MJCSG and individual organizations do not support eliminations
  - Eliminations affect all personnel types; officers, enlisted, civilians and contractors
- ✓ Contractors assumed to cost \$200,000 per year on average
- Impacts at NMMC Bethesda are not certified
  - We have rough estimates from DON BRAC office
  - Current estimates will likely change if more formal analysis is done



# Joint Medical Command Options

	HSA0115 as is	Collocation - 7%	Consolidation - 14%
One-Time Costs	\$108.322M	\$106.677M	\$103.087M
Net Implementation Costs / Savings	\$91.756M (Cost)	\$70.302M (Cost)	\$22.532M (Cost)
Annual Recurring Savings	\$5.983M	\$17.101M	\$41.450M
Payback Period / Year	24 Years (2034)	6 Years (2016)	2 Years (2012)
NPV	\$25.580M (Cost)	\$102.565M (Savings)	\$383.895M (Savings)
Eliminations (Off / Enl / Civ / Ctr)	None, Total Realigned = 1,881	78 Total (26 / 4 / 20 / 28)	249 Total (67 / 9 / 74 / 99)
	HSA0115 with new AF Data	Collocation - 7%	Consolidation - 14%
One-Time Costs	\$111.657M	\$110.054M	\$106,370M
Net Implementation Costs / Savings	\$91.392M (Cost)	\$71.213M (Cost)	\$23.592M (Cost)
Annual Recurring Savings	\$7.315M	\$18.142M	\$42.723M
Payback Period / Year	19 Years (2029)	6 Years (2016)	2 Years (2012)
NPV	\$12.306M (Cost)	\$111.856M (Savings)	\$395.348M (Savings)
Eliminations (Off / Enl / Civ / Ctr)	None, Total Realigned = 1,963	81 Total (34 / 6 / 22 / 19)	258 Total (84 / 13 / 78 / 83)

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# **Base Realignment and Closure 2005**

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## **Defense Finance and Accounting Service Cost of Base Realignment Actions (COBRA)**

25 July 2005

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7/25/2005 8:21 AM



# ***COBRA Data Preparation Methodology***

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- Scenario data call question responses were exported from the DFAS ODIN ACCESS data base, by table (DoD Question number), into an Excel format.
  - ✓ Based on scenario(s), additional data calls may be required.
- Responses were consolidated and sorted into Excel workbooks by subject area/type of questions
- Excel spreadsheets were developed in order to further sort data by location.



# ***COBRA Data Preparation Methodology***

- Scenario data call responses were combined to create a view for each location.
  
- Data input to COBRA is associated with the following subject matter/type of responses (bullets checked may require update based on scenario(s)):
  - FY05 – FY11 programmed personnel work years or authorizations by locations. (To determine total programmed personnel number for each location.) (DoD # 6125-6166)
  - Relocation (Screen 3 - Movement Table)
    - ✓ Personnel/function relocation by geographic location (To determine relocating numbers.) (DoD # 6167-6194)
    - ✓ Storage/Warehouse Material Movement -Tonnage. (To determine relocating amounts.) (DoD # 6196-6198)
    - ✓ Active Record Storage - Files Tonnage. (To determine relocating amounts.) (DoD # 6199-6201)
    - ✓ Mission/Support Equipment Relocation – Tonnage. (To determine relocating amounts.) (DoD # 6202-6204)
    - ✓ Furniture Relocation – Tonnage. (To determine relocating amounts.) (DoD # 6205-6207)



# ***COBRA Data Preparation Methodology***

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- ❑ **Screen 6, Base Information (Personnel) – Spreadsheets developed using FY 05-FY 11 programmed personnel work years or authorizations by locations.**
  - **Scenario Changes by Year (Additions/Eliminations)**
    - ✓ **Based on scenario(s), may require adjustment**
  - **Programmed Installation Population Changes (non-BRAC) by Year (Increases/Decreases)**
    - ✓ **Increases/Decreases beyond year of closure must be carried forward to one of the gaining locations to avoid error in COBRA.**
    - ✓ **Some adjustments necessary to balance personnel relocation numbers with programmed personnel work years or authorizations by location.**



## ***Activity Mission Costs***

- Lease costs begin to accrue at a gaining location when the required space exceeds the assigned space (defined in capacity data call), triggered by the movement in of personnel, mission and support equipment.
  - ✓ Based on scenario(s) may require update.
- A half year of the additional lease cost is used in the first year, based on the assumption that personnel, mission and support equipment will not move until the middle of a fiscal year.
- Lease cost per square foot (SF) factor was developed based on the FY03 fully burdened SF cost, escalated by 1.044% per OSD Policy Memorandum #3.



# ***Activity Mission Savings***

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- No space savings were identified/included in COBRA for sites moving/closing in FY06.**
  - ✓ **Based on scenario(s), may require update.**
  
- For all other FY, mid-year calculation was used to begin savings in year of move/closure.**
  
- Lease cost per square foot (SF) for each of the realigning/closing sites was developed based on the FY03 fully burdened SF costs, escalated by 1.044% per OSD Policy Memorandum #3.**



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## ***Military Construction***

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- Based on scenario(s):**
  - ✓ **Renovated (reactivated) facilities space requirement may require adjustment.**
  - ✓ **Military construction may be required.**



# ***DFAS COBRA POINTS***

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- Two separate COBRA runs – P1 and P2**
- Adder – combines P1 and P2 for final results**
- Footnotes for each screen**



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# **Defense Finance and Accounting Service Base Realignment and Closure 2005**

**HSA JCSG Analysis Team  
25 July 2005**

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## ***Optimization Model***

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- ❑ **Objective: Maximize Military Value**
    - Penalty for construction
    - Penalty for having many sites
  
  - ❑ **Subject to the following main constraints:**
    - Meet the personnel requirements for each business line in the future (FY2011).
    - Keep at least 2 sites for each business line.
    - ↳ ● Do not exceed capacity, either existing or buildable.
    - Do not assign staff for a function at a location where that function is not currently present.
- \* Additional special constraints exist but those listed above were the driving constraints.



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## *Original Optimization Model*

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- No penalty on construction and high penalty on the number of sites**
  - 2 site solution: Columbus, OH and Lawton/Ft. Sill, OK
- High penalty on construction, moderate penalty on the number of sites**
  - 3 site solution: Denver, CO; Columbus, OH and Indianapolis, IN
- High penalty on both construction and expansion, moderate penalty on number of sites**
  - 4 site solution: Denver, CO; Columbus, OH; Indianapolis, IN and Cleveland, OH



## Summary of Revised Model Runs

The penalties on the number of sites, expansion, building, non-secure locations and movement were varied throughout 52 model runs.

	<b>Military Value</b>	<b>Number of times appeared in an optimization run</b>
Cleveland, OH	0.587	22
Columbus, OH	0.688	52
Dayton, OH	0.625	10
Denver, CO	0.803	42
Indianapolis, IN	0.651	52
Kansas City	0.451	8
Lawton/Ft.Sill, OK	0.787	21
Norfolk, VA	0.787	4
Pensacola S., FL	0.805	1
Rock Island, IL	0.846	6



# BACK-UP SLIDES

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## ***Alternatives***

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- 2 site scenario: Requires construction.**
  - Columbus, OH
  - Indianapolis, IN
  
- 3 site scenario: Requires only expansion, no construction.**
  - Columbus, OH; Indianapolis, IN
  - Denver, CO
  
- 4-5 site scenario**
  - Columbus, OH; Indianapolis, IN; Denver, CO
  - Cleveland, OH (preferred when the penalty on construction is high)
  - Lawton/Ft Sill, OK
  
- 6-7 site scenario**
  - Columbus, OH; Indianapolis, IN; Denver, CO; Cleveland, OH; Lawton/Ft Sill, OK
  - Dayton, OH
  - Kansas City (becomes more desirable when the penalty on non-secure location is increased)