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From Theory to Practice
Admission-based Outcomes

September 7, 2006

SUMMARY

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1. Some method that incorporates costs is necessary, because most purchasers require a dollar number.
2. The standard method for calculating savings in DM is an historical adjusted method, using a trend adjuster.
3. Data show that use of a trend adjuster is a reasonable/necessary adjustment.
4. Trends need to be calculated carefully to avoid bias.
5. Comparing change in population-based admissions can increase the acceptability of results.
6. However, populations are also subject to trends and other factors that will need to be taken into account.

Quick refresher: why trend?

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The prevalent industry methodology is a trend-adjusted historical control (pre- post) methodology.

Trend = An actuarial concept.

Simple example:

Estimated Savings due to reduced pmpy =		
Baseline Cost pmpy * Cost Trend	$6,000 * 1.12 = $6,720	
Minus: Actual Cost pmpy		$6,300
Equals: Red uced Cost pmpy		$420
Multiplied by: Actual member years in Measurement Period		20,000
Equals: Estimated Savings		$8,400,000

Trend Assumptions: Definition

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Definition of Trend:

Trend from period t to period t+1 is defined as:

$$\text{Trend} = \frac{Pmpm_{t+1} - Pmpm_{t}}{Pmpm_{t}}$$

$$Pmpm_{t} = \frac{\sum_{J=1}^{12} \sum_{i=1}^{n_j} C_{ij}}{\sum_{j=1}^{12} n_j}$$

where: C_{ij} is the claims (or utilization, or other statistic being measured) of the i-th member in the j-th month; and n_j is the number of members enrolled in the j-th month

Quick refresher: trend components

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A 12% trend consists of two major components:

- 2% utilization trend, and
- 10% unit price trend.

A couple of other factors will drive trend, for example leveraging of cost-sharing.

- **Critics of Unit Cost trend in DM suggest that it "inflates" savings. However, for the purpose of calculating a PMPM cost-savings measure, a unit cost measure is required, to convert utilization changes into $'s.**
- **While unit cost trend isn't the only way to introduce unit costs, it is consistent with the "projected baseline" approach.**
- **Trends in allowed charges are not subject to benefit plan design features, and are more stable over time.**

Quick refresher: trend components

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Simple Example:

	Units	Unit Cost	Cost PMPM
Baseline	100	$ 8,000	$ 66.67
Trend	2%	10%	112%
Intervention	102	$ 8,800	$ 74.80

You get the same answer whether you apply a PMPM trend to a PMPM baseline, or a Utilization Trend + Current Unit Cost.

Hypothesis Underlying DM Population Measurement

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- It is possible to measure a population and its utilization accurately and unambiguously over time.

- Corollary: it is possible to separate the effect of an *intervention* from the underlying tendencies of a population.

- Conundrum: Switching to a utilization-based measure (e.g. Admissions) doesn't eliminate the need to understand the long-term trends in the population you are managing.

Trend is tough to understand and measure

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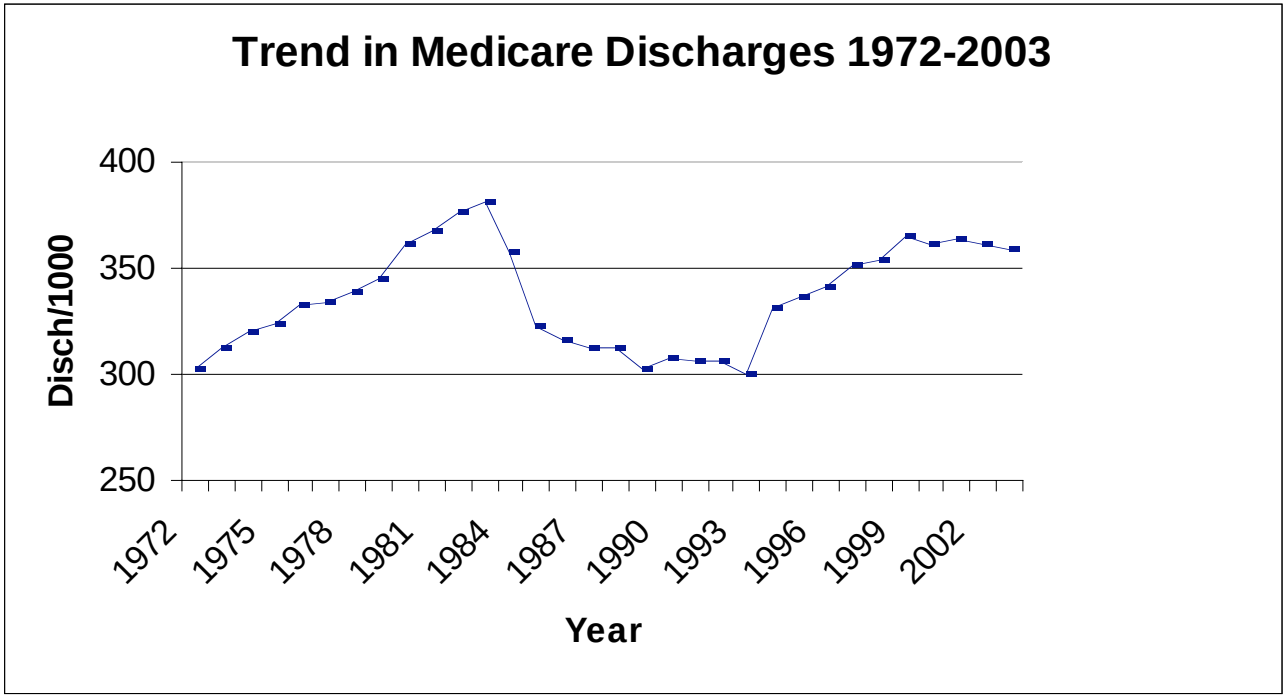
- Is there a trend in the following data?
- What is it?



Inpatient Admission Trend data

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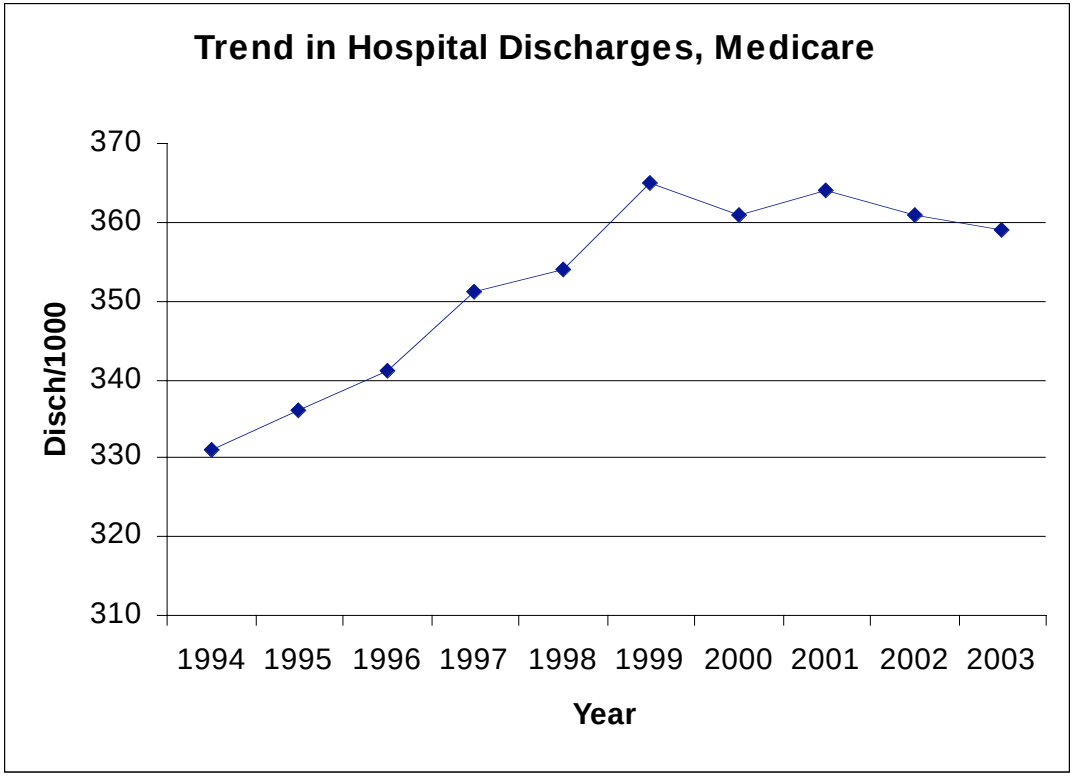
Even in a consistently defined dataset.



What about Chronic Trends?

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Chronic and Non-chronic Trends

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Average 3-year trends*

Chronic	**5.6%**
Non-chronic	**13.8%**
Population	**16.0%**

*** Prospective chronic identification**

From Bachler, R, Duncan, I, and Juster, I: "*A Comparative Analysis of Chronic and Non-Chronic Insured Commercial Member Cost Trends.*" North American Actuarial Journal (forthcoming) October 2006.

Chronic and Non-chronic Trends

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Average 3-year trends*

Chronic	**16.3%**
Non-chronic	**17.2%**
Population	**16.0%**

***Retrospective chronic identification**

From Bachler, R, Duncan, I, and Juster, I: *"A Comparative Analysis of Chronic and Non-Chronic Insured Commercial Member Cost Trends."* North American Actuarial Journal (forthcoming) October 2006.

Sensitivity of Admission Measures

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Members	100,000
Diabetics (2.5%)	2,500
High Risk	750
Engaged in Yr 1*	375
Average exposure in Program Yr.	0.75
Deferral Period	6 months
Life years in Program	94
Diabetes Admits/1000	100
Expected Admits, Population	250
Expected Admits, High Risk	125
Admit reductions*	15%
Admit reductions*	2.3
Effect on Population Admits	0.9%

* If you are good at it

Admission Measures - Issues

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- Given the small number of admissions affected by DM, results are likely to be highly sensitive to changes in the underlying population.
- Trend still exists and needs to be considered.
- Claims coding:
  - There are up to 6 codes on a claim. Which one(s) count?
  - Because of reimbursement, there is some evidence of code creep in coding.
  - Patients with a chronic disease are coded with other types of manageable claims (syncope; signs and symptoms).
- Availability (restrictions on) hospital beds/ specialists may have some effect.

The industry has developed standard adjustments to take account of these factors, and they have a role here.

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Thank you for your time and attention!

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