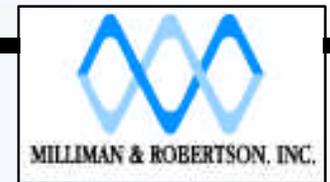


VHA Office of Policy and Planning



CARES Enrollment, Utilization & Expenditure Projection Model

Kathi Patterson, FSA, MAAA
Principal & Consulting Actuary
Milliman & Robertson, Inc.

May 2001

General Model Overview

- Enrollment Projections
- Workload Projections
- Unit Cost Projections
- Expenditure Projections
- Unmet Demand



Actuarial Model Detail

- Geographic Area
 - Preferred Facility
 - County or Zip of residence
- Age Bands (<45, 45-64, 65+)
- Enrollee Types
- Priority Level
- 40 service lines
- Up to 20 years



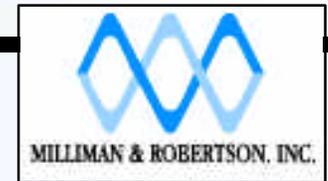
Enrollee Types

- Enrollee Pre
 - Used VA health care services during FY96-FY98
 - Enrolled
- Enrollee Post
 - Did not use VA health care services during FY96-FY98
 - Past: Enrolled FY99
 - New: Enrolled FY00



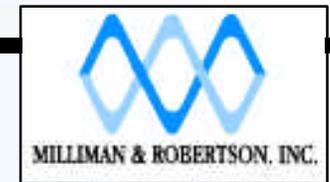
Enrollment Projections

- Enrollment began 10/1/98 (FY99)
- Availability of enrollment trends
- Modeled Enrollee Pre and Enrollee Post separately
- Trend rates developed using exponential decay model
- Applied to current enrollment
- 10-year projections



Projected Average Enrollment

Fiscal Year	Projected Enrollee Pre Average Enrollment	Projected Past Enrollee Post Average Enrollment	Projected New Enrollee Post Average Enrollment	Total Projected Average Enrollment
2001	3,114,945	828,782	954,012	4,897,739
2002	2,996,930	794,210	1,356,181	5,147,321
2003	2,873,574	759,961	1,652,384	5,285,919
2004	2,750,215	726,131	1,864,317	5,340,663
2005	2,628,732	692,808	2,009,308	5,330,848
2006	2,509,875	660,079	2,101,238	5,271,192
2007	2,394,015	628,029	2,151,267	5,173,311
2008	2,281,396	596,736	2,168,392	5,046,524
2009	2,172,202	566,277	2,159,889	4,898,368
2010	2,066,577	536,721	2,131,645	4,734,943



Workload Projection Methodology

- Private Sector Benchmarks
- Uniform Benefit Package & Millennium Bill Services
- Geographic Area
- Age/Gender
- Reliance
- Morbidity
- Degree of Health Care Management
- Residual Differences



Private Sector Utilization Benchmarks

- Geographic area specific
- Large nationwide databases with extensive detail
- Commercial and Medicare Over 65
- Used extensively by private sector health plans (validated)
- Researched and updated annually



Health Care Services



- Uniform Benefit Package
- Millennium Bill Services
- Impact of Copays and unlimited benefits on utilization
- Ability to perform analyses regarding additional health care services

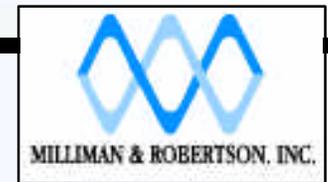
Age/Gender Adjustment

- Predominantly Male
- No Children
- Older under age 65 population, on average
- Younger ages 65 and over population, on average
- Specific adjustments by health care service



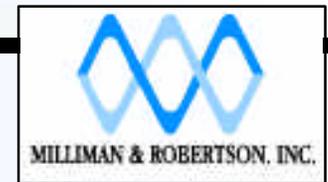
Reliance Adjustment

- Veterans have “access” to non-VA health care
- Reliance adjustment reflects enrollee reliance on VHA for their health care needs (0% to 100%)
- Survey of enrollees (two years)
- Varies by inpatient, outpatient and prescription drug services
- Varies by Enrollee Type, Age Group, Priority Level and VISN



Morbidity Adjustment

- Historically VHA health care users have been sicker than private sector health care users
- Diagnosis based methodology comparing health status of veteran enrollee and private sector populations
- VHA patient diagnosis data and SF-36 survey data
- Impact of reliance
- Varies by inpatient and outpatient separately for mental health and non-mental health services
- Varies by Enrollee Type Age Group, Priority Level and VISN



Degree of Health Care Management

- Private sector is measured on a spectrum of 0% (loosely managed) to 100% (well managed)
- Inpatient length of stay analysis
- Outpatient assumed to be community loosely managed (except mental health)
- Inpatient adjustment varies by service line
- Outpatient adjustment varies by mental health and non-mental health
- All adjustments vary by VISN and fiscal year



Residual Differences



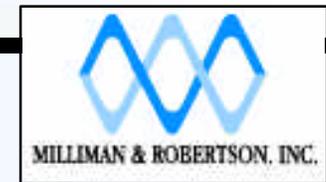
- Fiscal year 1999 actual workload data compared to model projections
- Classified detailed VA data in terms of Actuarial Model service lines
- Residual adjustment reflects unmeasured morbidity, reliance and degree of health care management

VA Unit Costs

- VHA Unit Cost data (CDR)
- Obtained annually from ARC
- Major Facility Detail
- Adjusted for health care service mix



Average Impacts of Model Parameters - VISN 12



<i>Priority</i>	<i>Parameters Impacting Utilization</i>						<i>Unit Costs</i>	<i>Total</i> ³
	<i>Reliance</i>	<i>Morbidity</i>	<i>A to E</i>	<i>Age/Sex</i>	<i>Area</i> ¹	<i>Other</i> ²		
1	0.76	2.70	0.97	1.05	0.96	1.07	0.81	1.73
2	0.64	1.73	0.95	1.05	0.97	1.07	0.81	0.92
3	0.60	1.57	0.92	1.07	0.98	1.06	0.83	0.80
4	0.78	3.86	1.29	1.22	1.02	1.05	0.93	4.73
5	0.67	1.65	0.96	1.17	1.01	1.07	0.86	1.15
6	0.56	1.18	0.94	0.81	0.98	1.05	0.81	0.42
7a	0.36	1.23	1.13	1.21	0.96	1.02	0.78	0.46
7c	0.30	1.03	0.92	1.24	0.99	1.02	0.75	0.26
<i>Pre</i>	0.70	1.90	0.95	1.15	1.00	1.04	0.85	1.29
<i>Past Post</i>	0.34	1.30	1.10	1.19	1.01	0.99	0.81	0.47
<i>New Post</i>	0.43	1.25	1.11	1.18	0.97	0.99	0.80	0.55
VISN 12	0.59	1.71	0.98	1.16	1.00	1.04	0.84	0.998

¹ Area adjustment includes the impact of locality and degree of community management.

² Other includes the impacts of UBP adjustments and unmeasured parameter correlations.

³ The product of individual average adjustment factors may not duplicate the total average adjustment factors due to rounding.

Relative Impacts of Model Parameters by VISN - FY01



VISN	Reliance	Morbidity	Age/ Gender	VA Unit Costs	Area	Other*	Total
1	1.00	0.99	1.07	1.10	1.02	0.99	1.18
2	0.97	0.91	1.07	0.90	0.99	0.97	0.82
3	0.78	0.93	1.10	1.12	1.21	0.99	1.07
4	0.82	0.85	1.08	0.97	1.06	0.98	0.76
5	1.10	0.98	0.96	1.03	1.04	1.01	1.12
6	1.04	1.01	0.93	0.94	0.99	1.00	0.91
7	1.01	1.00	0.94	0.96	1.06	1.00	0.97
8	0.95	0.98	1.06	0.90	1.14	1.03	1.04
9	1.07	1.05	0.98	0.98	1.06	0.97	1.11
10	0.94	1.00	0.98	0.96	0.93	1.03	0.85
11	1.00	1.03	1.00	1.02	0.93	1.01	0.99
12	1.04	1.11	1.04	1.07	0.96	0.97	1.19
13	1.01	1.06	1.08	0.94	0.82	0.97	0.86
14	0.93	1.03	1.08	0.95	0.84	0.97	0.80
15	1.03	1.02	1.01	0.95	0.93	1.01	0.95
16	1.12	1.01	0.96	0.98	1.13	0.99	1.19
17	1.12	0.99	0.93	0.90	1.05	0.99	0.96
18	1.07	1.01	1.00	0.94	0.90	1.00	0.91
19	1.04	1.08	0.97	0.97	0.82	1.00	0.87
20	1.03	1.15	0.89	1.04	0.77	1.03	0.87
21	1.03	0.99	0.99	1.15	0.87	1.04	1.05
22	1.04	1.00	0.92	1.19	0.99	1.02	1.15
National	1.00	1.00	1.00	1.00	1.00	1.00	1.00

* Other includes the impact of all remaining model assumptions, such as copay utilization and actual to expected adjustments.

Projected Expenditures

- Utilization x Unit Cost x Enrollment projects expenditures at greatest level of detail
- One page outline of model methodology
- VISN 12 Cost Model
 - Composite
 - 45-64, Priority 5, Enrollee Pre, Cook County, FY 2001



Sample Cost Model

Inpatient



FY 2001, All Ages, All Priorities, All Enrollees, VISN 12



Type of Service	Annual Admissions Per 1000	Length of Stay	Annual Utilization Per 1000	Average Cost Per Service	Projected Monthly Claim Cost	Projected Annual Expenditures
Medical	111.2 adm.	5.93	659.1 days	\$1,310.06	\$71.95	\$187,897,978
Surgical	29.0 adm.	10.81	314.1 days	\$2,455.07	\$64.26	\$167,810,324
Psychiatric	17.5 adm.	13.06	228.2 days	\$751.21	\$14.29	\$37,312,264
Substance Abuse	25.4 adm.	9.64	245.0 days	\$256.89	\$5.24	\$13,694,567
Long Term Care (Priority 1a)			1,066.6 days	\$175.90	\$15.63	\$40,827,051
Maternity Deliveries	0.7 adm.	2.14	1.5 days	\$1,868.97	\$0.23	\$609,424
Maternity Non-Deliveries	0.1 adm.	2.38	0.2 days	\$2,200.85	\$0.03	\$79,061
Emergency Stabilization - Mill Bill	20.7 adm.	4.43	91.5 days	\$1,016.01	\$7.74	\$20,219,273
INPATIENT SUBTOTAL	204.5 adm.	12.74	2,606.1 days	\$826.02	\$179.39	\$468,449,942

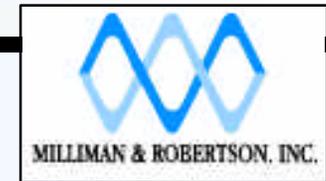
Sample Cost Model-Ambulatory

FY 2001, All Ages, All Priorities, All Enrollees, VISN 12



Type of Service	Annual Utilization Per 1000	Average Cost Per Service	Projected Monthly Claim Cost	Projected Annual Expenditures
Allergy Immunotherapy	625.8 proced	\$19.77	\$1.03	\$2,692,555
Allergy Testing	672.3 proced	\$3.75	\$0.21	\$548,103
Anesthesia	102.5 proced	\$273.56	\$2.34	\$6,104,096
Cardiovascular	1,044.3 proced	\$66.43	\$5.78	\$15,094,923
Consults	413.8 consults	\$91.85	\$3.17	\$8,271,332
Emergency Room Visits	132.6 visits	\$199.76	\$2.21	\$5,762,573
Emergency Room Visits - MB	85.3 visits	\$159.98	\$1.14	\$2,969,377
Glasses/Hearing Aids	226.2 visits	\$62.40	\$1.18	\$3,071,628
Hearing/Speech Exams	192.4 exams	\$29.86	\$0.48	\$1,250,438
Immunizations	319.4 proced	\$18.72	\$0.50	\$1,300,783
Maternity Deliveries	0.7 visits	\$3,258.76	\$0.19	\$495,786
Maternity Non-Deliveries	0.4 visits	\$1,275.08	\$0.05	\$122,286
Misc. Medical	1,813.8 proced	\$73.07	\$11.04	\$28,841,051
Office/Home Visits	5,980.5 visits	\$41.18	\$20.52	\$53,596,573
Outpatient Psychiatric	1,507.1 visits	\$68.32	\$8.58	\$22,405,928
Pathology	4,995.6 proced	\$22.98	\$9.57	\$24,981,666
Physical Exams	109.9 exams	\$163.29	\$1.50	\$3,905,495
Physical Medicine	1,355.9 visits	\$38.64	\$4.37	\$11,400,626
Podiatry	338.0 visits	\$45.48	\$1.28	\$3,345,189
Radiology	1,973.9 proced	\$120.46	\$19.81	\$51,742,658
Surgery	896.1 proced	\$315.34	\$23.55	\$61,488,362
Sterilizations	2.8 proced	\$179.46	\$0.04	\$110,714
Therapeutic Injections	861.9 proced	\$16.35	\$1.17	\$3,066,600
Urgent Care Visits	152.9 visits	\$58.48	\$0.75	\$1,945,533
Vision Exams	637.3 exams	\$53.64	\$2.85	\$7,439,610
AMBULATORY SUBTOTAL	24,441.4 services	\$60.53	\$123.29	\$321,953,886

Sample Cost Model Other & Total



FY 2001, All Ages, All Priorities, All Enrollees, VISN 12



Type of Service	Annual Utilization Per 1000	Average Cost Per Service	Projected Monthly Claim Cost	Projected Annual Expenditures
Prescription Drugs	29,493.9 scripts	\$15.38	\$37.80	\$98,700,293
PDN/Home Health	1,646.2 units	\$92.65	\$12.71	\$33,189,794
Ambulance	80.9 units	\$207.75	\$1.40	\$3,657,633
Ambulance - Mill Bill	53.9 units	\$102.02	\$0.46	\$1,196,834
Durable Medical Equipment	505.2 units	\$84.77	\$3.57	\$9,319,794
Prosthetics	36.8 units	\$192.91	\$0.59	\$1,544,034
OTHER SUBTOTAL	31,817.0 services	\$21.32	\$56.53	\$147,608,382
TOTAL ALL HEALTH CARE	58,864.5 services	\$73.23	\$359.21	\$938,012,210

Unmet Demand

- Estimated demand that enrollment projections do not capture
- Market Share Percentage is used as a proxy measure of access
- Market based models
 - county
 - 3-digit zip
- Optimal & Realistic Levels
 - Unmet Demand is overall demand less enrollment



Unmet Demand Methodology

- Detailed regression analysis used to model access (market share) for each market, age group and priority level
- < 45, 45 - 64 and 65+
- VA Variables
 - VA primary care provider access data
 - VA facility data
- Non-VA Variables
 - unemployment rates
 - income
 - health insurance coverage
 - access to non-VA health care providers



Optimal Unmet Demand

- Equalized access
- 3 markets with VA variables providing largest contribution to modeled market share
- Average of the top 3
- May not produce realistic results



Realistic Unmet Demand

- Equalized access for rural and urban markets separately
- 3 markets with VA variables providing largest contribution to modeled market share
- Lowest of top 3



VISN 12 Realistic Unmet Demand for FY 2001



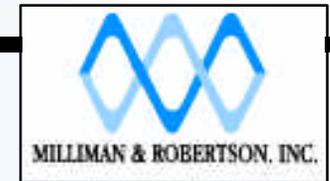
Priority Level	Under Age 45	Ages 45 to 64	Ages 65 & Over	All Ages Combined
1	127	0	1,572	1,699
2	0	209	469	678
3	691	275	1,018	1,984
4	0	168	1,366	1,534
5	2,557	2,325	5,409	10,291
6	418	50	76	544
7	892	2,533	7,702	11,127
All	4,685	5,560	17,612	27,857

VISN 12 Optimal Unmet Demand for FY 2001



Priority Level	Under Age 45	Ages 45 to 64	Ages 65 & Over	All Ages Combined
1	321	0	2,318	2,639
2	0	729	556	1,285
3	2,285	1,170	2,739	6,193
4	0	196	1,449	1,644
5	9,123	17,708	5,866	32,697
6	1,091	695	85	1,870
7	13,851	25,466	8,294	47,611
All	26,671	45,963	21,306	93,939

Projected Average Enrollment & Unmet Demand - VISN 12



<u>Fiscal Year</u>	<u>Enrollees</u>	<u>Realistic Unmet Demand</u>	<u>Optimal Unmet Demand</u>
2001	217,611	27,857	93,940
2002	227,182	24,247	84,400
2003	232,162	22,308	77,732
2004	233,629	21,512	72,725
2005	232,369	21,447	68,976
2006	228,994	21,811	66,351
2007	223,995	22,506	64,215
2008	217,774	23,563	63,729
2009	210,655	24,653	62,811
2010	202,909	26,092	62,198

Unmet Demand Impact on Model



- Age/Gender
- New Enrollee Post Factors
- Reliance
- Morbidity

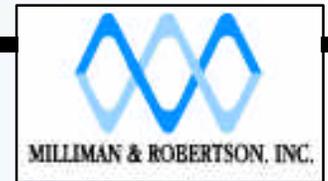
General Model Attributes



- Model is not constrained by supply
- Model is readily adaptable to changes in underlying assumptions
- Assumptions and methodologies have been subject to rigorous review



Closing



Questions?