

# Who Gets Better in Public Mental Health?

Demographic and Diagnostic Predictors of  
Improved Quality of Life

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# Original Need

- Compare Contracted Provider Agencies (4) with regard to client outcomes:
  - Providers serve different populations (demographic and diagnostic mix)
  - Providers espouse different philosophies
  - Providers employ different mixes of professional and paraprofessional staff
  - Providers offer a variety of services

# Standard Risk Adjustment Method

- Goal: To adjust a single outcome score to take account of one or more client risk factors that influence outcome and vary across treatment groups.
- Requirements:
  - Data meet statistical assumptions (normality, etc.)
  - The effects to be adjusted for are consistent across all groups.

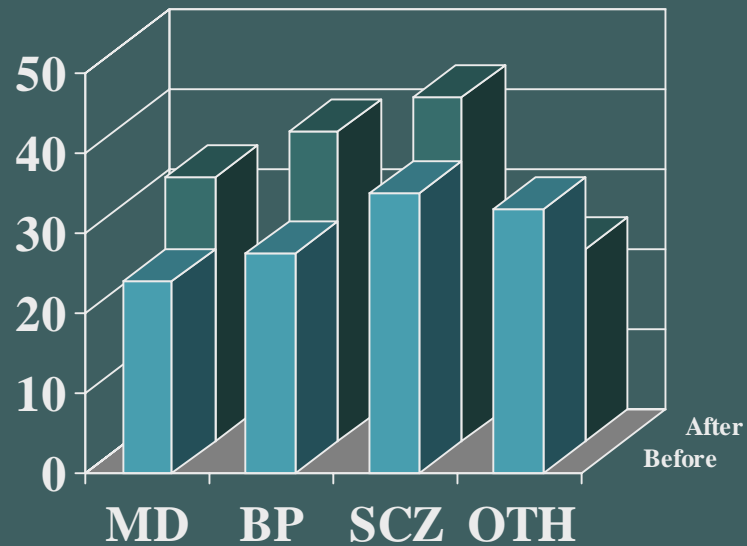
# Traditional Risk Adjustment

Agency	Unadjusted	Admin-adjusted	Survey-adjusted
F	4.67 (1)	3.83 (1)	2.53 (1)
D	4.37 (2)	3.36 (2)	0.46 (2)
A	1.03 (3)	1.54 (3) 	-2.00 (5)
B	1.02 (4)	1.43 (4)	-0.75 (3)
E	-1.09 (5)	-0.22 (5)	-1.26 (4)
C	-4.40 (6)	-4.47 (6)	-4.11 (6)
	p = .03	p = .04	p = .33

From Hendryx, M. & Teague, G. (2001), Comparing alternative risk-adjustment models. *Journal of Behavioral Health Services & Research*, 28(3): 247-57

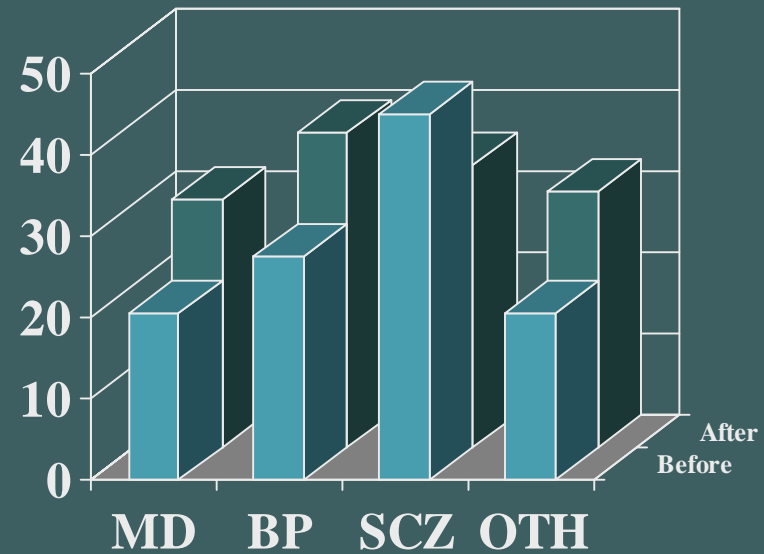
# Our Problem: Effects Vary Across Groups

Agency A



Before After

Agency B



Before After

# Possible Solutions


- Stratify by any variable whose effect varies across groups
  - If there are multiple stratification layers, results become unwieldy, groups small
- Decide to NOT adjust for variables whose effects are complex
- Adopt a different strategy...

From Dow, M. et al. (2001), Risk adjustment of Florida mental health outcomes data: Concepts, methods, and results. *Journal of Behavioral Health Services & Research*, 28(3): 258-272

# Second Need: Give Provider Agencies Actionable Information

- Providers are different (in philosophy, organization, staffing, and values)
- Ranking providers on a single dimension puts too much weight on one score, and may obscure important differences or other organizational characteristics
- What sort of evaluation would most likely lead to positive changes?

# Traditional Risk Adjustment

Agency	Unadjusted	Admin- adjusted	Survey- adjusted
F	4.67 (1)	3.83 (1)	2.53 (1)
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# Big Idea: “Who gets better in MH?”

- Could we construct a “profile” of clients who benefit and those who don’t in the public mental health system?
- Assume “getting better” ~ “being better served” (?)
- Which clients are well served by our system (as reflected in QOL improvement), and which are not?
- By extension, which clients are well served (or not) by each contracting agency?
- “Getting Better” = improvement in QOL (for now)

# Our Solution: Regression

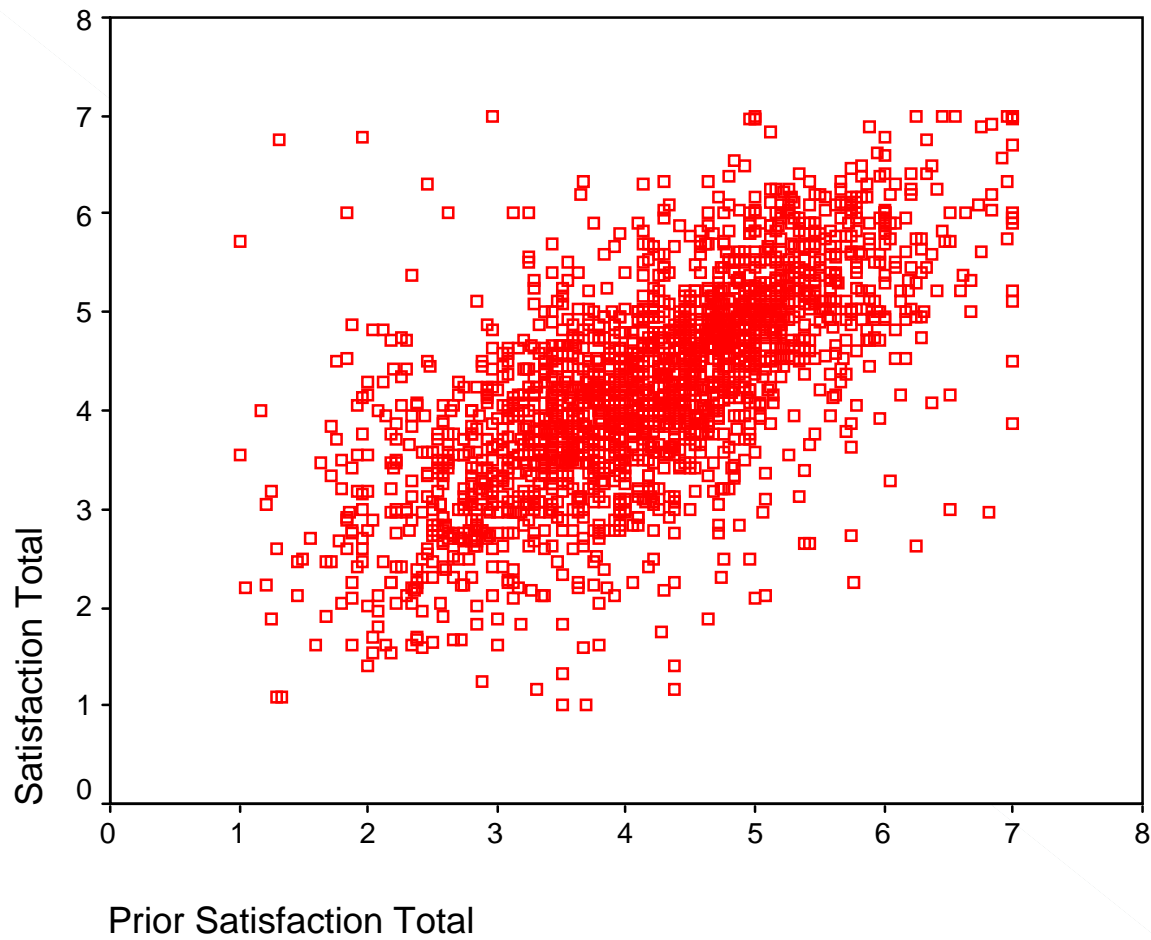
- Criterion = "Change" in QOL scores (more...)
- Predictors include Demographics, Diagnosis, Ethnicity, and Agency, with interactions between Agency and other terms.
- Allows examination of contributions to outcome that vary across providers.
- Includes "prior scores" so that the emphasis is on change rather than just final outcome.

# Outcome Variable: Residualized Change

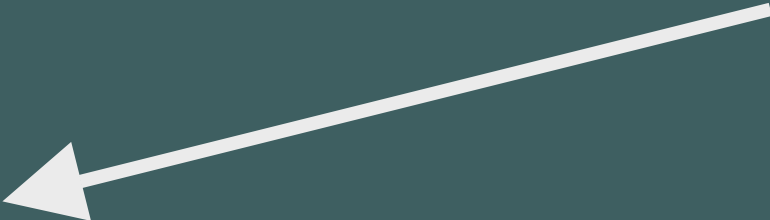
- Unstandardized residuals from regressing outcome value (current QOL score) on prior year value (prior year QOL score).
- Rough interpretation: “difference between how they were expected to improve given prior score, and how they actually did”

From Dow, M. et al. (2001), Risk adjustment of Florida mental health outcomes data: Concepts, methods, and results. *Journal of Behavioral Health Services & Research*, 28(3): 258-272

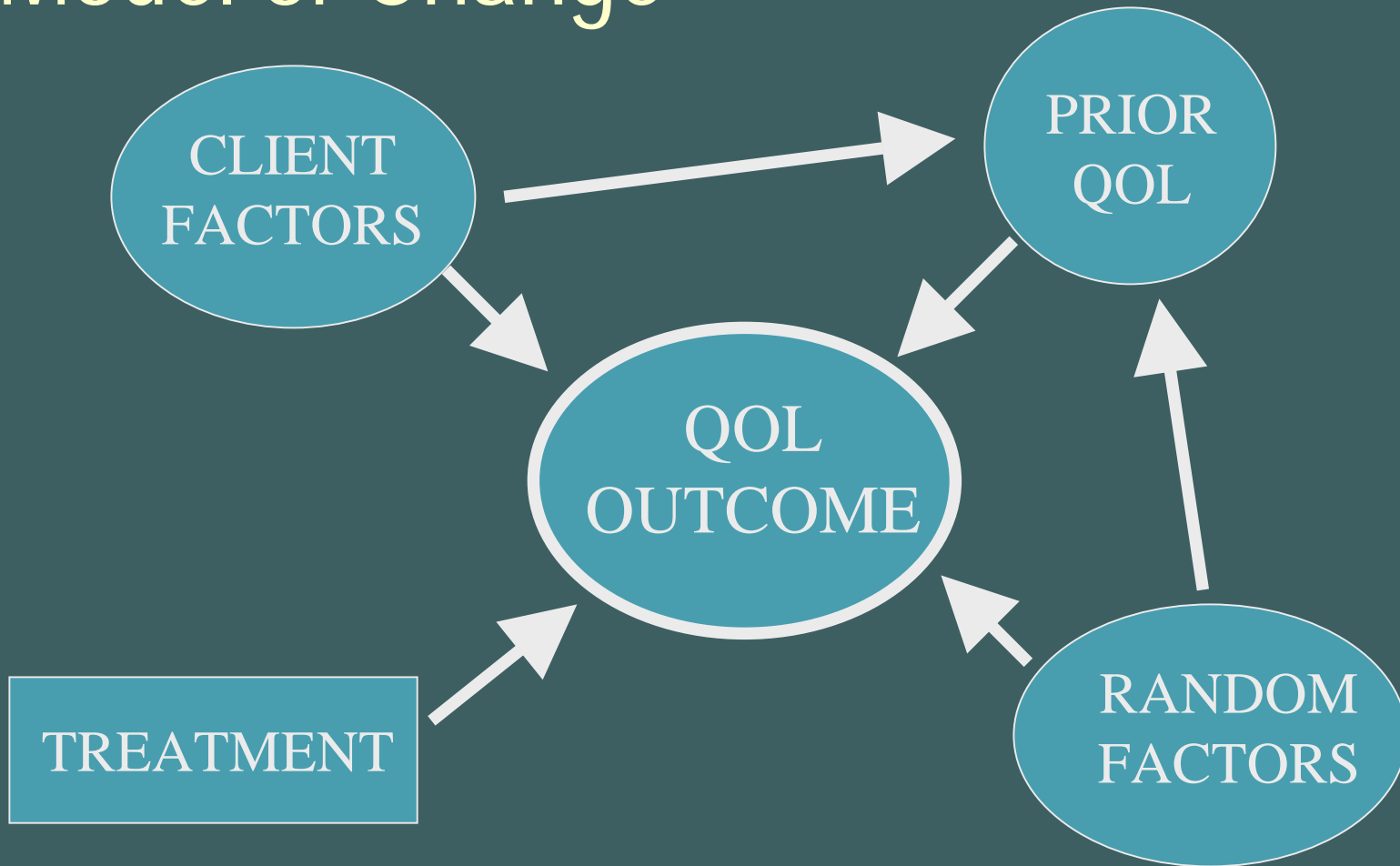
# Intake vs. Outcome



# Analysis

- Current QOL =  $C + a(\text{Prior QOL}) + \text{Residual QOL}$
  - Residual QOL =  $C + a(\text{Age}) + b(\text{Age}^2) + c(\text{Sex}) + d(\text{Ethnic Group}) + e(\text{Diagnostic Group}) + f(\text{Agency}) + \text{error}$
  - This process was done for each of 15 (10 subjective + 5 objective) subscales of the CA-QOL.
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# Model of Change



# Method Summary

- Outcome Instrument: CA-QOL
  - Based on Lehman's QOLI (Long and Short Versions)
  - 10 subjective scales, 5 objective scales (2-4 items each on a 1-7 Likert-type scale)
  - Scale reliabilities .86 - .92 in our sample (alpha)
  - Used throughout CA, validated, available
- Analysis: 2-stage multiple regression
  - Allows interactions between predictors and agencies
  - Elucidates within-group detail
  - Provides actionable information

# Sample

- All outpatients with a CA-QOL on file in 2000 (n = 2,716) and a CA-QOL on file during the period 9-15 months prior (n = 1,933-2,004).
  - ~70% of all adult outpatients seen at County Agencies
- Split nearly equally among 4 outpatient agencies and 4 diagnostic groups; less evenly split among 4 ethnic groups.

# Sample Breakdown

Agency:	A	B	C	D
% Schizophrenia	28	26	20	33
% Major Depression	25	30	33	25
% Bipolar Disorder	32	28	29	20
% Other Diagnosis	15	16	18	22
% Caucasian	60	75	58	46
% African American	18	12	18	30
% Hispanic	13	6	10	12
% Other Ethnicity	9	7	14	22

# Results - I

- ● Age (centered at 44), Age<sup>2</sup>, & Sex Effects
  - Very few
- ● Diagnosis Effects (MD, Bipolar, Other vs. SCZ)
  - Strongest predictors of QOL changes
- ● Race/Ethnicity Effects (African American, Hispanic, Other vs. Caucasian)
  - Some effects
- ● Agency Effects (Agencies A, B, C vs. D)
  - Some effects
- ● Selected Interactions
  - Some Agency X Ethnicity, Sex, and Diagnosis interactions

# Regression Tables:

5 columns

5 columns

5 columns

Subscales:	Satisfaction Subscales A	Satisfaction Subscales B	Objective Subscales
Constant			
Prior Year			
Predictors...			

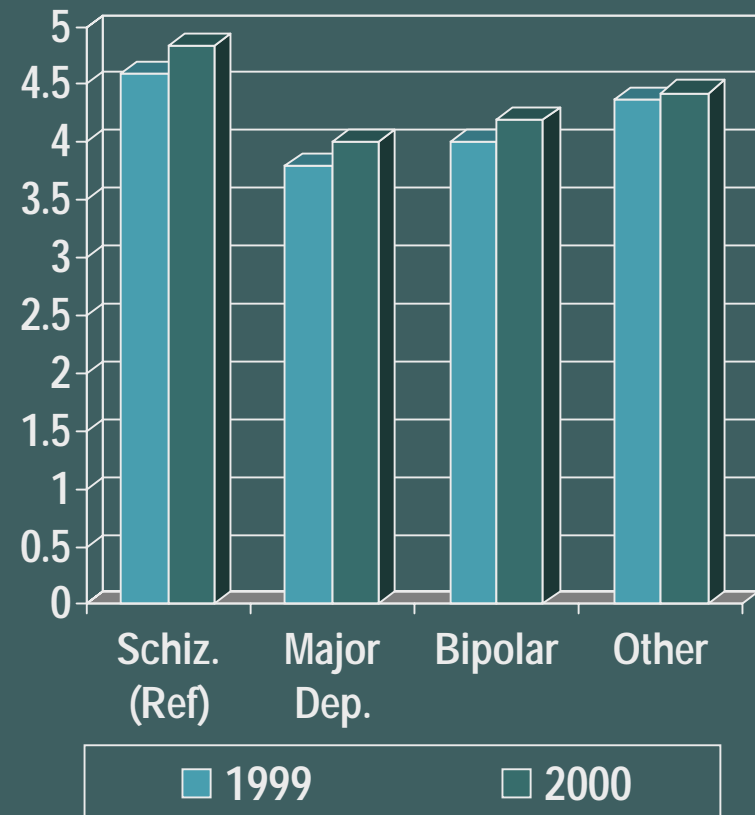
Adjusted R<sup>2</sup>

# Demographic & Diagnostic Effects - I

Satisfaction Subscales:	General Life Satis.	Living Situation	Leisure Activities	Daily Activities	Finances
Constant	2.31 <sup>***</sup>	2.80 <sup>***</sup>	2.61 <sup>***</sup>	2.86 <sup>***</sup>	2.18 <sup>***</sup>
Prior Year	.54 <sup>***</sup>	.44 <sup>***</sup>	.48 <sup>***</sup>	.41 <sup>***</sup>	.50 <sup>***</sup>
Age					
Age Squared	-.0008 <sup>**</sup>				
Sex (Male)					
Diagnostic Groups (relative to Schizophrenia)					
Major Dep.	-.66 <sup>***</sup>	-.46 <sup>***</sup>	-.68 <sup>***</sup>	-.61 <sup>***</sup>	-.54 <sup>***</sup>
Bipolar	-.47 <sup>***</sup>	-.25 <sup>***</sup>	-.47 <sup>***</sup>	-.47 <sup>***</sup>	-.34 <sup>***</sup>
Other	-.18 <sup>*</sup>	-.18 <sup>*</sup>		-.23 <sup>**</sup>	-.33 <sup>***</sup>
<b>Adjusted R<sup>2</sup></b>	.41	.23	.32	.25	.32

# Diagnostic Effects – Gen'l Life Satisf.

- Schizophrenic group starts highest and improves the most.
- Depressed group starts lowest and improves much less than SCZ.
- Bipolar and Other also improve less than SCZ, but to a less extreme degree



# Demographic & Diagnostic Effects - II

Satisfaction Subscales:	Social Relations	Family Relations	Safety	Health	Satisfaction Average
Constant	2.64 <sup>***</sup>	2.46 <sup>***</sup>	2.65 <sup>***</sup>	2.24 <sup>***</sup>	1.95 <sup>***</sup>
Prior Year	.46 <sup>***</sup>	.49 <sup>***</sup>	.46 <sup>***</sup>	.55 <sup>***</sup>	.60 <sup>***</sup>
Age				-.007 <sup>*</sup>	
Age Squared					
Sex (Male)					
<b>Diagnostic Group (relative to Schizophrenia)</b>					
Major Dep.	-.51 <sup>***</sup>	-.47 <sup>***</sup>	-.18 <sup>*</sup>	-.55 <sup>***</sup>	-.40 <sup>***</sup>
Bipolar	-.45 <sup>***</sup>			-.50 <sup>***</sup>	-.27 <sup>***</sup>
Other	-.28 <sup>***</sup>	-.22 <sup>**</sup>		-.22 <sup>**</sup>	
<b>Adjusted R<sup>2</sup></b>	.28	.29	.25	.41	.46

# Demographic & Diagnostic Effects - III

Objective Subscales:	Family Contacts	Social Contacts	Adequate Finances	Health Status	Objective Average
Constant	2.16 <sup>***</sup>	1.58 <sup>***</sup>	.44 <sup>***</sup>	1.32 <sup>***</sup>	1.15 <sup>***</sup>
Prior Year	.34 <sup>***</sup>	.48 <sup>***</sup>	.43 <sup>***</sup>	.55 <sup>***</sup>	.49 <sup>***</sup>
Age				-.008 <sup>***</sup>	-.003 <sup>*</sup>
Age Squared	-.0006 <sup>*</sup>				
Sex (Male)		-.18 <sup>***</sup>	.03 <sup>*</sup>		
<b>Diagnostic Group (relative to Schizophrenia)</b>					
Major Dep.				-.29 <sup>***</sup>	
Bipolar	.38 <sup>***</sup>	.14 <sup>**</sup>		-.13 <sup>*</sup>	
Other				-.18 <sup>**</sup>	
<b>Adjusted R<sup>2</sup></b>	.17	.28	.19	.38	.25

# Summary of Diagnostic Effects

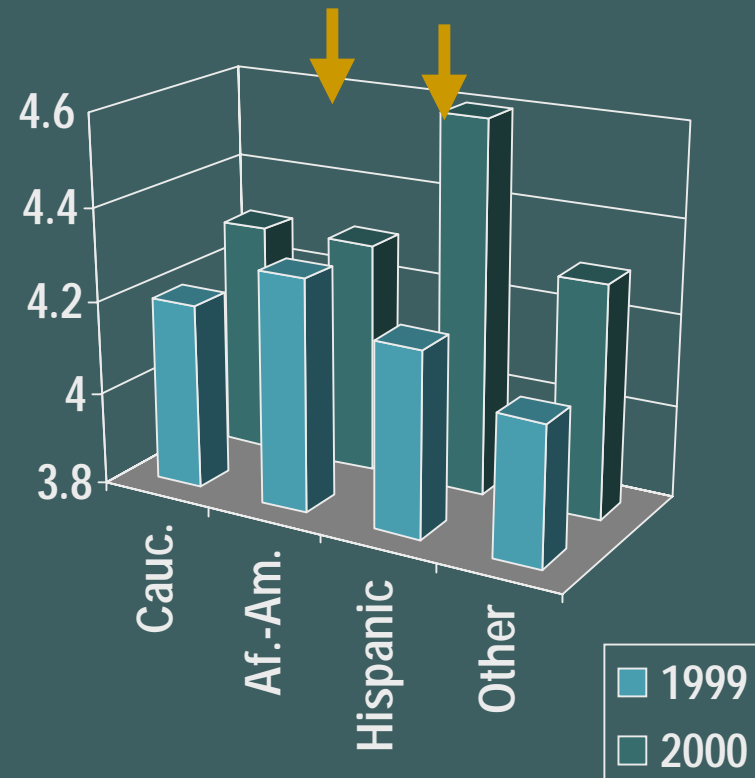
- A strong, consistent pattern of rank ordered effects with SCZ showing best QOL outcomes, MD worst.
  - Questions have been raised about the validity of self-report QOL in psychiatric clients.
  - Depressed clients generally report relatively low QOL and have the greatest difficulty making improvements.
  - High levels of self-reported QOL are generally reported by community-based schizophrenic clients.
  - There is little relationship between Objective and Subjective QOL at less than extreme levels of Objective QOL.
    - Reviewed by Barry & Zissi (1997). Quality of Life as an outcome measure in evaluating mental health services: A review of the empirical evidence. *Social Psychiatry & Psychiatric Epidemiology*, 32, pp. 38-47.

# Ethnicity Effects - I

Satisfaction Subscales:	General Life Satis.	Living Situation	Leisure Activities	Daily Activities	Finances
Constant	2.31***	2.80***	2.61***	2.86***	2.18***
Prior Year	.54***	.44***	.48***	.41***	.50***
<b>Ethnic Group (relative to Caucasian)</b>					
Hispanic		.34**		.41**	
African Amer.		-.18*	-.15*	-.20*	
Other					
<b>Adjusted R<sup>2</sup></b>	.41	.23	.32	.25	.32

# Ethnicity Effects – Living Situation

- In general, clients improved from 1999 to 2000.
- African American clients improved less than average.
- Hispanic clients improved more than average.



# Ethnicity Effects - II

Satisfaction Subscales:	Social Relations	Family Relations	Safety	Health	Satisfaction Average
Constant	2.64 <sup>***</sup>	2.46 <sup>***</sup>	2.65 <sup>***</sup>	2.24 <sup>***</sup>	1.95 <sup>***</sup>
Prior Year	.46 <sup>***</sup>	.49 <sup>***</sup>	.46 <sup>***</sup>	.55 <sup>***</sup>	.60 <sup>***</sup>
<b>Ethnic Group (relative to Caucasian)</b>					
Hispanic		.26 <sup>*</sup>			
African Amer.	-.23 <sup>**</sup>				
Other			-.19 <sup>*</sup>		-.13 <sup>*</sup>
<b>Adjusted R<sup>2</sup></b>	.28	.29	.25	.41	.46

# Ethnicity Effects - III

Objective Subscales:	Family Contacts	Social Contacts	Adequate Finances	Health Status	Objective Average
Constant	2.16***	1.58***	.44***	1.32***	1.15***
Prior Year	.34***	.48***	.43***	.55***	.49***
<b>Ethnic Group (relative to Caucasian)</b>					
Hispanic	.25*				
African Amer.					
Other	.28***	-.22***			
<b>Adjusted R<sup>2</sup></b>	.17	.28	.19	.38	.25

# Summary of Ethnicity Effects

- Hispanic clients reported greater than average improvement on one objective and several subjective subscales.
- African Americans showed less improvement than average on several objective and subjective subscales
- Clients of “Other” ethnicities reported more family contacts and fewer social contacts than average.

# Agency and Other Effects - I

Satisfaction Subscales:	General Life Satis.	Living Situation	Leisure Activities	Daily Activities	Finances
Agency A					
Agency B					
Agency C					
Agency Interactions					
A x Other Diagnosis	-.36*	-.52**	-.42**		
B x Male			-.24*	-.25*	
B x Hispanic					
Other Interactions					
Age <sup>2</sup> x Major Dep	.002**	.002**	.002***	.002***	
Age <sup>2</sup> x Bipolar D/O	.002***		.001**	.001**	

# Agency and Other Effects - II

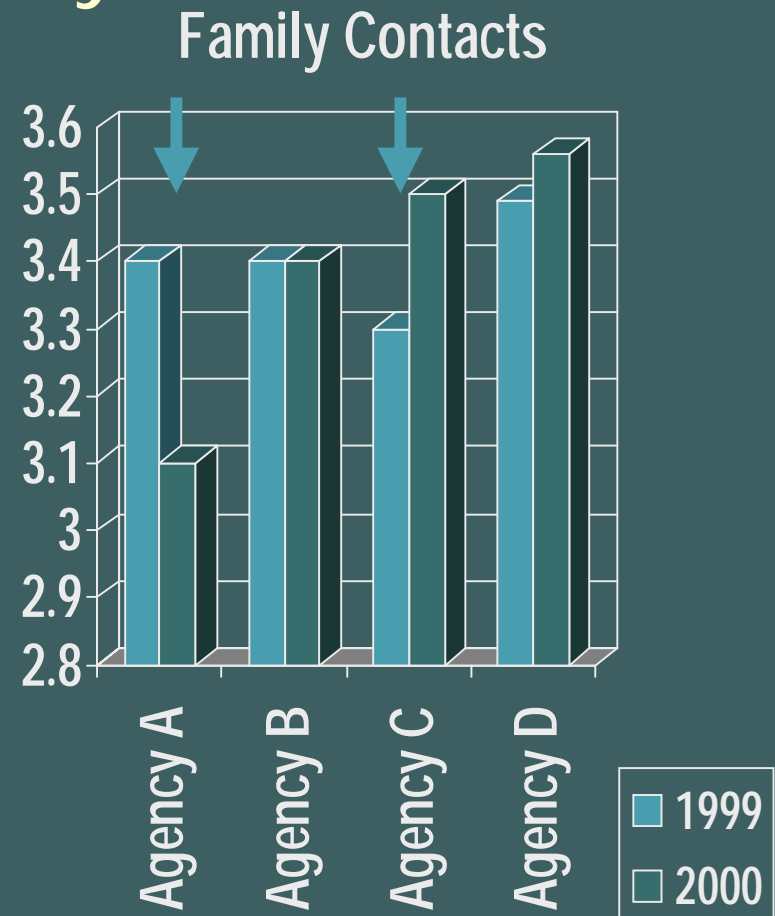
Satisfaction Subscales:	Social Relations	Family Relations	Safety	Health	Satisfaction Average
Agency A					
Agency B					
Agency C			-.22**	-.19**	
Agency Interactions					
A x Other Dx					-.32**
B x Male					
B x Hispanic	.55*			.54*	
Other Interactions					
Age <sup>2</sup> x Major Dep	.001*	.001*	.001*	.001**	.001***
Age <sup>2</sup> x Bipolar D/O	.002***			.001**	.0009*

# Agency and Other Effects - III

Objective Subscales:	Family Contacts	Social Contacts	Adequate Finances	Health Status	Objective Average
Agency A	-.20**				
Agency B		.09*			
Agency C	.14*		-.05**	-.17**	
Agency Interactions					
A x Other Dx	-.37*				
B x Male					
B x Hispanic		-.53**			-.26*
Other Interactions					
Age <sup>2</sup> x Major Dep	.001*	.001*			.0008***
Male x Other Ethnic			-.08*		-.13*

# Agency Effects – Family Contacts

- Agency D shows modest improvement (reference).
- Agency B is not significantly different from D.
- Agency A shows less improvement (decline).
- Agency C shows greater improvement than D & B.



# Summary of Agency & Other Effects

- Agency C showed poorer Safety, Financial, and Health outcomes than average.
- Clients at Agency A showed less than average increases in Family Contacts.
- Clients at Agency C had greater than average increases in Family and Social Contacts.
- Agency A did poorer than average for its clients with "Other" diagnoses.
- Hispanics at Agency B had fewer than average Social Contacts, though they were more satisfied than average with the ones they had.

# Summary of Results

- Diagnosis was the strongest and most consistent predictor of QOL improvement.
  - May reflect client reporting tendencies, "service disconnects," or ???
- There were significant Ethnicity effects present
  - Hispanics showed greater improvement in QOL, while African Americans showed relatively less.
- Demographic, Diagnostic, and Ethnic effects varied across Agencies
  - Traditional risk adjustment would have summarized this rather than elucidating it.

# Conclusions: So Who Gets Better?

- Clients with Schizophrenia tend to report better and more improved subjective QOL and Health Status than others.
- Clients with Major Depression tend to report the worst QOL and least improvement, along with significantly worse Health Status, than others.
  - How does this relate to “service quality”?
  - “Best served” and “worst served” groups?

# Conclusions II: So Who Gets Better?

- Hispanic clients show above average QOL improvements in a number of areas.
- African American clients show below average QOL improvements in a number of areas.
- Clients of “Other” ethnic groups show greater increases in family contact, but smaller increases in social contact than other groups.
  - Should “improvement” always be an increase?
  - Are there diversity issues involved?

## Conclusions III: So Who Gets Better?

- Agencies appear to show significant quality differences, and significant variation with respect to QOL outcomes in specific client subgroups.
  - Agency A – general decreases in Family Contacts
  - Agency B with Hispanics – fewer contacts, greater satisfaction
- The oldest and youngest clients report generally better QOL than clients closer to average age.

# Summary of Conclusions – So What?

- These data allow us to “see into” the contracting agencies and evaluate their performance in very specific ways relative to their peer agencies and client groups.
- Analyses like these provide more detail than traditional risk adjustment while keeping the benefits of adjustment.
- These results provide constructive feedback to contracting agencies, and may increase their interest in outcomes, and the likelihood that improvement will be made to their programs.

# Limitations

- Administrative Data
- Only Sacramento County
- Only QOL outcomes
- Models included only some of the many possible interaction effects

# Next Steps

- Packaging results for use by Agencies
- More detailed analyses, more interactions
- Application to newer, more complete datasets

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