Modeling Long Term Medical Trends for Valuation Purposes

Webinar Presenters

- **Project oversight members**
  - *Keith Williams – Watson Wyatt*
    - *Moderator*
  - *Adam Reese – Hay Group*
- **Prof. Thomas E. Getzen**

Disclaimer

Disclaimer for Materials Posted on this Web Page

The model, accompanying documentation, and methodologies contained herein do not represent an official position, statement, or endorsement on behalf of the Society of Actuaries or its members, nor should the material be construed to do so. It is the product of a research effort commissioned by the Society of Actuaries to add to the library of resource tools for the estimation of long-term health care cost trends and further knowledge in that area. The model is neither intended to preclude the use of other methodologies for estimation of long-term health care cost trends for any purpose nor provide a statement or position on the use, application, or preferability of other methodologies as compared to the methodology described herein.

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Web Link

The model and accompanying documentation for this webcast can be found on the SOA Web site at:

www.soa.org/research/health/research-hlthcare-trends.aspx

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Project Oversight Group

- Steven Siegel — Society of Actuaries
- Kevin Binder — Bolton Partners
- John Cookson — Milliman Inc.
- Marilyn Oliver — Bartel Associates
- Adam Reese — Hay Group
- Russell Weatherholtz — OACT, CMS
- Keith Williams — Watson Wyatt
- Jeanne Nallon — Society of Actuaries

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Webinar Presenters

Prof. Thomas E. Getzen

- *Dept. of Risk Insurance & Healthcare Management, Temple University and Executive Director of iHEA (International Health Economics Association)*

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Purpose of the Project

- **Research**
  - Forecast Medical Cost Trends.
  - Determine major Factors, Parameters.
  - Build *flexible* Model.
- **Practice**
  - Estimate Future Liabilities (FAS 106; GASB 43 & 45).
  - Combine with Actuarial Expertise, Plan Limits, etc.
- **Provide <u>SOA Benchmark</u>.**

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Existing Work

- **Benefit / Premium Surveys**
- **CMS Projections**
- **CBO Projections**
- **Private Forecasts**

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Scope

- **Time**

- **Coverage** (what base benefits included)

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Prior Research

- **Aggregation and the Measurement of Health Care Costs.** *Health Services Research* **41(5):1938-1954, 2006.**

- **"On the Money: Making Forecasts What They Should Be." with Heinz Dommert, HFM:** *Healthcare Financial Management Journal*, **59 (11): 106-112, 2005.**

- **….applying Multilevel Decision Models to the Analysis of Health Care Expenditures."** *Journal of Health Economics* **19(2):259-270, 2000b.**

- **"Forecasting Health Expenditures: Short, Medium and Long (long) Term."** *Journal of Health Care Finance* **26(3):56-72, 2000.**
 ……see Bibliography in Technical Documentation

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Time Frame

- 5 to 75 years
- That is, we are only concerned about the **_LONG RUN_** trends.

Coverage

- Standard Premiums
- Differential Trends
  - Over Age 65+
  - Hospital
  - Pharmaceuticals
  - Long-Term Care
  - Co-payments & Deductibles

Major Factors

- **Wage Growth / GDP**
- **Technology**
- *many factors are important in the short run, but are unknown in the long run, or swamped by underlying long run trends*

Constraints

- Limited by growth in GDP
  - "resistance function"

- Must eventually stabilize
  - "constant growth cap"

Model Parameters

- Inflation (cpi)
- Income (% growth)
- Income multiplier
- Trend (due to technology & other)

- Resistance Point   [share of GDP]
- Limit Year   [constant growth]

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Assumptions

- Beneficiary cost share percentage remains the same
  - fixed dollar co-pays and deductibles are indexed over time.
- Past Trends (mostly) continue.
- No giant shift in technology, politics.

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STEP 1

INPUT SHORT TERM RATES

SOA-Getzen Model 3.1 (Dec 2007):

Baseline Default Assumptions and User Inputs

General input instructions: To change baseline default assumptions,

input user-desired values in the shaded cells with bold blue numbers

Trend Years	Implied per capita cost	Short Term Rates	Baseline Assumptions
2007	$7,488		
2008	$8,050	**7.5%**	7.5%
2009	$8,653	**7.5%**	7.5%
2010	$9,302	**7.5%**	7.5%
	$10,000	**7.5%**	7.5%

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STEP 2 - INPUT 2011 BASELINE COSTS: % GDP SHARE AND PER CAPITA MEDICAL COST

2011 GDP % share (user input):

17.5%

$ 10,000

2011 per Capita Medical Cost (user input)

Baseline Assumption:

17.5%

$ 10,000

Baseline Assumption:

Suggested Range: (16.0% - 18.5%)

Note: Raise [2011] cost up or down in [Cell G17] to make

2007 costs in [Cell G10] match desired value.

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Step 3

	Inflation (cpi)	Real GDP (per capita)	Income Multiplier	Technology / Taste	Aggregate Factor
Baseline Assumptions:	3.2%	1.9%	1.40	1.2%	7.2%
Suggested Rate:	(1.8 - 5.5)	(0.8 - 3.0)	(0.90 - 1.70)	(0.0 - 2.5)	
User Input for Years 2012+	3.2%	1.9%	1.40	1.2%	7.2%

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STEP 4 (optional) - INPUT DESIRED CAPACITY CONSTRAINTS ASSUMPTIONS

	User Input	Baseline Assumption
Health Share of GDP above which cost growth is assumed to meet resistance:	25%	25%
Year after which growth in medical costs is limited to rate of growth in GDP:	2075	2075

Based on the input entries above:	*Results*	
Projected per capita medical costs in 2025 would be	$ 25,779	$25,779
--implying a health share of GDP in 2025 of	22.3%	**22.3%**

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Step 5 (Optional)
INPUT OPTIONAL REFINED GROWTH FACTORS ASSUMPTIONS

	Inflation (cpi)	Real GDP (per capita)	Income Multiplier	Technology / Taste	Aggregate Factor
2020 - 2030	3.2%	1.9%	140.0%	1.2%	7.2%
years 2031+	3.2%	1.9%	140.0%	1.2%	7.2%

Note: The default is to use the same parameter assumptions throughout 2012-2099, however the input boxes above can be used to change the parameter values for 2020 - 2030 and 2031+.

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Year	Baseline	User Input/ Results	Source
2006		* *	{not yet reported by CMS}
2007		* *	" "
2008	7.5%	9.2%	user estimate
2009	7.5%	9.2%	" "
2010	7.5%	8.4%	" "
2011	7.5%	6.3%	" "
2012	7.2%	7.8%	% growth - - Model Generated
2013	7.2%	10.9%	" "
2014	7.1%	10.2%	" "
2015	7.1%	10.5%	" "

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Year	Baseline	Results	Source
2020	6.9%	6.9%	% growth - - Model Generated
2025	6.8%	6.8%	" "
2040	6.2%	6.2%	" "
2050	5.9%	5.9%	" "
2060	5.8%	5.8%	" "
2070	5.7%	5.7%	" "
2080	5.2%	5.2%	" "
2090	5.2%	5.2%	" "
2099	5.2%	5.2%	" "
2100	5.2%	5.2%	" "

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Health Expenditures as Share of GDP

(actual 1980-2005; projected 2007-2099)

share — actual — baseline

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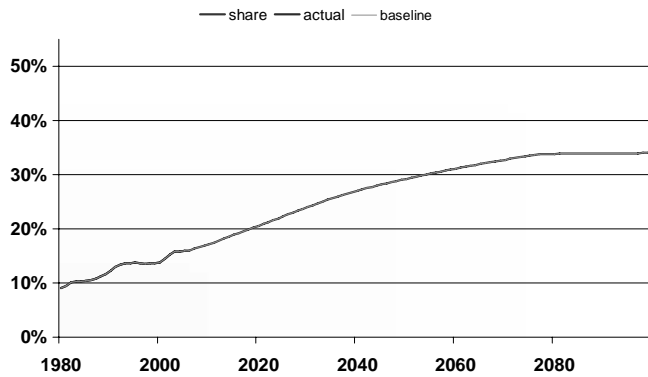
Health Expenditures per capita
(Actual 2000 to 2005; Projected 2007 - 2099)

H$ —— actual ······ baseline

$10,000,000	
$1,000,000	
$100,000	
$10,000	
$1,000	

1980   2000   2020   2040   2060   2080   2100
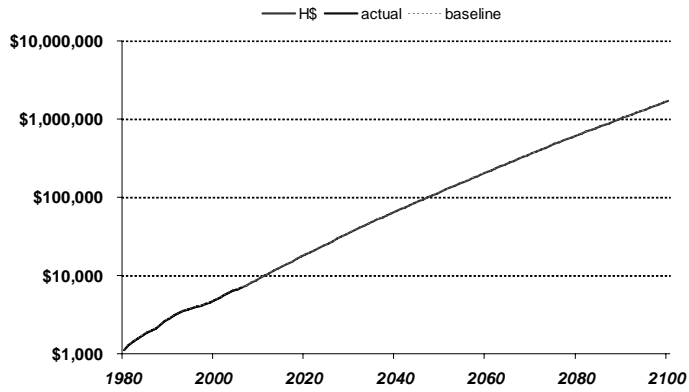
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First Polling Question

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What factors are NOT included ?

- Aging
- Regulations & Legislative change
- Underwriting Cycle
- Disability and illness trends

- **Technology**
  - Important, but not measurable or predictable.

A Flexible Model
  --with a standard baseline

most important contribution:

RESEARCH and DOCUMENTATION OF TRENDS

SOA-Getzen Model

- **Flexible**
- **Powerful**
- **Easy to use**
- **Standardized**
- **Comparable to CBO and CMS projections**
- **Thoroughly reviewed and documented**
- **As or more accurate than others available**
    - *but, it is only one component for making an actuarial projection.*

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Second Polling Question

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Third Polling Question

Modeling Long Term Medical Trends for Valuation Purposes Implementation Issues

Project Oversight Group Members

Keith Williams, FSA

Adam Reese, FSA

Implementation Issues

- Discount rate implications
- Phase in considerations
- Plan specific issues

Discount Rate Implications

- Future economic scenario consideration
- Inflation consistency

Phase-In Issues

- Current practice
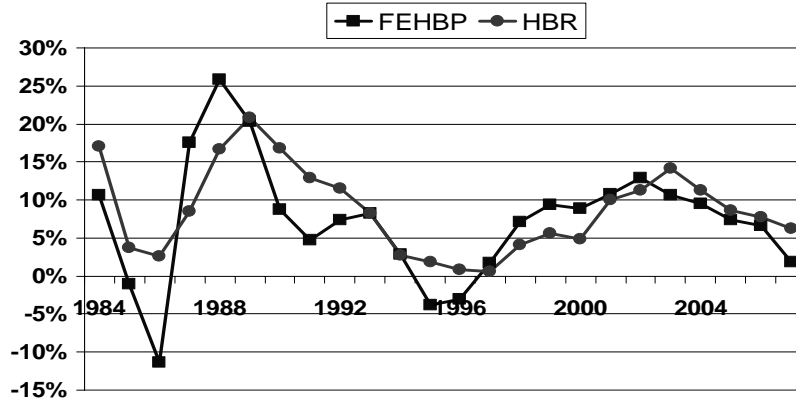- Near term expectations
- Projection valuation modeling
- Long term retirement assumptions

Plan Issues

- Near term expected trend
- Expected plan changes
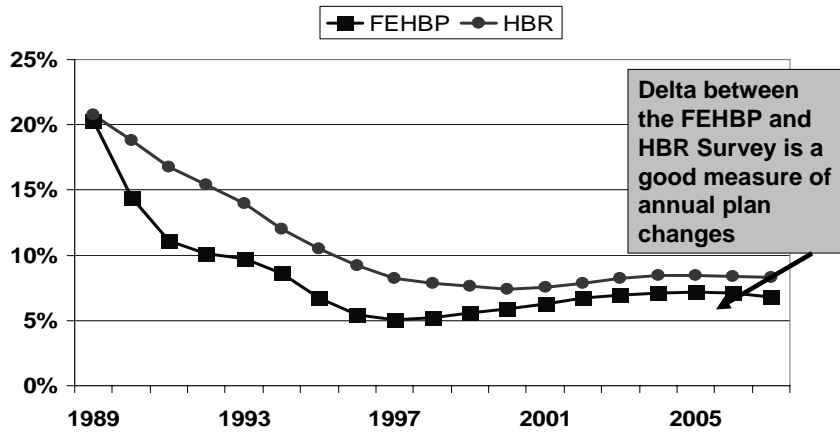- Population aging

Chart 1 -- Annual Healthcare Rate Changes

FEHBP = Federal Employees Health Benefit Program

HBR = Hay Benefits Report, survey of 600+ employers

Chart 2 -- Cumulative Annual Average Since 1989

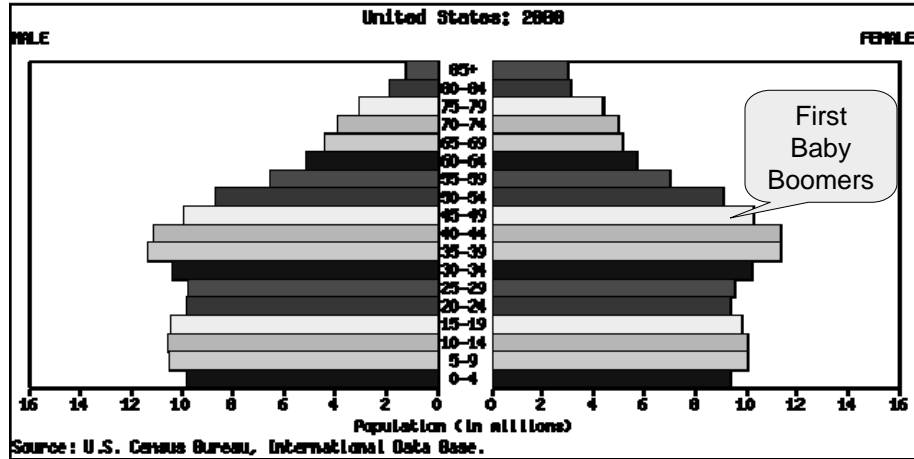Delta between the FEHBP and HBR Survey is a good measure of annual plan changes

FEHBP are pure premium rate increases, reflecting plan design changes. HBR are annual rate increases for the "prevalent plan".
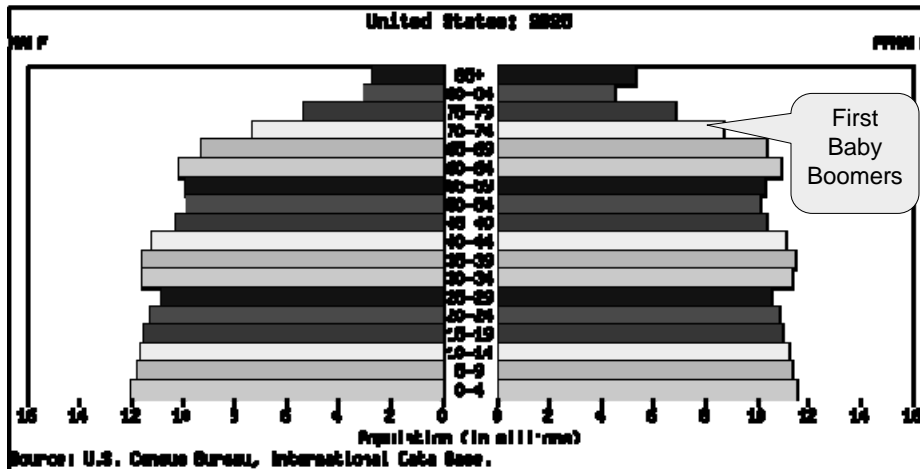
Population Aging - USA in **2000**

Population Aging - USA in **2025**

Population Aging - USA in **2050**

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United States: 2050

MALE | FEMALE

85+
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4

16 14 12 10 8 6 4 2 0   0 2 4 6 8 10 12 14 16
Population (in millions)

Source: U.S. Census Bureau, International Data Base.
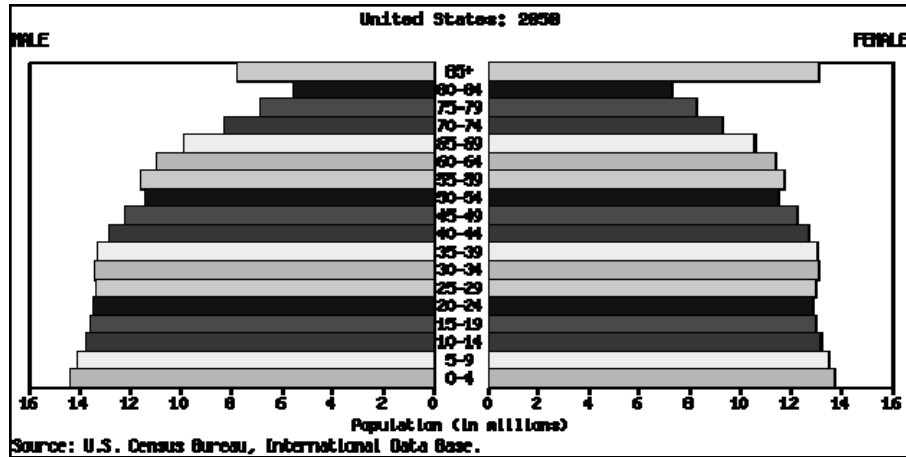
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Questions??

- Now via the webinar
- Later to:
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