

Titrating Home Care to Patient Risks: A Budgeting Strategy

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Outline

- **Project goals**
- **Approach to improvement**
- **Results from earlier projects**
- **Adaptation to Florida DOE home care**
- **Estimation techniques**

Goals for DOE Home Care Budgeting Project

- **Better information for care planning**
 - *Emphasizing patient specific goals*
- **Shift care to higher risk patients**
 - *Patient specific budgets*
- **Better outcomes**
- **Rewards for better outcomes**

Clearer Outcome Goals

- **Goal is nominally avoiding nursing home entry**
- **But most patients face risks other than nursing home entry**
 - **Nursing home entry risk prediction methods weak**
- **So patient specific goals left vague**
- **Case manager must work them out**
 - **With very limited information**

Effectiveness Information Lacking

- **For outcomes:**
 - **Should know risks and care effectiveness**
 - *Marginal benefit of additional care*
 - *And substitution options*
- **But case managers given only assessment**
 - *Must assess, weigh risks on her or his own*
 - *Make own estimates of effectiveness of types and amounts of care*

Policy Problems

- **Budget caps or limits on new patients**
 - **Caps bind only on highest cost patients**
 - *Sometimes shortchanges highest risk patients*
 - *Or limits new patients: most likely to benefit*
- **Budget caps not binding for most patients**
 - **Little effect on low risk patients with little potential to benefit**
 - *Spending may exceed potential to benefit*
 - *Even if home care is 100% effective*

More Policy Concerns

- **Few rewards for successful outcomes**
 - *Payments don't rise for avoiding ER or hospital or nursing home or ADL decline*
 - *Nor fall if outcomes consistently under achieved*
 - **Even in capitated plans**
 - *Hospital and nursing home cost risks usually minimal & capped*
- **Result:**
 - *Home care dollars not allocated to highest risk patients*

Resource allocation is random

Figure 1. Per Capita Spending by Decile of Hospitalization Risk in ALTCS '92-97

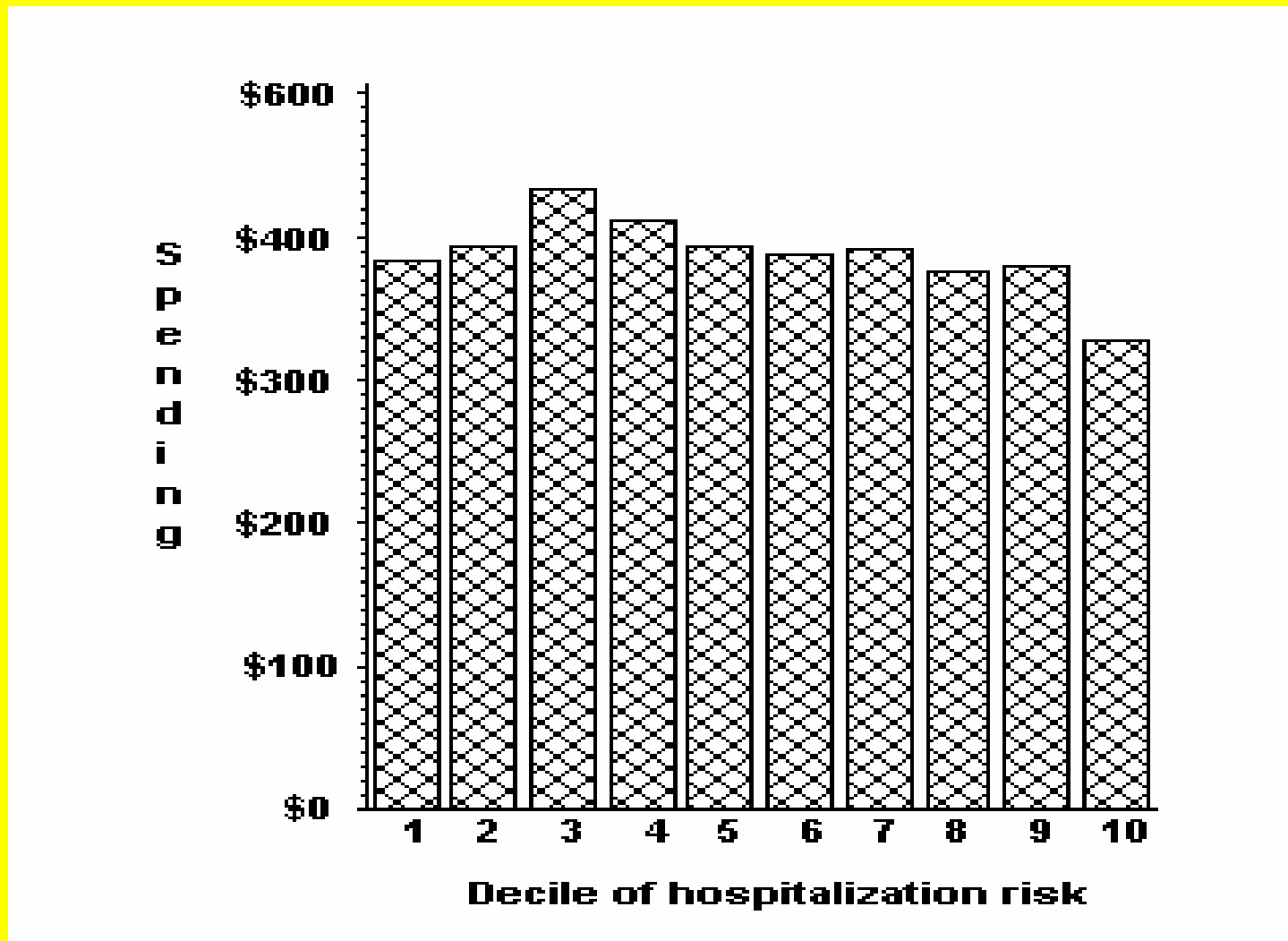


Figure 2. Per Capita Spending by Decile of Nursing Home Admission Risk in ALTCS '92-97

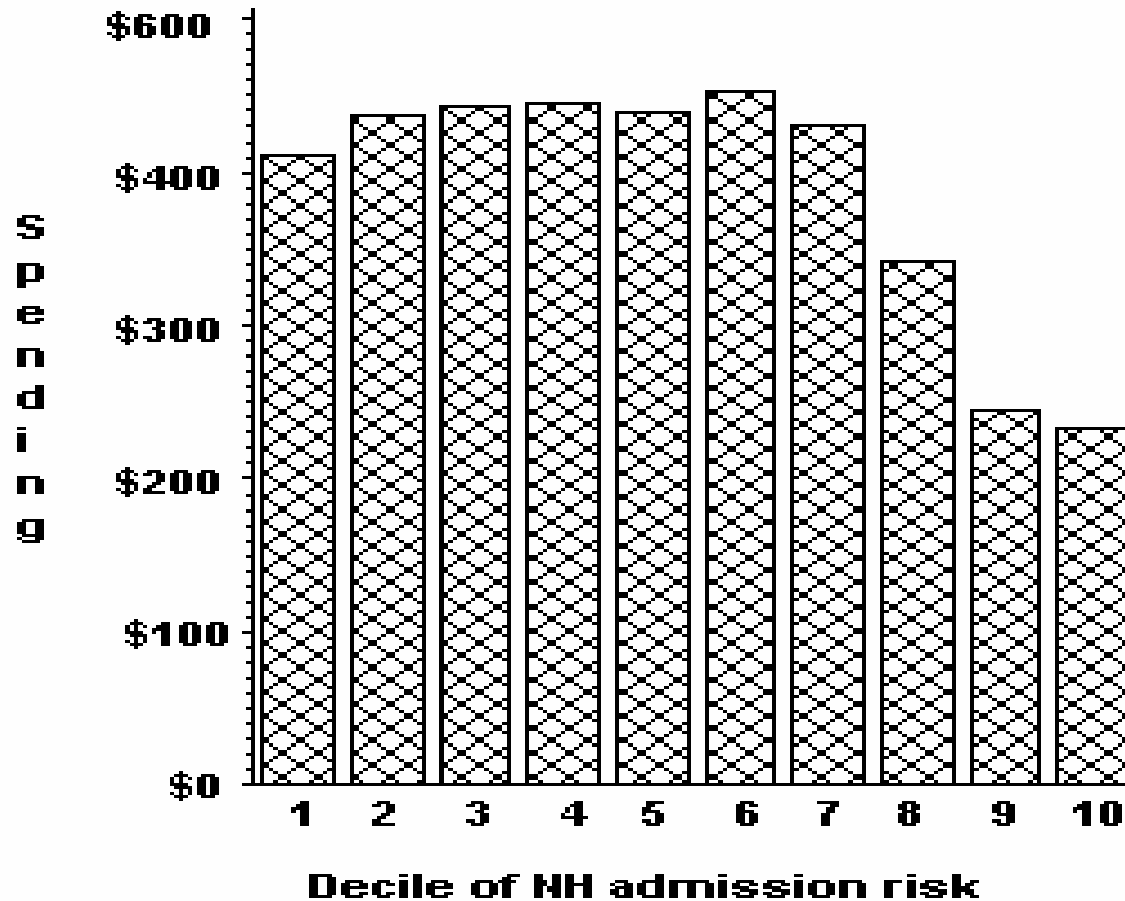


Figure 3. Per Capita Spending by Decile of Risk of Death in ALTCS '92-97

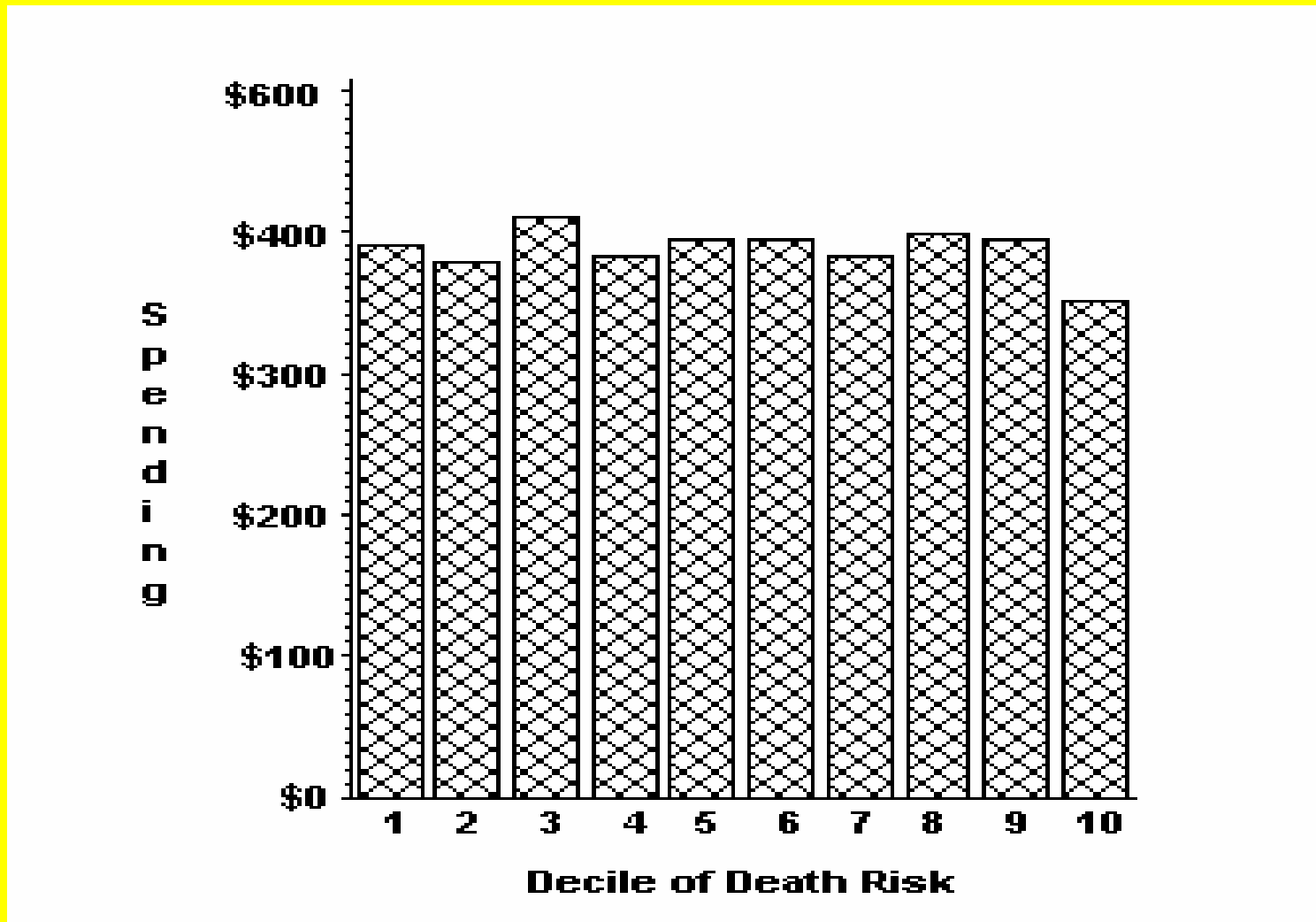
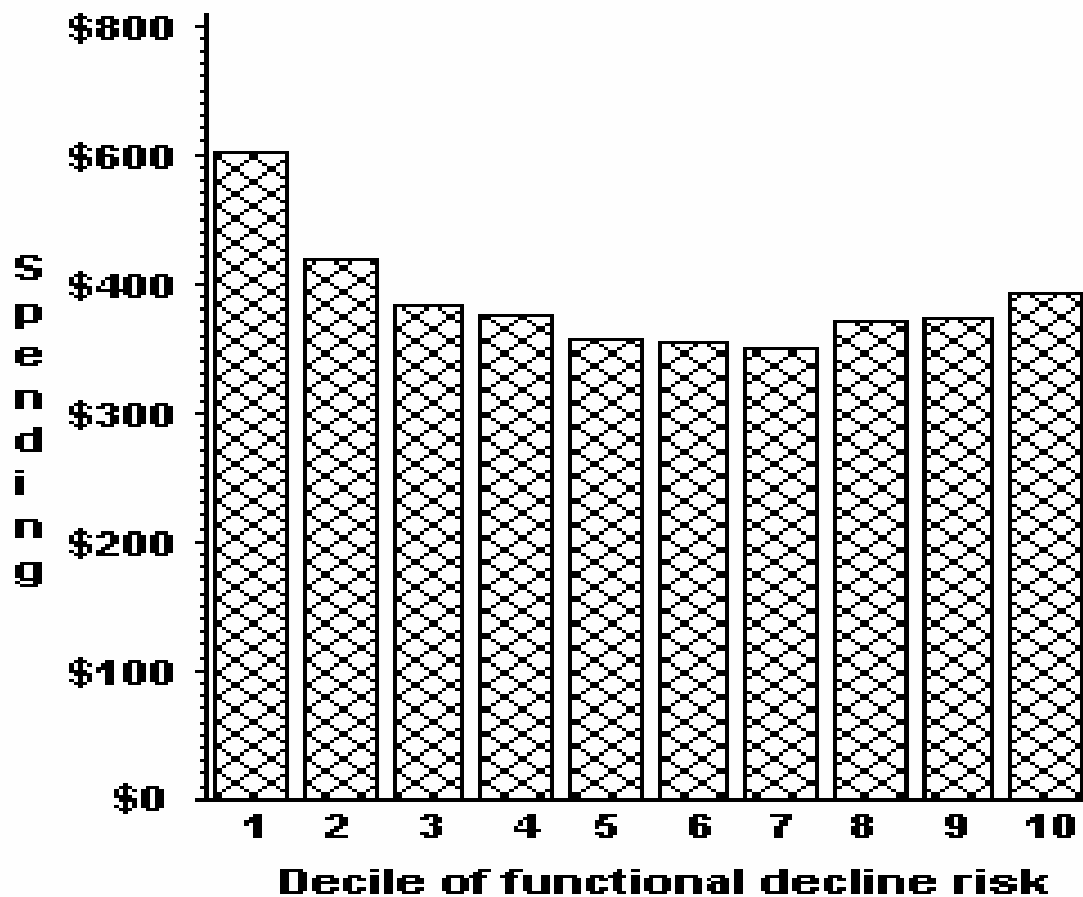


Figure 4. Per Capita Spending by Decile of Functional Decline Risk in ALTCS '92-97



Effectiveness, Risk, Value (ERV) Budget Model

- **Clarifies goals**
 - **Emphasizes patient-specific outcomes**
 - **Accommodates broad range of outcomes**
 - *Any that can be measured*
- **Improves information**
 - *Provides better risk assessment methods*
 - *Employs two-stage needs assessment*
 - *Implies care plan evaluation criteria*
- **Creates incentives for marginal benefit-marginal cost trade-offs**
 - *Sets binding constraint on care plan costs*
 - *Shifts funds from low risk to high risk patients*
 - *Rewards improved effectiveness*

ERV Example for One Risk

- **If...**
 - Hospital risk for a given patient = 25%, and,
 - Cost of hospitalization would be = \$10,000, and
 - Effectiveness of home care in mitigating hospital risk = 20%,
 - *Then, monthly ERV= \$500, just for hospital risk*
 - » $(500 = .20 * .25 * 10,000)$
- **Note incentives:**
 - *Spending reallocated to highest risk-benefit potential*
 - *Higher effectiveness=more money*
 - *Process, outcome evaluation criteria implied*

Calculating an ERV Budget

- For each patient, effectiveness and risk weighted value defined as ERV:
- $ERV_{ij} = E_j * R_{ij} * V_j$
 - Where:
- *ERV_{ij} = The Effectiveness and Risk weighted Value of adverse outcome 'j' for patient 'i'*
- *E_j =Effectiveness, defined as average change in the risk of adverse outcome 'j' due to home care*
- *R_{ij} =Risk of adverse outcome 'j' for patient 'i'*
- *V_j =Average value of avoiding adverse outcome 'j'*

Some Case Examples

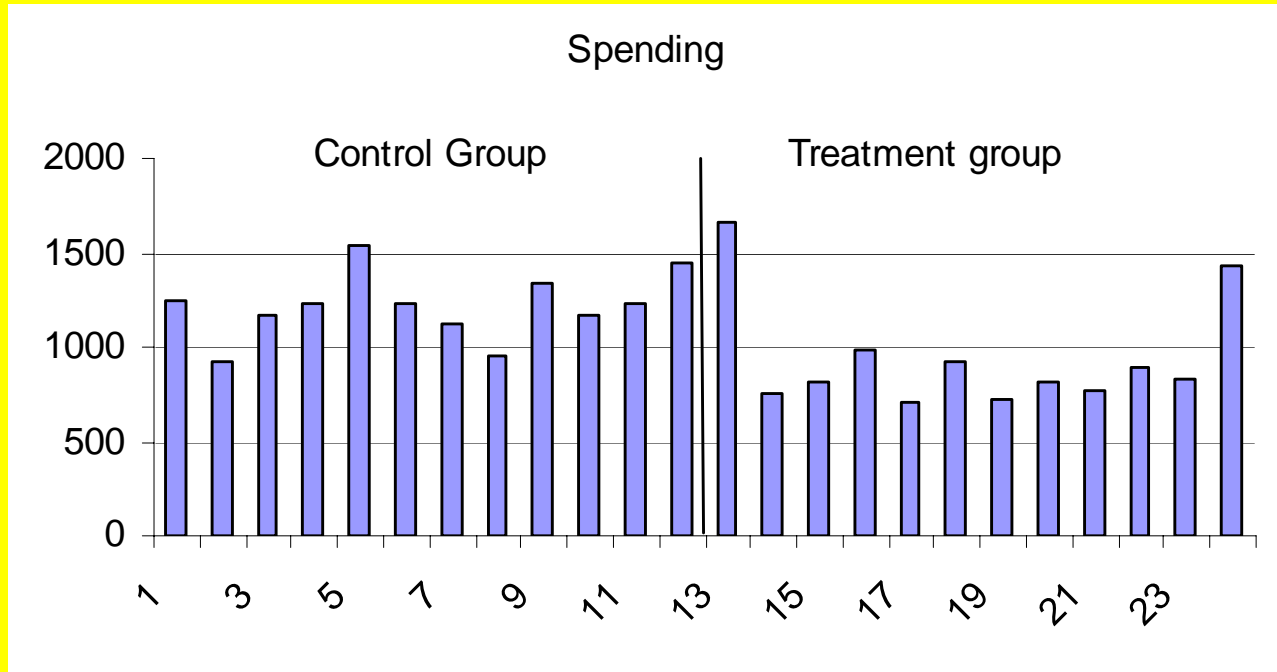
Characteristics	Value	Outcome	Monthly Risk	Risk Percentile	Monthly Target Budget	Budget %
ADL's	4	Death	0.82%	15-20%	\$8	15-20%
Married	Widow	Functional Decline	1.82%	10-15%	\$35	10-15%
AGE	87	Hospitalization	0.86%	15-20%	\$42	15-20%
SEX	Female	Nursing home admission	1.71%	0-5%	\$64	0-5%
		Total			\$149	0-5%

Characteristics	Value	Outcome	Monthly Risk	Risk Percentile	Monthly Target Budget	Budget %
ADL's	1	Death	0.72%	10-15%	\$7	10-15%
Married	Widower	Functional Decline	10.97%	95-100%	\$212	95-100%
AGE	92	Hospitalization	0.78%	10-15%	\$38	10-15%
SEX	Male	Nursing home admission	4.03%	30-35%	\$151	30-35%
		Total			\$408	50-55%

Characteristics	Value	Outcome	Monthly Risk	Risk Percentile	Monthly Target Budget	Budget %
ADL's	4	Death	67.59%	95-100%	\$684	95-100%
Married	Married	Functional Decline	2.35%	25-30%	\$45	25-30%
AGE	82	Hospitalization	7.66%	95-100%	\$375	95-100%
SEX	Female	Nursing home admission	61.86%	95-100%	\$2,314	95-100%
		Total			\$3,419	95-100%

Results of Randomized Trial

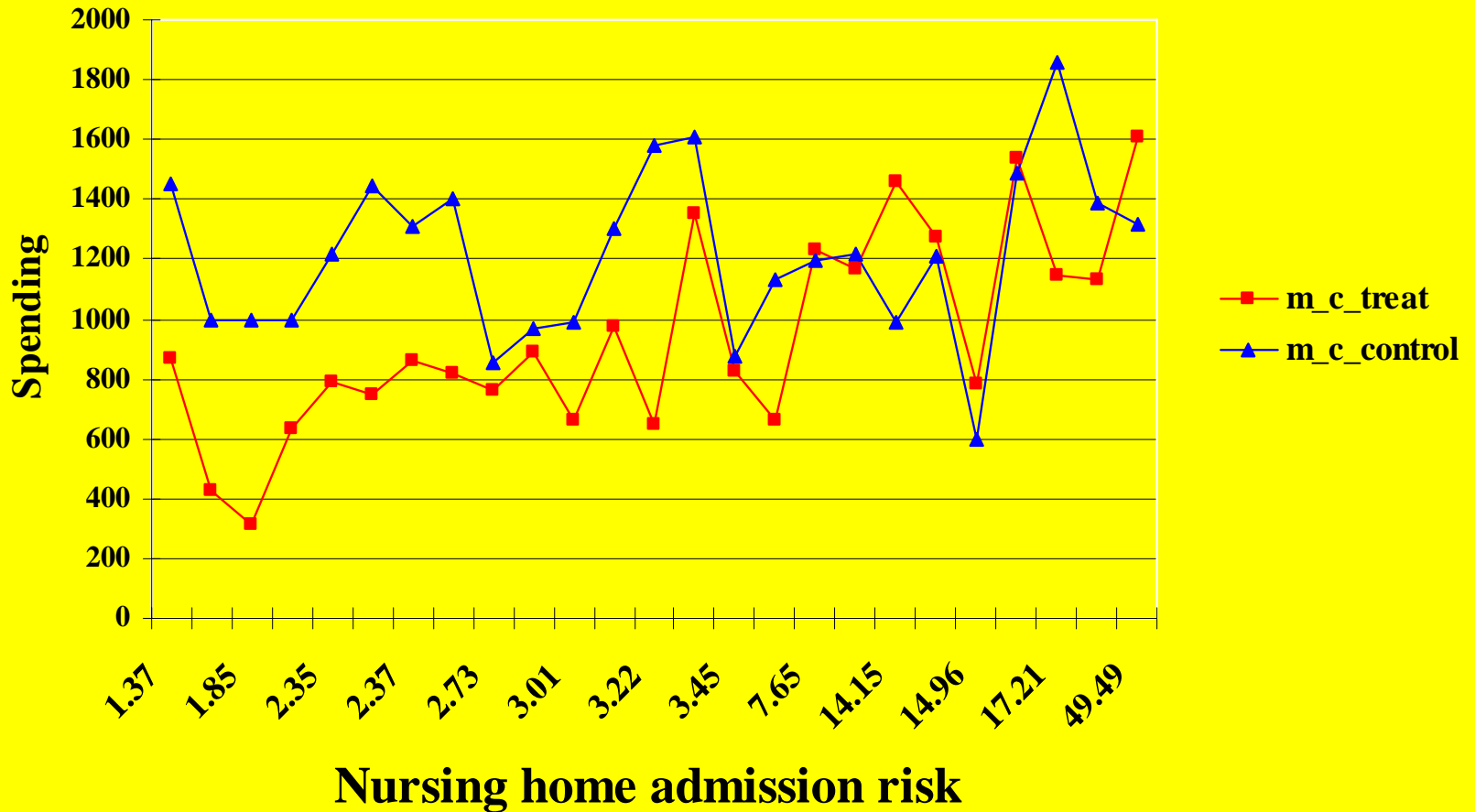
Figure 1: Average Spending by Case Managers on 25 Cases Each



Control group case managers are 1 – 12. Treatment group=13 – 24.

**Figure 2. Case by case spending in relation to risk
(treatment vs. control group)**

Case by case spending in relation to risk



DOEA Project

- Use Florida CIRTS and Medicaid data for 1999-2004 on 50,000 clients
 - *600,000 observations*
- Estimate risks of adverse outcomes
- Develop ERV budgets
- Provide budgeting methods to case managers

Our Estimates

Estimate Effectiveness

- **Incidence reduction due to home care:**
 - **Death: 2.5%**
 - **Functional decline: 5.2%**
 - **Hospitalization: 18%**
 - **Nursing home entry: 20%**

Risk: Observed Vs. Predicted

Mean Rate of Hospitalization for Selected Subgroups

<i>Characteristic</i>	<i>Predicted</i>	<i>Actual</i>	<i>Ratio</i>
• Male	0.0178	0.0178	1.00
• Age over 80	0.0134	0.0133	1.01
• Human help toileting	0.0155	0.0156	0.99
• Human help transfer	0.0161	0.0160	1.01
• Human help eating	0.0142	0.0135	1.05
• Human help w/mobil	0.0161	0.0161	1.00
• Mental/Alz. dx	0.0128	0.0128	1.00
• Respiratory dx	0.0207	0.0207	1.00
• Nonhyperten. circ.dx	0.0172	0.0172	1.00

Measuring Utiles

- **Utiles are usually measured in QALYs**
- **QALYs are Quality Adjusted Life Years**
 - (1 year of life at full health minus adjusted for reduced quality)
 - e.g., if one year of full health equals 1 QALY
 - and having one ADL dependency reduces the value of life by 20%
 - then prevention of loss of independence in one ADL=.2QALY
- **%reduction is arbitrary, or preference based**
 - I used, 5ADL dependency=0 Quality of Life (0 QALYs)
 - May understate value of 5ADL dependent life
 - and thus overstates value of preventing a single ADL decline

Value of Life

- Usually estimated by either human capital approach (lifetime earnings) but produces discrimination problems, or preferably willingness to pay (also called contingent valuation) – as revealed by extra pay for extra risky jobs, or population cost of life-saving products like air bags divided by lives saved in the population

Estimate Values

- **Synthesized 42 estimates**
- **Regressed QALY on method & setting:**
 - **United States vs Other countries**
 - **Methods**
 - **Contingent valuation (willingness to pay)**
 - **Revealed preference (risky job premium)**
 - **Human capital (value of lifetime earnings)**
- **Results:**
 - **Death=\$112,000**
 - **Hospitalization=\$15,000**
 - **Nursing home=\$10,000**
 - **Functional decline=\$16,000**