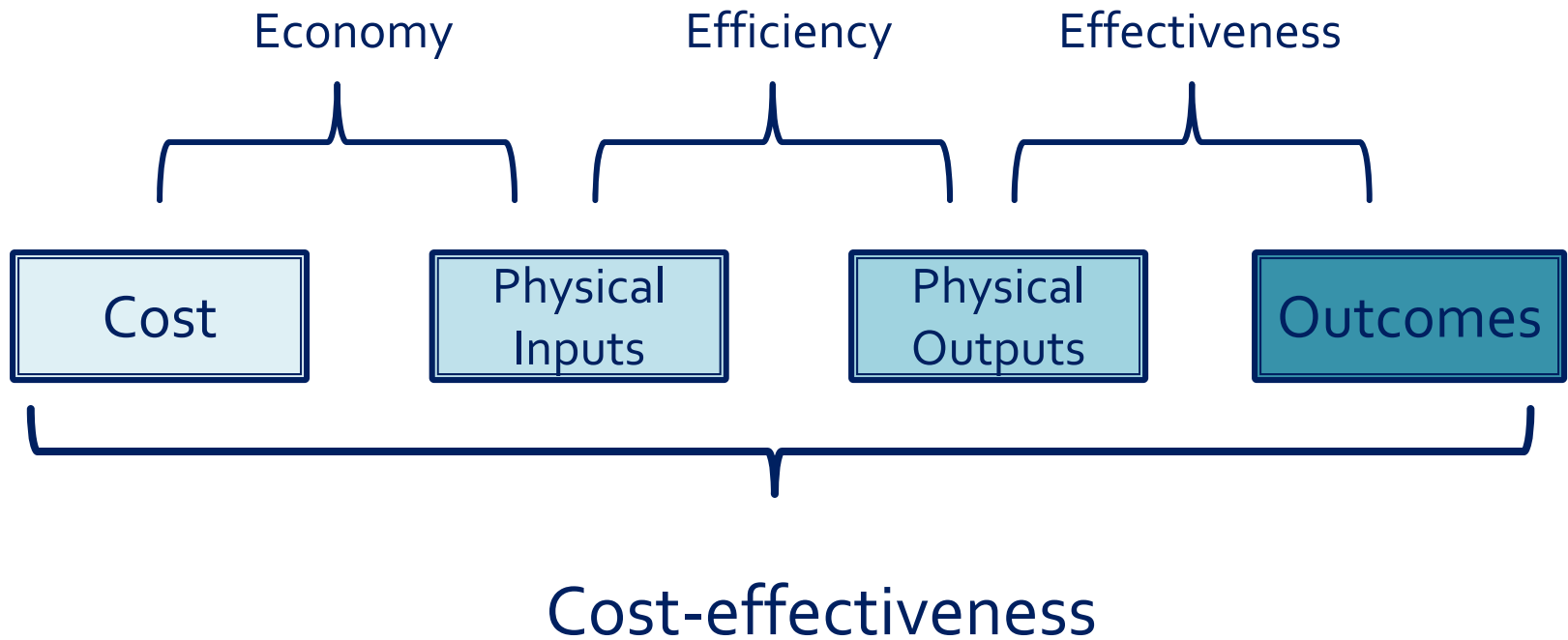


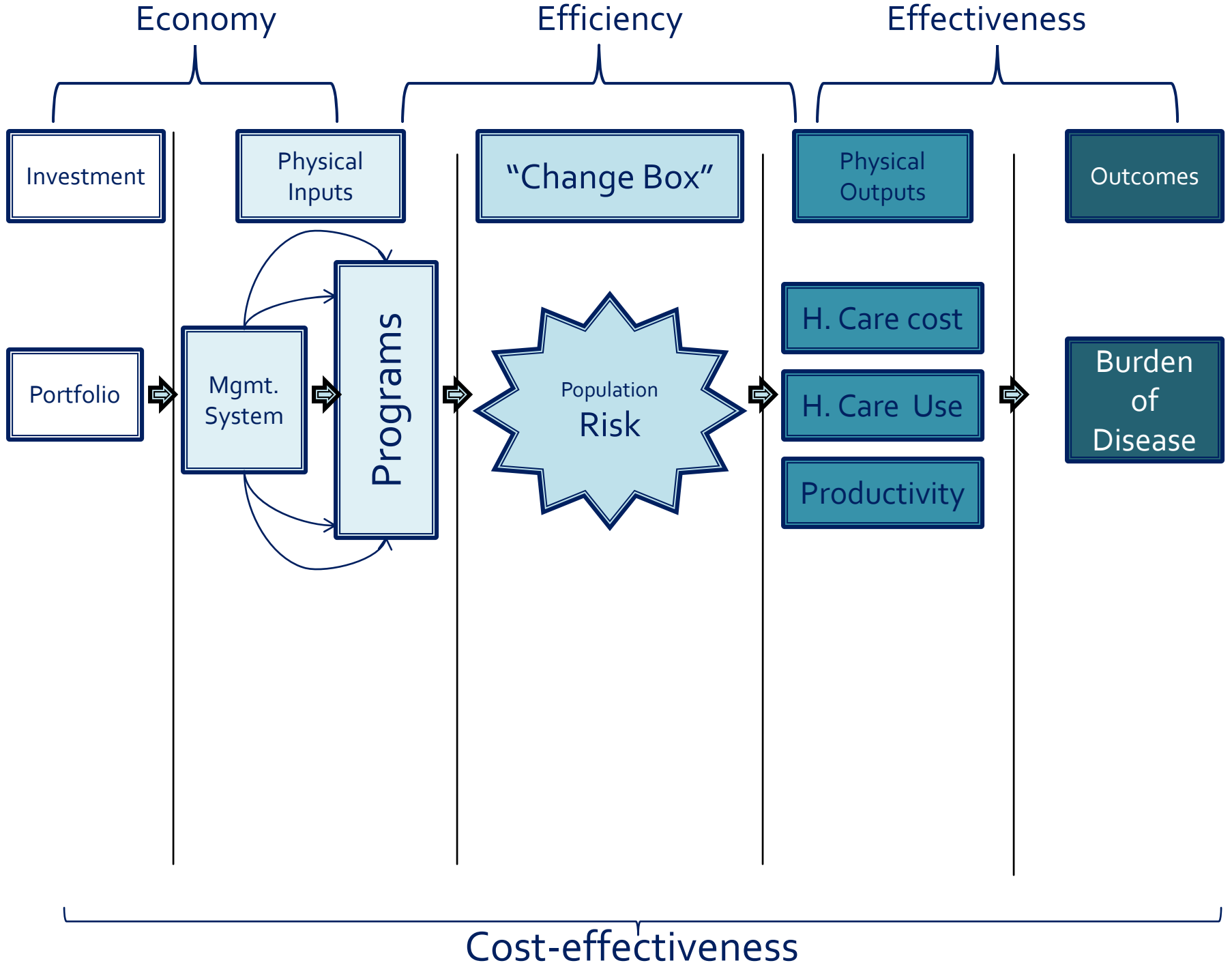


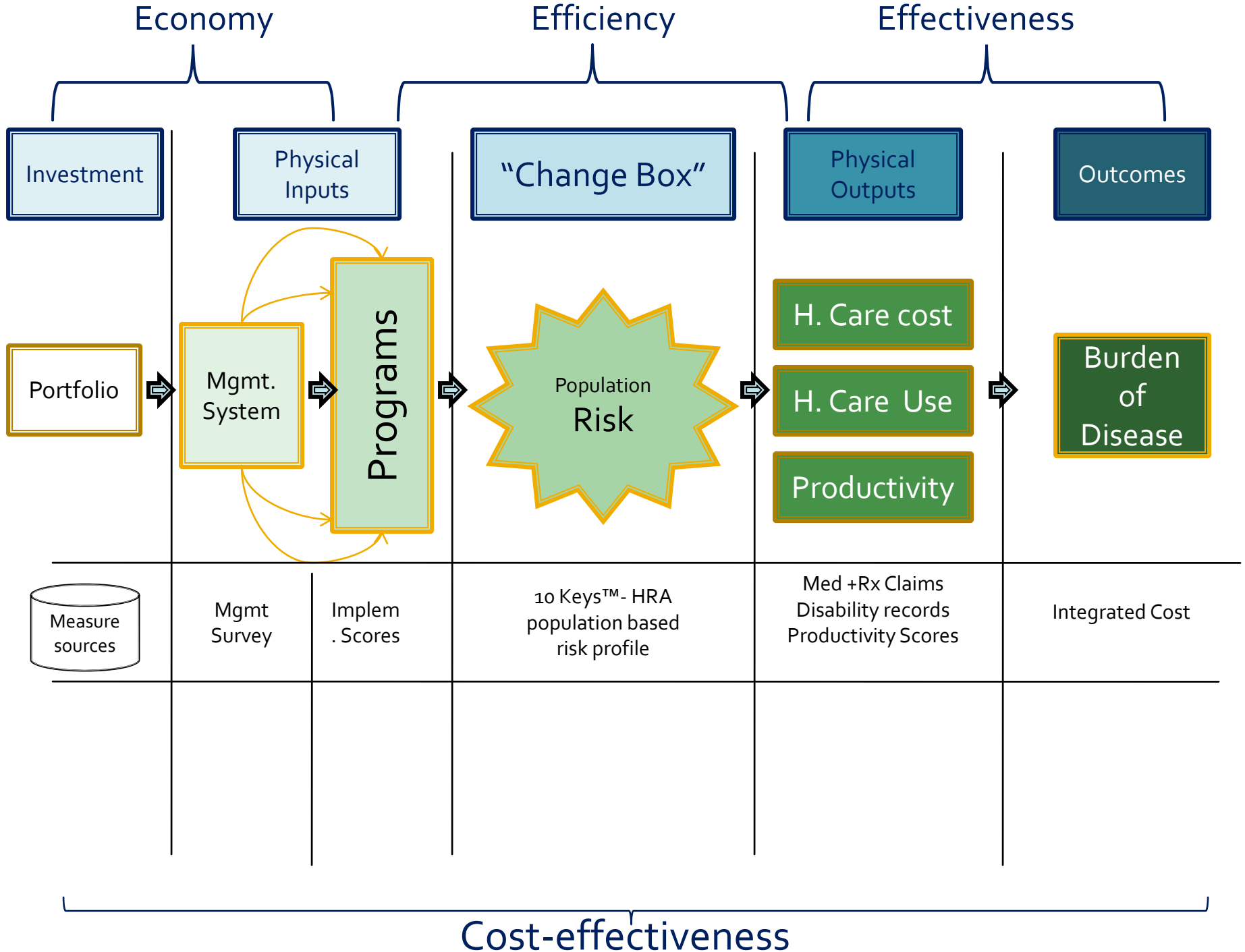
28th Annual WELLNESS in the WORKPLACE Conference
Ann Arbor, MI March 18, 2009
A.M. Colombi MD MPH

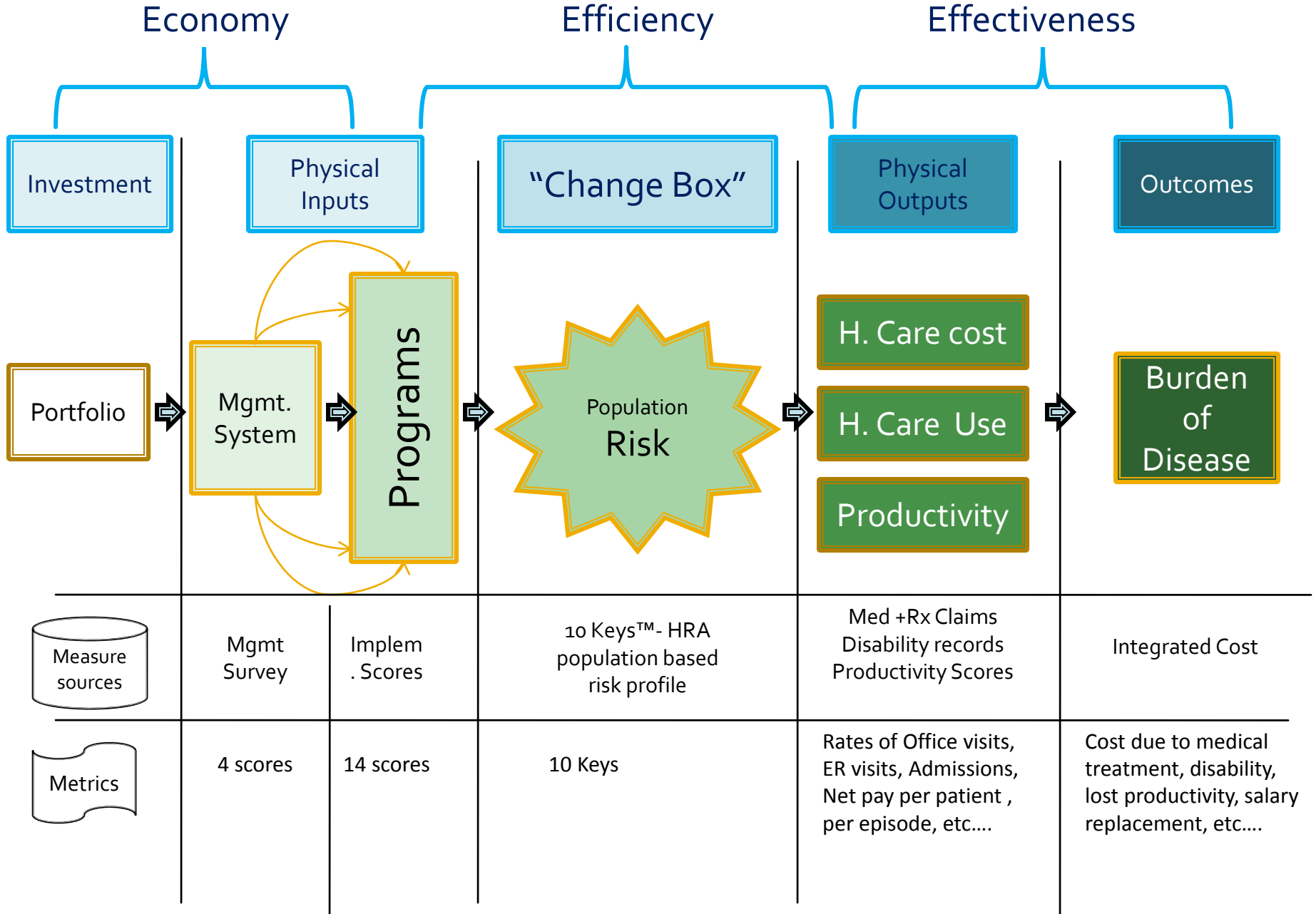
The Clinical and Economic Aspects of Health Management at PPG

Cost Effectiveness







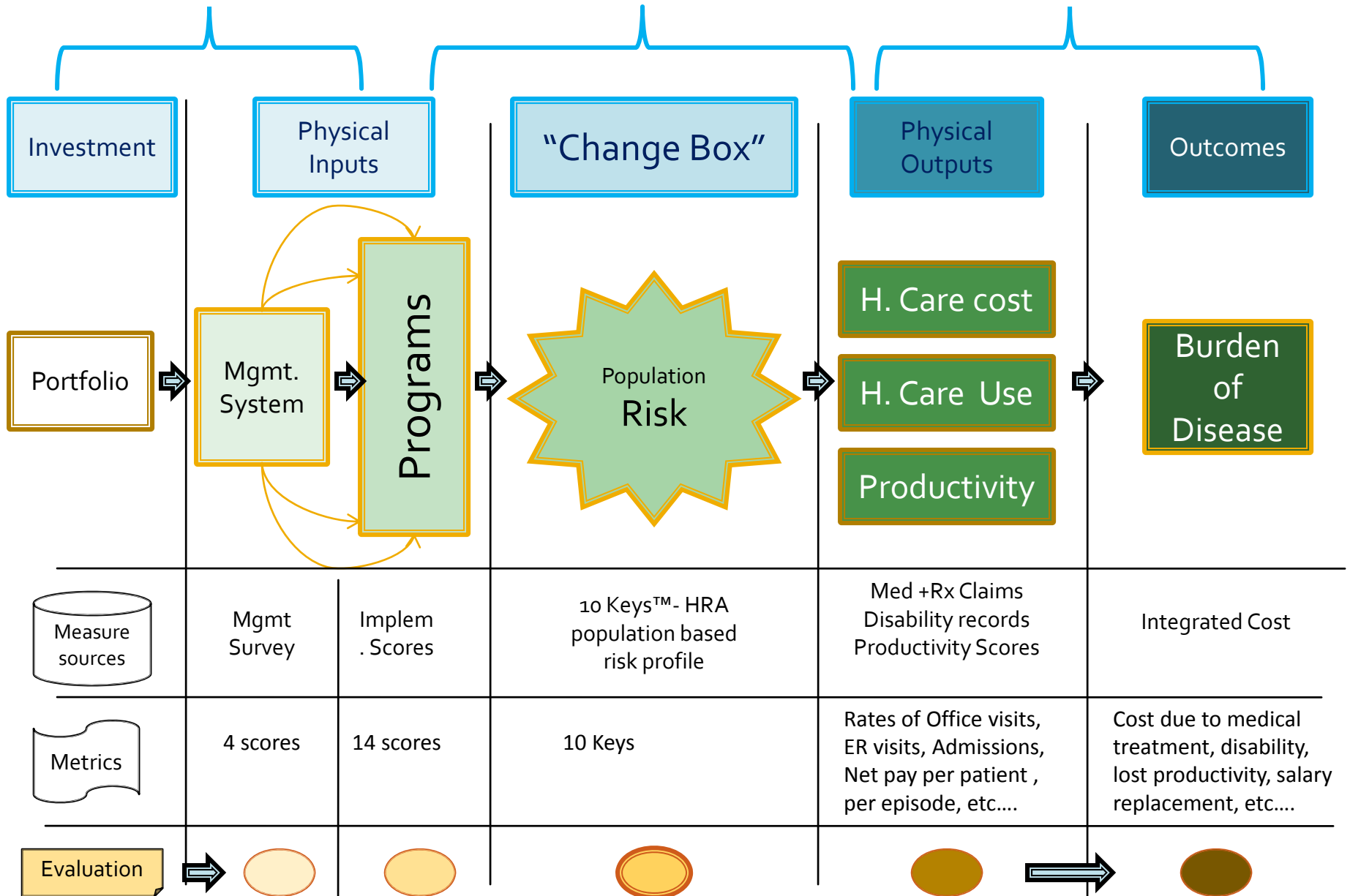


Cost-effectiveness

Economy

Efficiency

Effectiveness

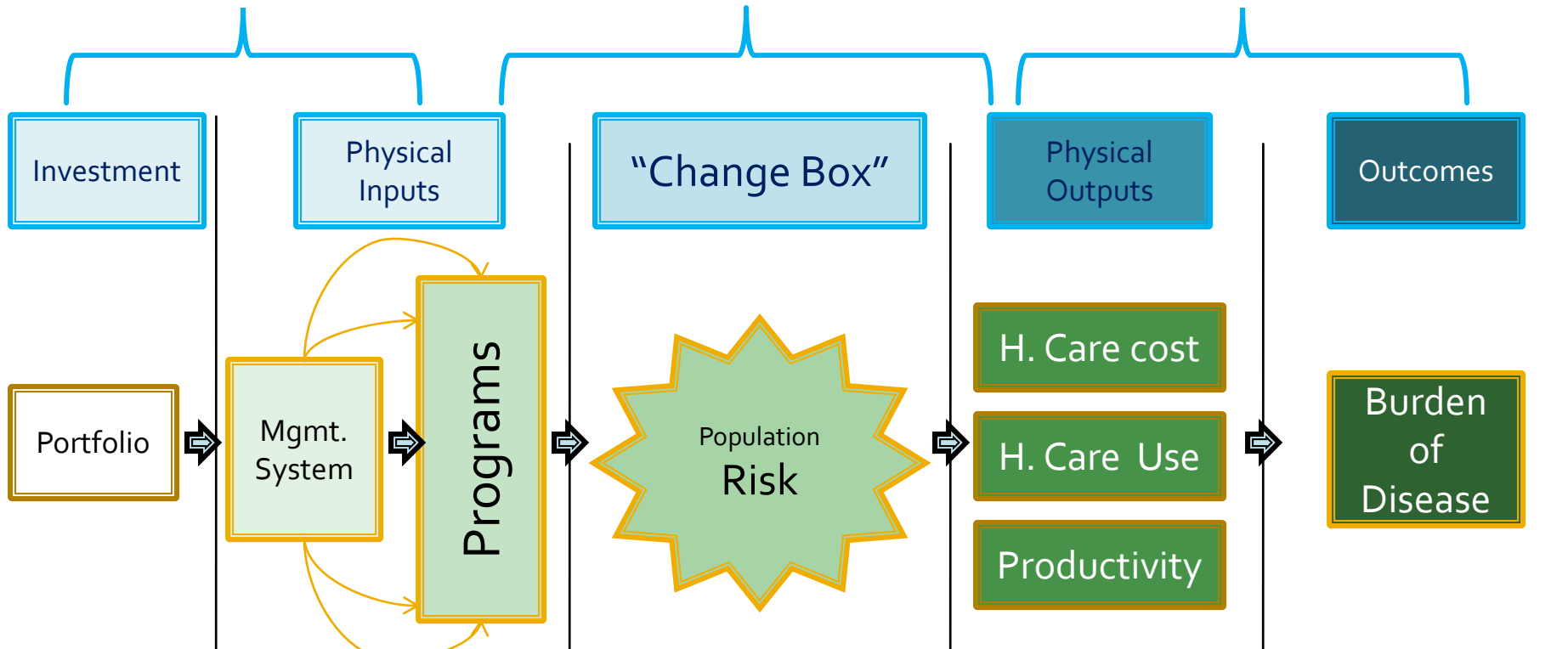


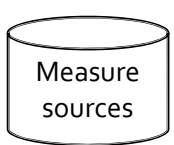

Cost-effectiveness

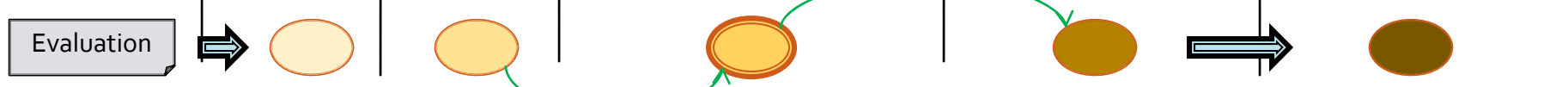
Economy

Efficiency

Effectiveness



 Measure sources	Mgmt Survey	Implem . Scores	10 Keys™- HRA population based risk profile	Med +Rx Claims Disability records Productivity Scores	Integrated Cost
 Metrics	4 scores	14 scores	10 Keys	Rates of Office visits, ER visits, Admissions, Net pay per patient , per episode, etc....	Cost due to medical treatment, disability, lost productivity, salary replacement, etc....

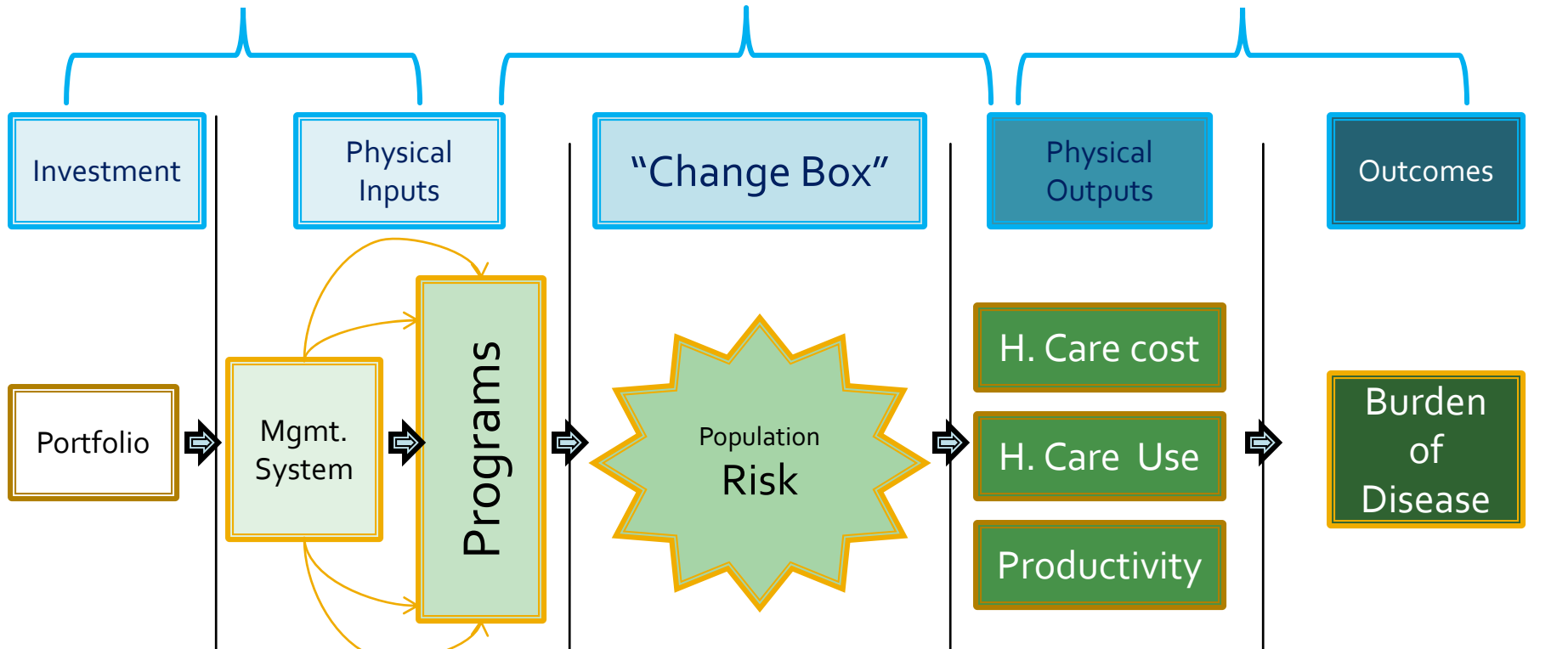


Cost-effectiveness

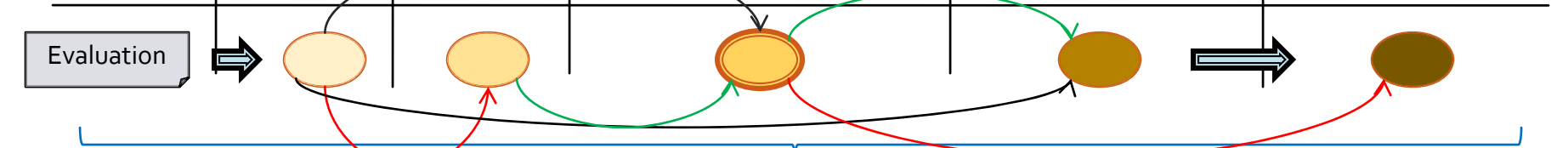
Economy

Efficiency

Effectiveness



<p>Measure sources</p>	Mgmt Survey	Implem . Scores	10 Keys™- HRA population based risk profile	Med +Rx Claims Disability records Productivity Scores	Integrated Cost
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Cost-effectiveness



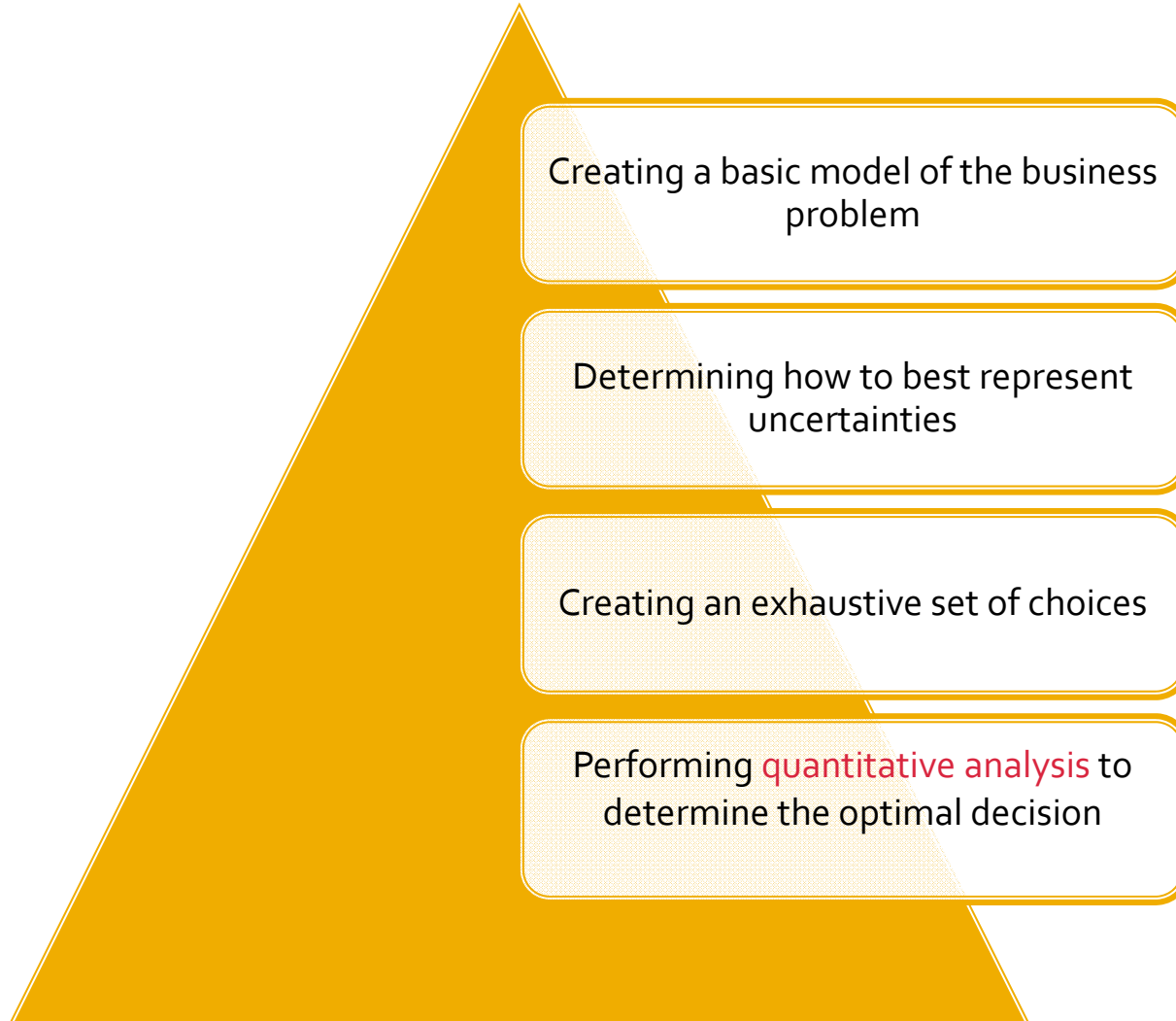
Decision Analysis

DA provides a clear framework for analyzing decisions that involve significant uncertainties (risk).

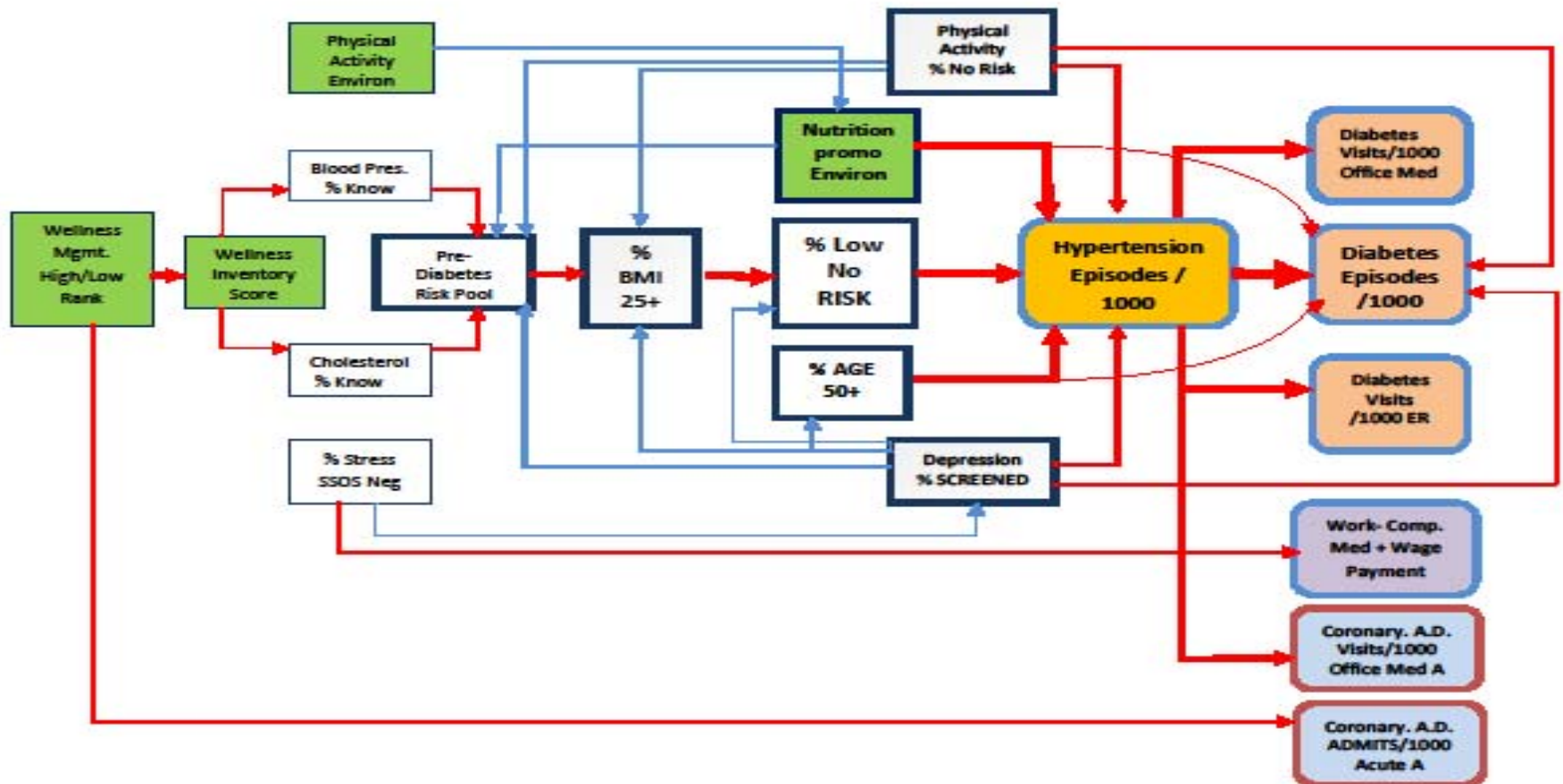
In today's world risks can include anything from political and legal risks, to unknowns associated with market acceptance, weather, foreign exchange rates, commodity prices, and ... (why not) wellness and health outcomes.

Decision Analysis Cycle

Four main steps

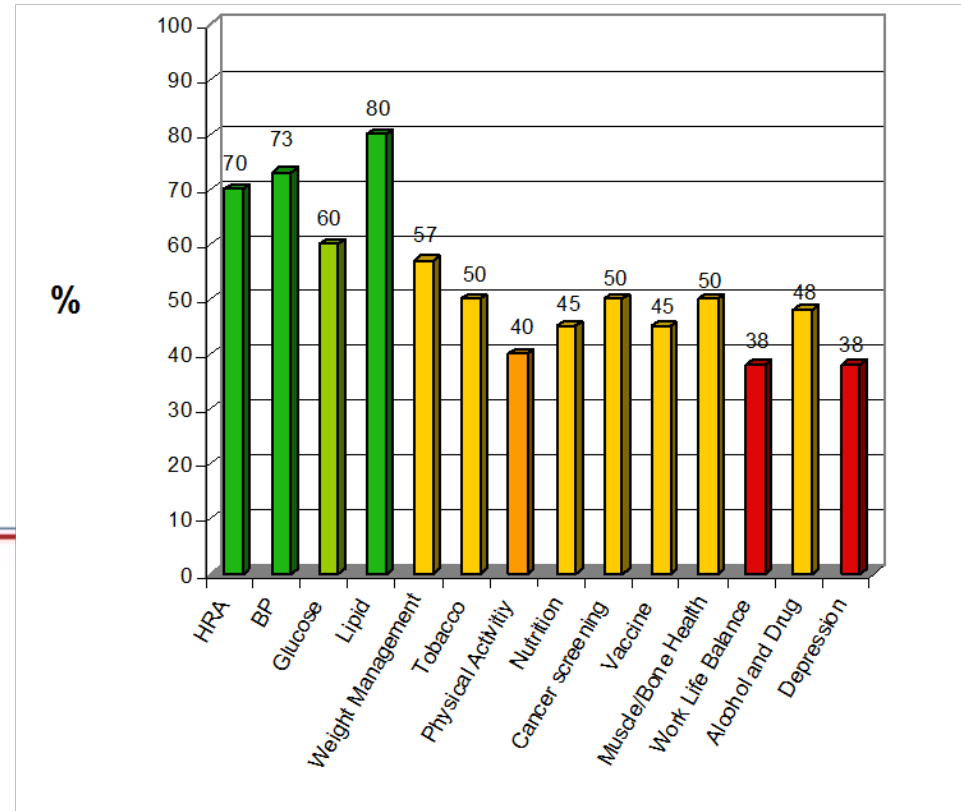
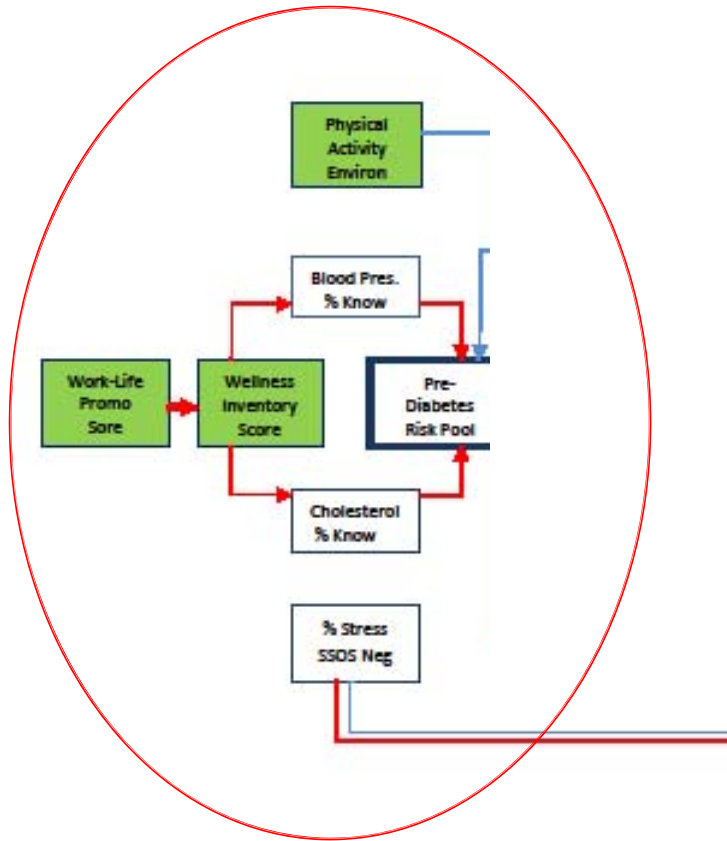


W2O: Wellness to Outcomes



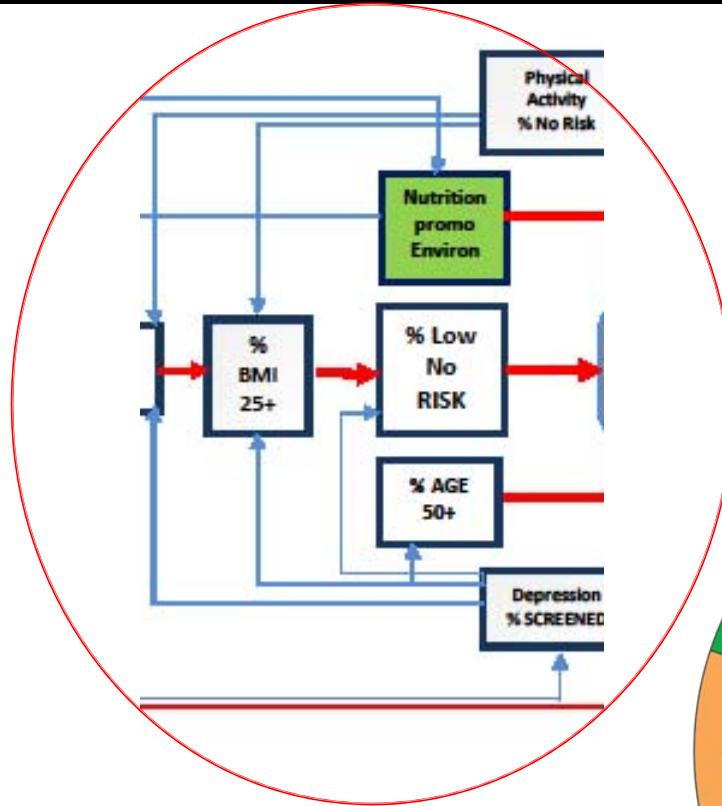
W2O : Wellness to Outcomes

1



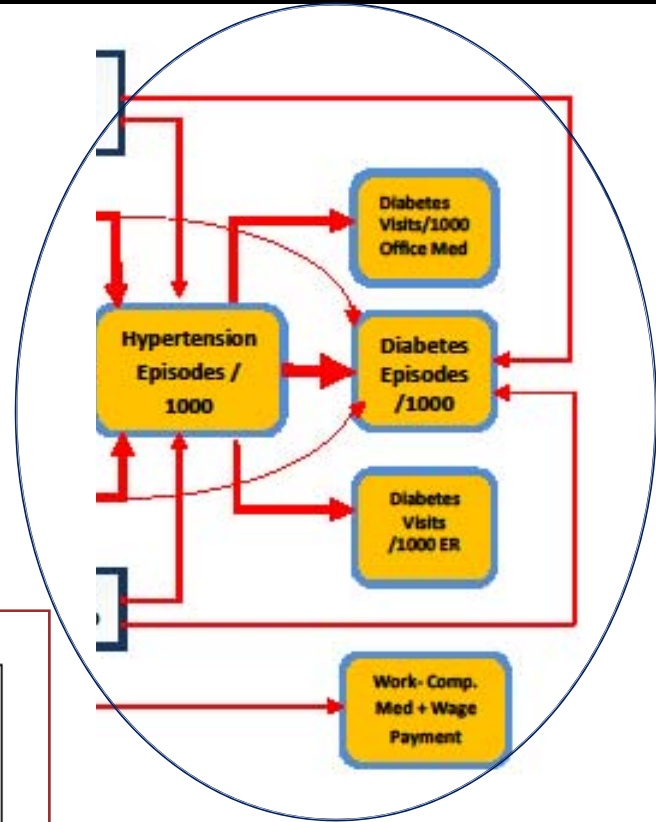
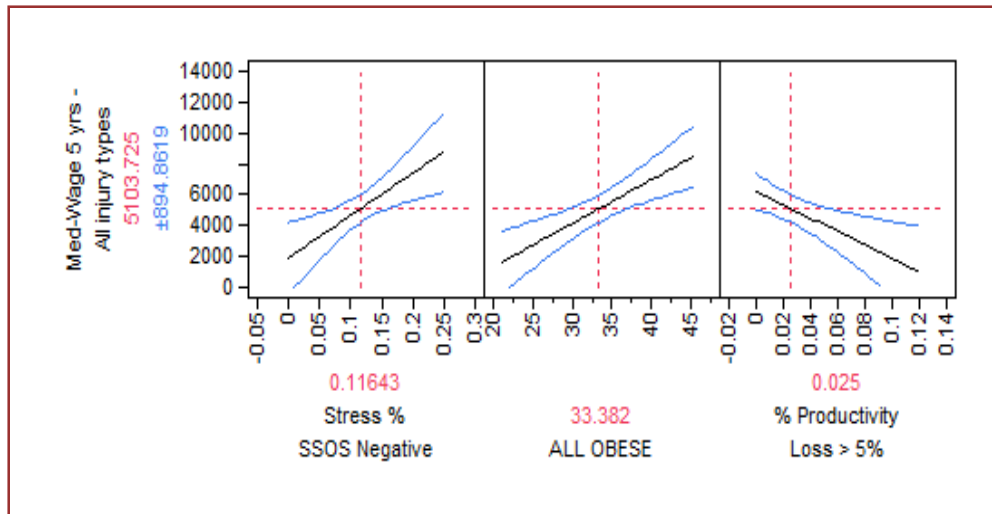
W2O : Wellness to Outcomes

2



W2O : Wellness to Outcomes

4



Hypertension example

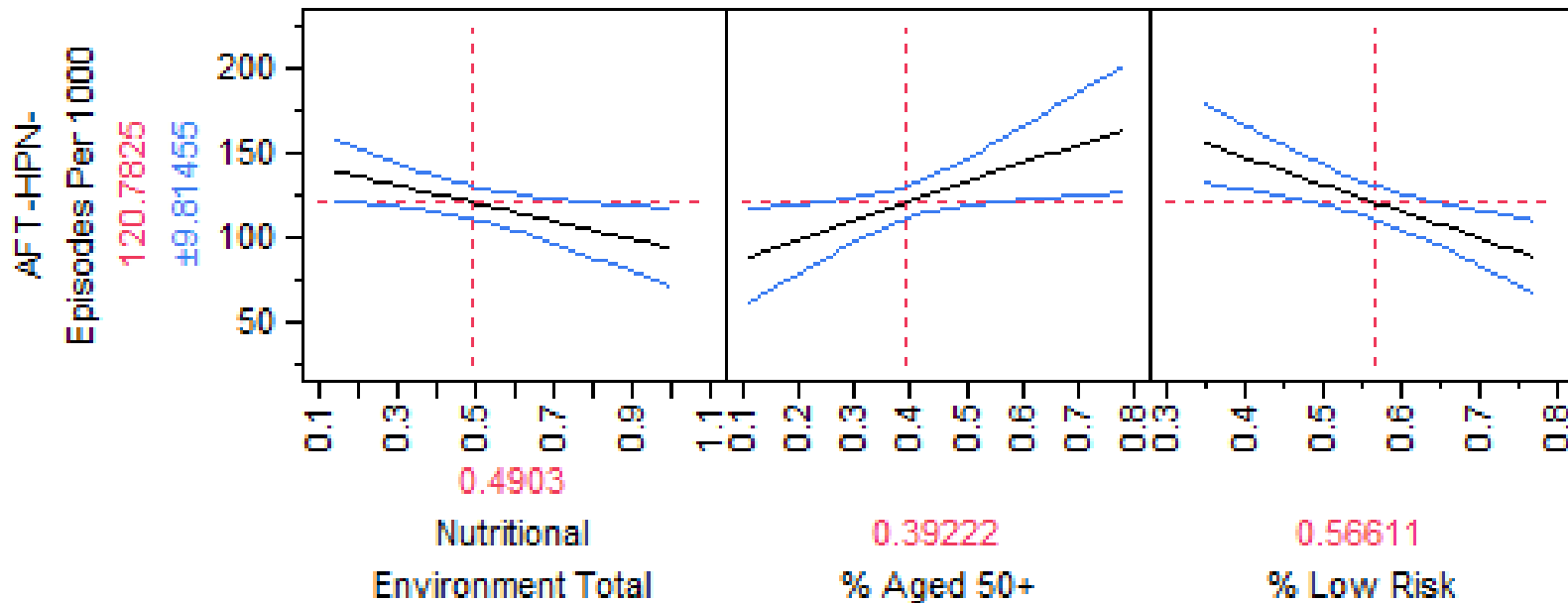


Sorted Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob> t
% Low Risk	-158.2534	46.74753	-3.39	0.0025
Nutritional Environment	-52.91356	20.28908	-2.61	0.0157
% Aged 50+	111.49604	45.05718	2.47	0.0211

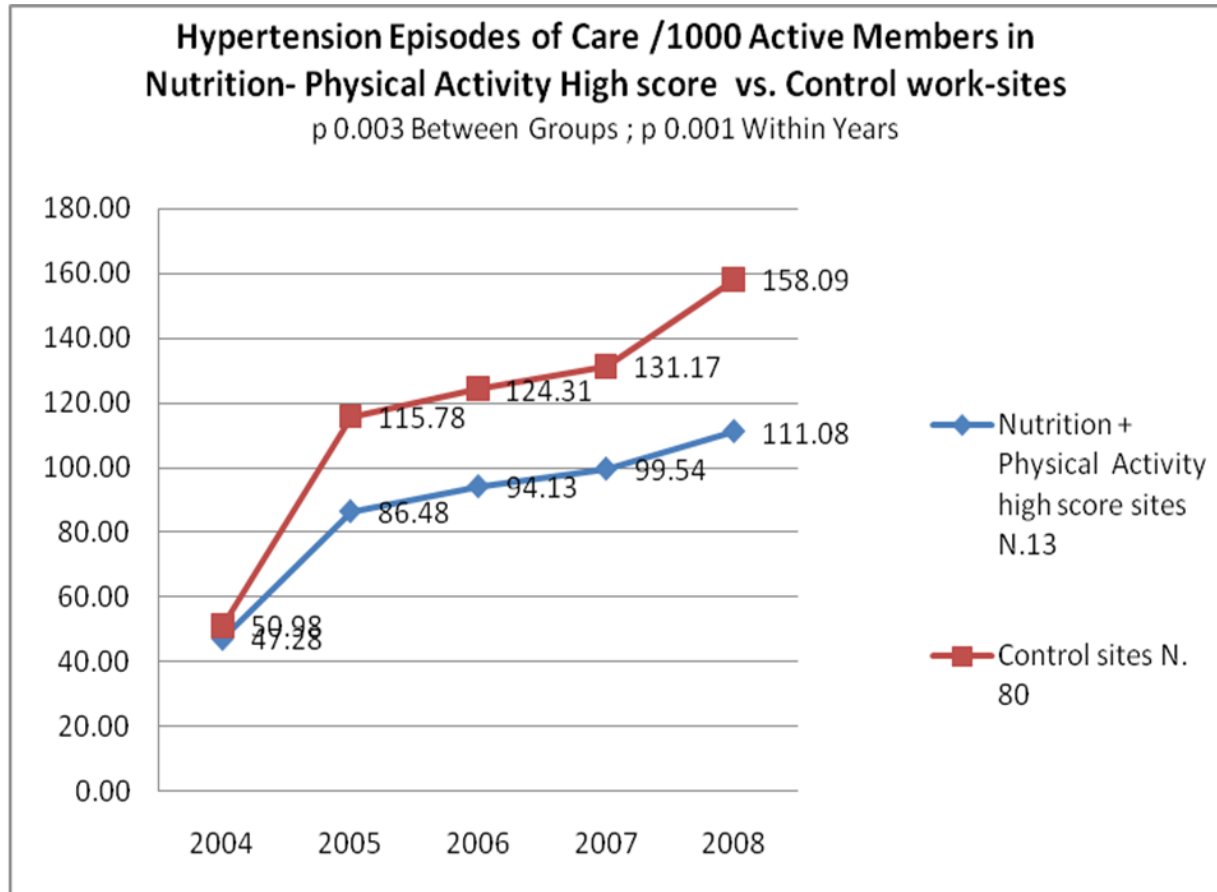
RSquare	0.65331
RSquare Adj	0.608089
Root Mean Square Error	24.65265
Mean of Response	120.7826
Observations (or Sum Wgts)	27

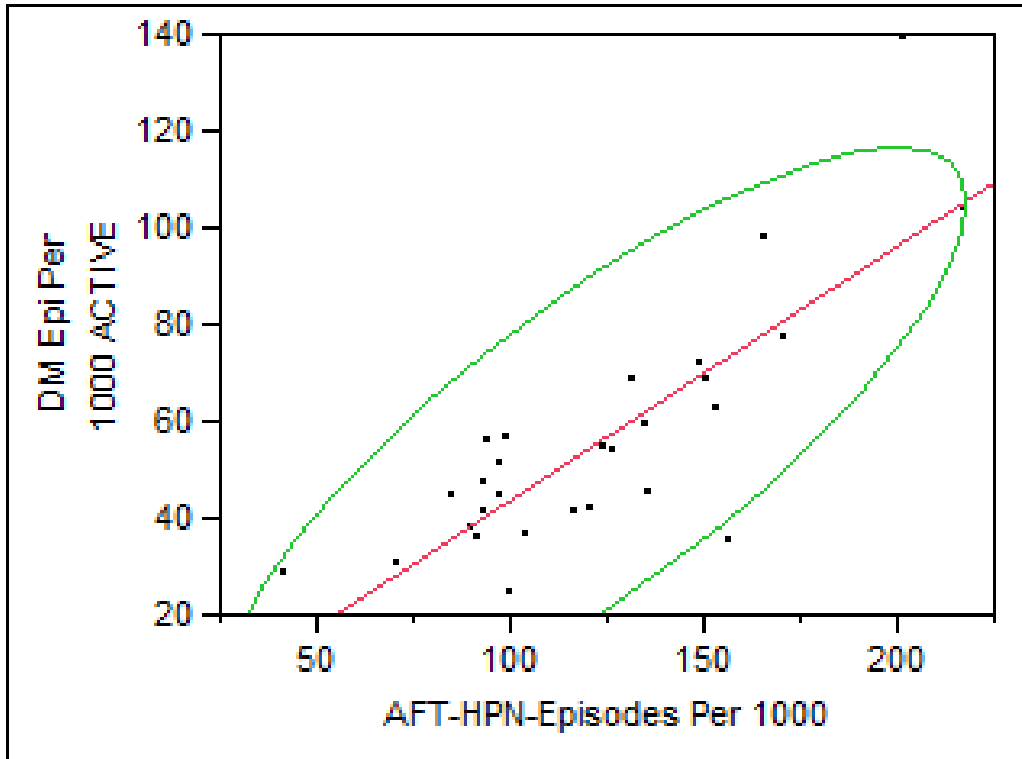
Prediction Profiler





Hypertension Episodes rates





RSquare 0.665526
RSquare Adj 0.652662
Root Mean Square Error 14.82222
Mean of Response 54.99786
Observations (or Sum Wgts) 28

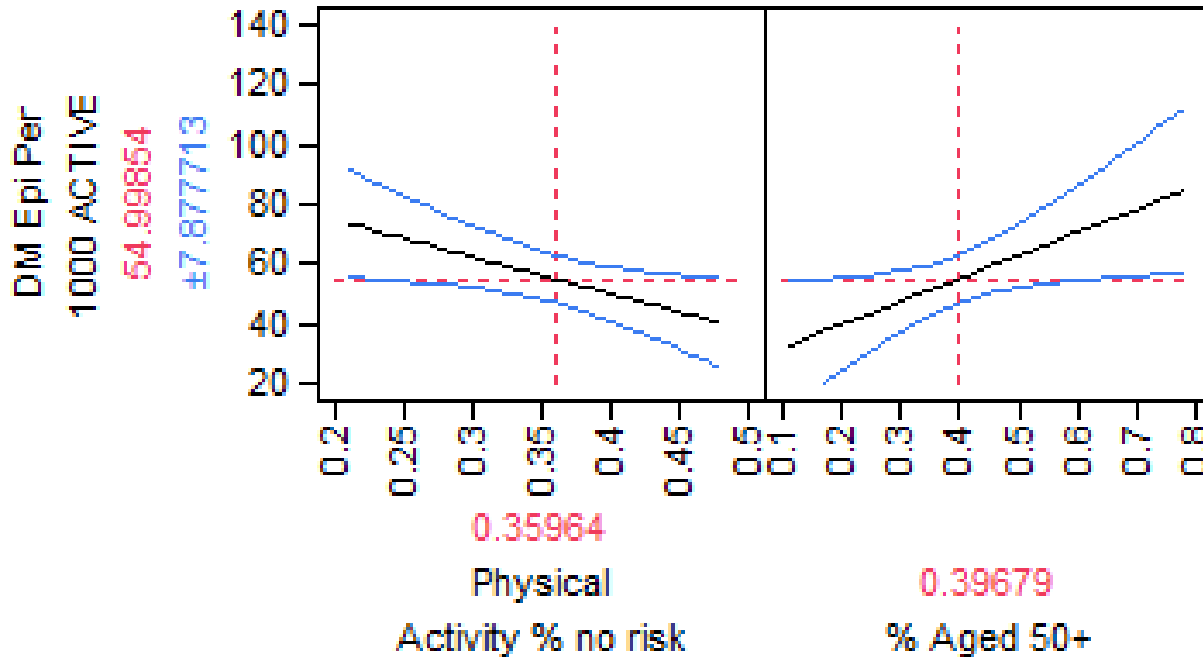
Variable	Mean	Std Dev	Correlation	Signif. Prob
AFT-HPN-Episodes Per 1000	121.9436	39.12864	0.815798	<.0001
DM Epi Per 1000 ACTIVE	54.99786	25.14994		

Term	Estimate	Std Error	t Ratio	Prob> t
Intercept	-8.943783	9.32074	-0.96	0.3461
AFT-HPN-Episodes Per 1000	0.5243543	0.072902	7.19	<.0001

Diabetes Episodes rates (example)



Term	Estimate	Std Error	t Ratio	Prob> t
Physical Activity % no risk	-122.7227	52.38092	-2.34	0.0274
% Aged 50+	77.20665	33.31348	2.32	0.0289



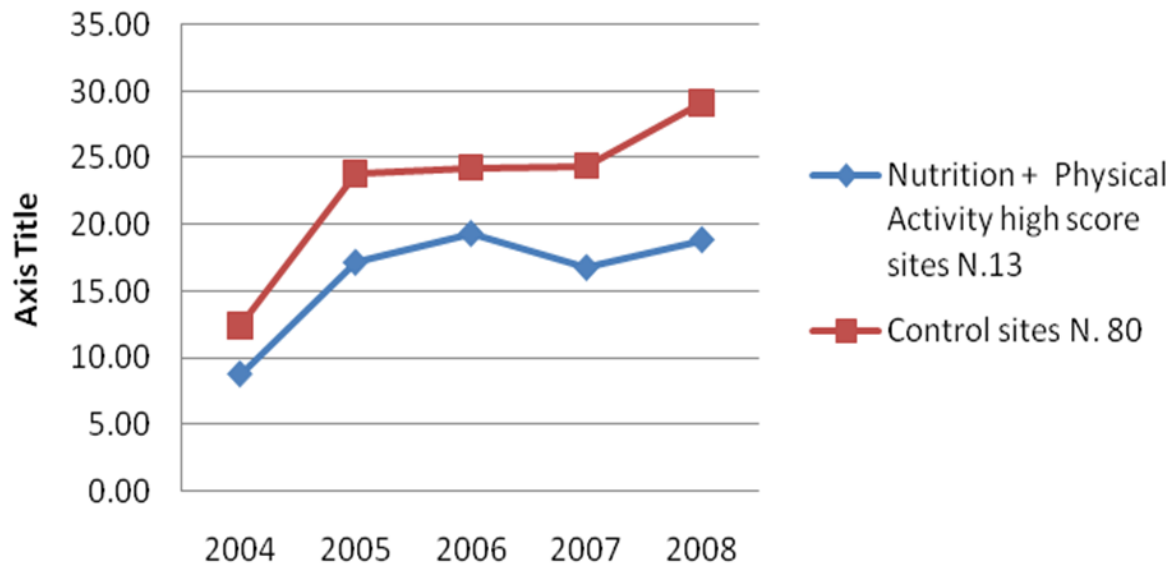
RSquare 0.400318
 RSquare Adj 0.352344
 Root Mean Square Error 20.23994
 Mean of Response 54.99786
 Observations (or Sum Wgts) 28

Coronary Artery Disease - Episodes rates



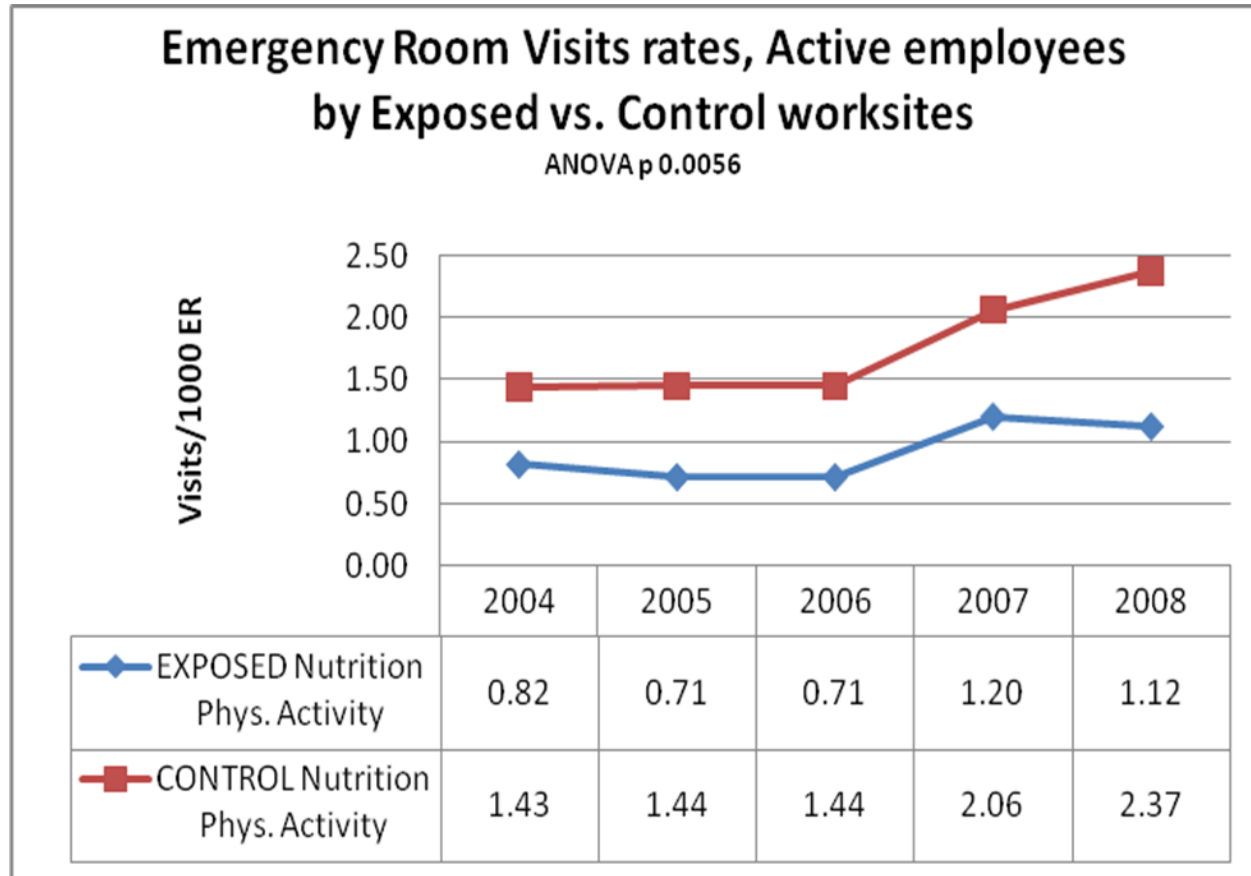
Coronary Artery Episodes of care /1000 Active members

p 0.01 within years; p 0.02 between groups





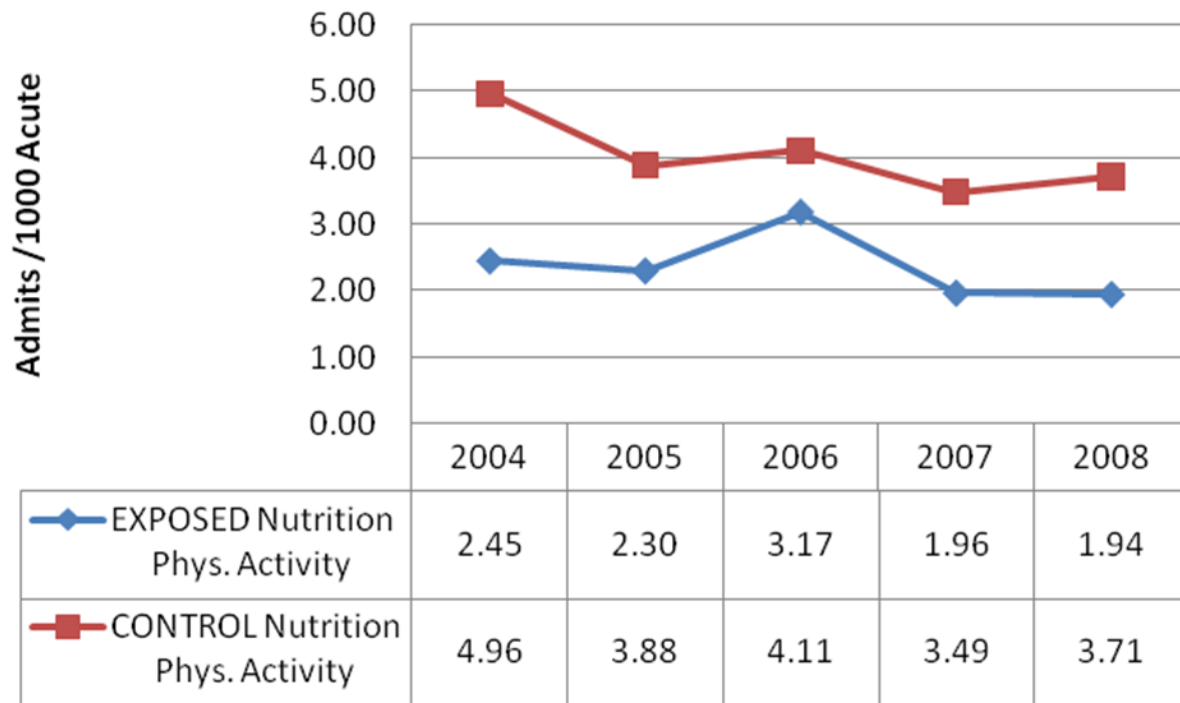
Coronary Artery Disease/ER visits rates





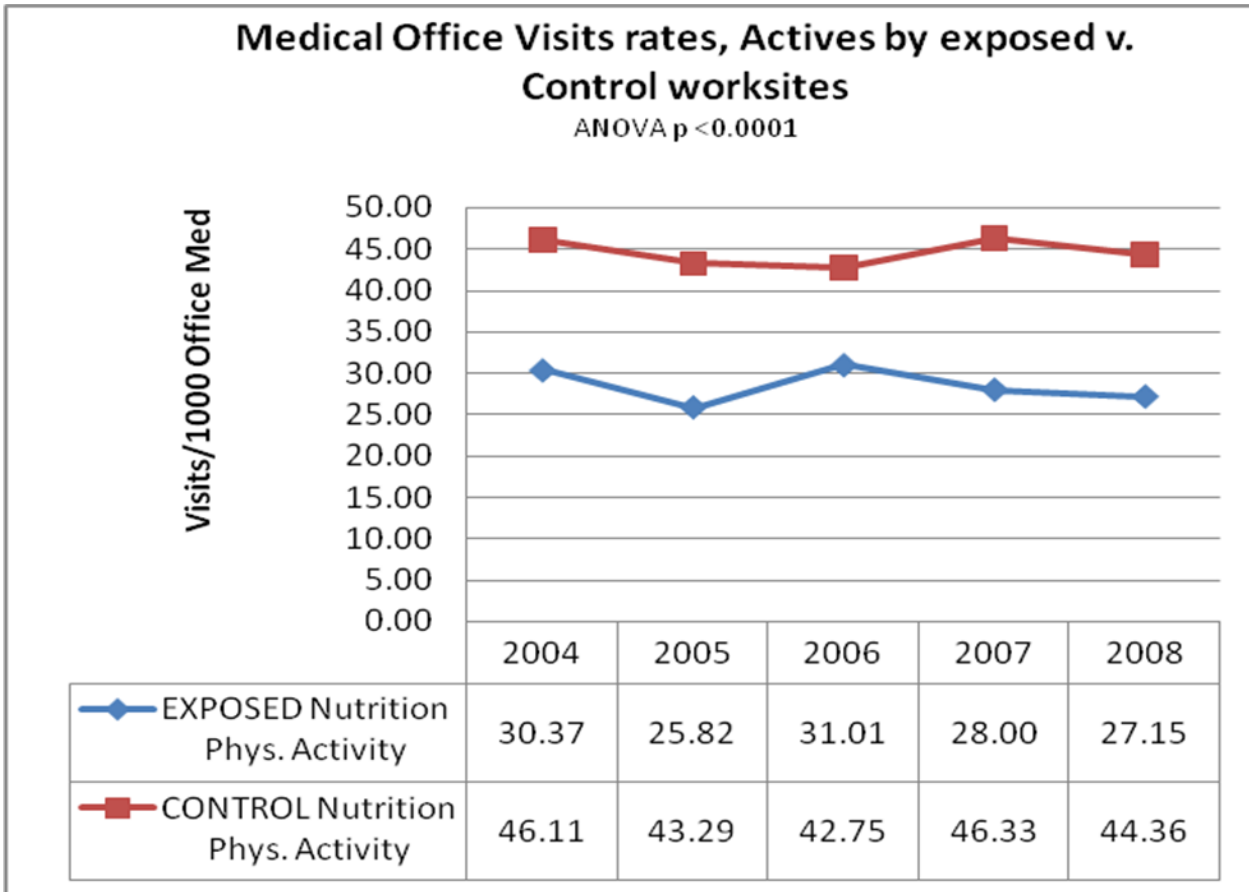
Coronary Artery Disease/Admission rates

Coronary Artery Disease Hospital Admission Rates ,
in Active employees by Exposed v.Control worksites
(ANOVA p0.001)





Coronary Artery Disease Office visits rates

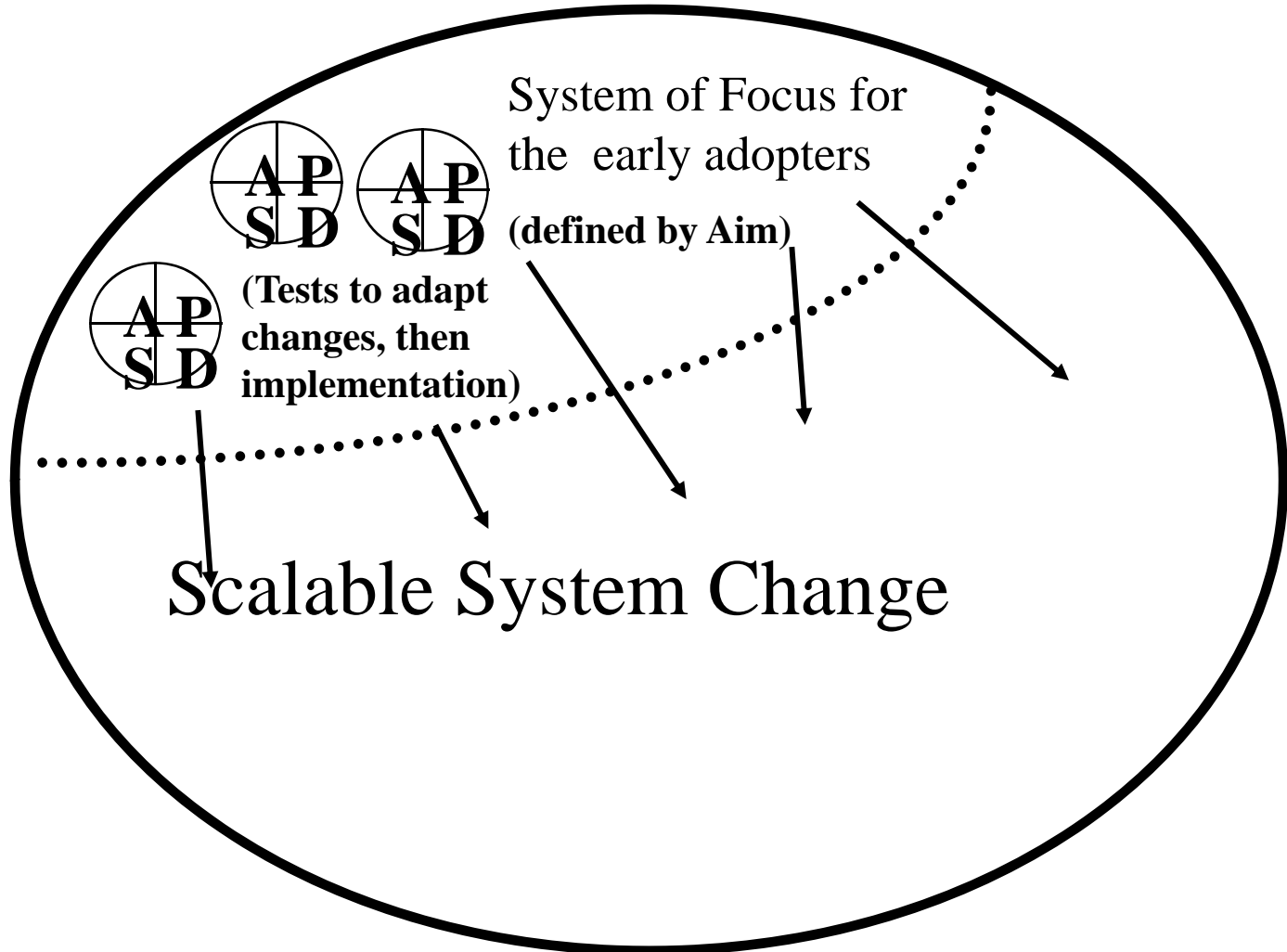


Several dimensions

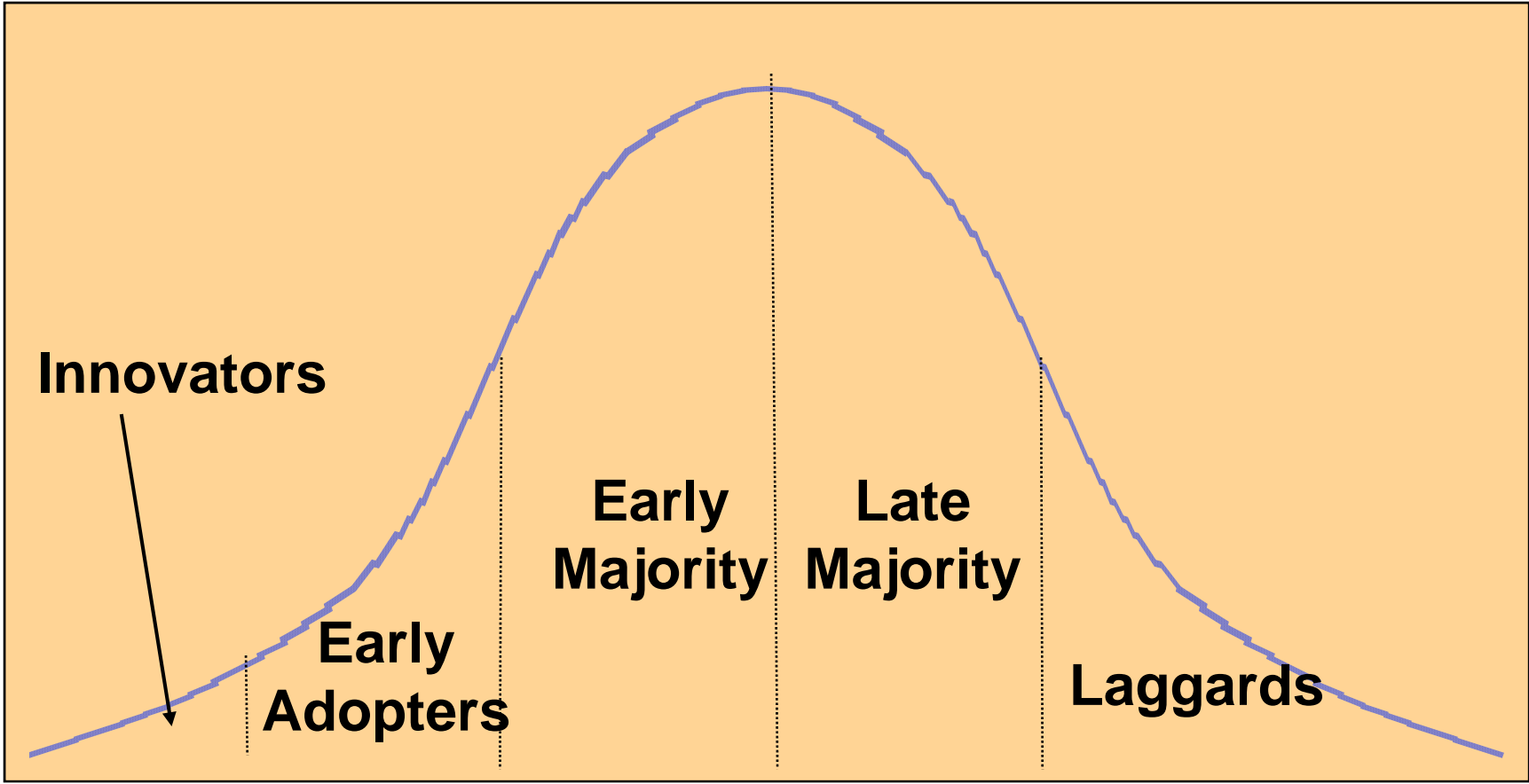


- Multi-factorial effects for any outcome , f.i.
 - Multiple risk factors contributing to Coronary Artery Disease
- Co-Existing but distinct population outcomes, f.i.
 - Hypertension, Diabetes, Coronary Artery Disease, Workers Compensation....
- Heterogeneity of populations
 - Several worksites, regions
- Diversity of simultaneous programs
 - Variance in implementation maturity and intensity

Evidence Based Wellness

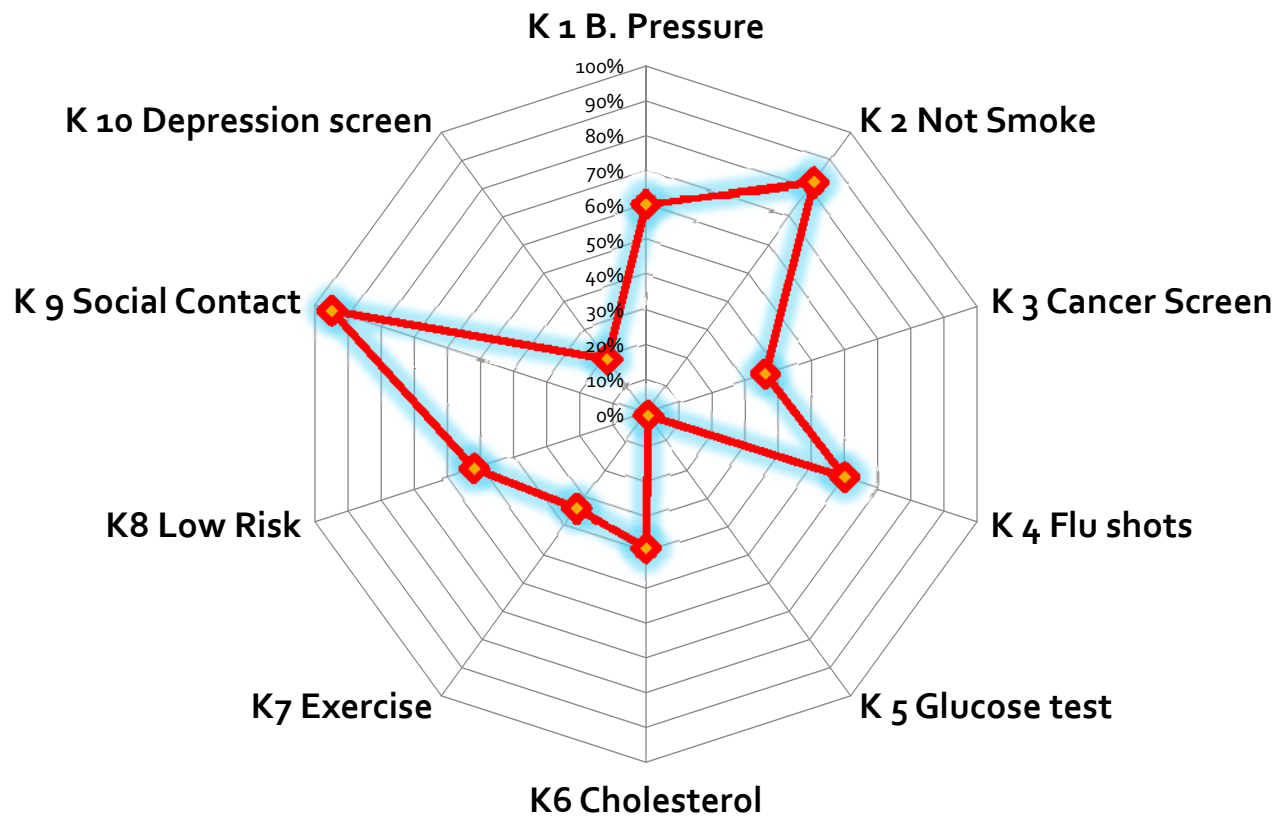


Adopter Categories



from E. Rogers, 1995

Delaware (2007). "10 Keys to Health" : Process indicators

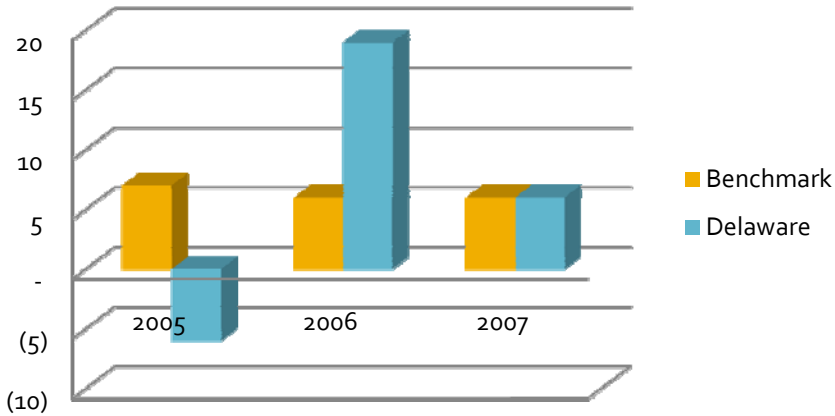


Delaware : Wellness Performance

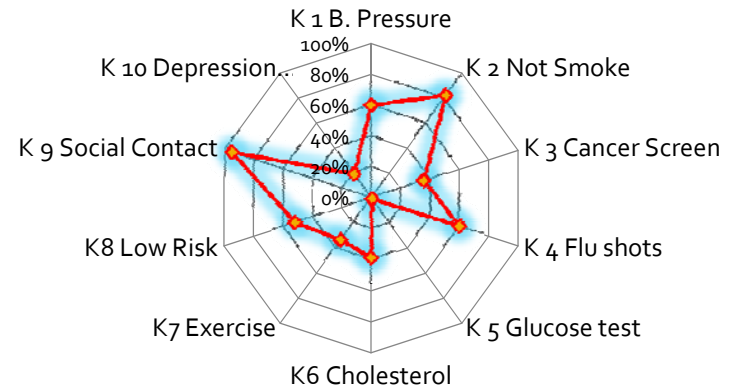
"Quad" (example)



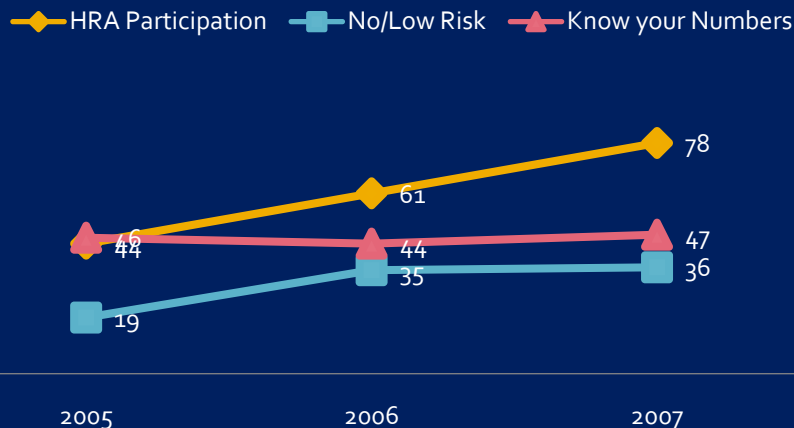
Net Care Cost Inflation rate



Delaware: 10 Keys to Health Process indicators



Delaware: Health Risk Indicators



Management Topic	Status
Problem/Opportunity	Green
Focus /priorities	Yellow
ID of population needs	Green
Programs coordination	Yellow
Plan Evaluation	Green