Mental Health and Service Use in Rural versus Non-rural Areas

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Impact of Medicaid Managed Care Study

- Samples of school-aged children with Medicaid in TN and MS
- Part of a national study on the impact of managed care on Medicaid
- Baseline interview was conducted when the family agreed to participate
- Followed children and their families for a year

Possible Explanations for Observed Differences

- Differences in children's level of need
- Differences in family help seeking behavior
- Community structural barriers
- Supply side influences

Study Questions

- To what extent are there differences in mental health status between children in rural areas compared to those in non-rural areas?
- Are there significant differences in family and caregiver characteristics such as income, caregiver strain, and caregiver education?
- Are there differences in caregiver-reported barriers to care?
- To what extent are there differences in mental health service use between rural and non-rural youth after controlling for mental health status, family and caregiver characteristics, and barriers to care?

Defining Rural

- A primary question for the field
  - Population density
  - Economy (e.g., agriculture, mining)
  - Proximity to metropolitan area
  - Distance to treatment

Rurality Operationalized

- Focus urbanicity of child's county of residence
  - Percentage of the county population living in Census-defined urban area
- Suspect a curvilinear relationship between service use and rural residence
- Also tested a linear relationship and several dichotomous variables (i.e., 20, 25, 30, 35 percent urban)

Children in the Study

Medicaid enrolled children with emotional or behavioral disorders in

- Tennessee managed care system ($N = 332$)
- Mississippi fee-for-service system ($N = 344$)

Data

- Baseline information on child and family variables collected during caregiver interviews
- Service use variables constructed from Medicaid claims for a 13-month period (one month before to 12 months after the baseline interview)

Child Variables

Clinical Status	Tennessee	Mississippi
Mean CBCL Externalizing	67.36	67.32
Mean CBCL Internalizing	64.33	65.10
Mean Columbia Impairment Score	25.20	24.23
Demographics		
Mean Age	11.5	11.5
% Male	68%	69%
% African American	21%	67%

Caregiver and Family Variables

Family Resources and Strengths	Tennessee	Mississippi
Household per Capita Income	$334	$296
Caregiver Resources and Strengths		
Catchment Epidemiological Scale – Depression	19.19	20.10
% Completed High School	73%	66%
Caregiver Strain Questionnaire		
Objective Strain	2.35	2.08
Subjective Externalizing	2.00	1.92
Subjective Internalizing	3.21	3.07

Service Use Variables 13 Month Period

Amount of Services Used	Tennessee	Mississippi
Mean Number of Encounters	17	59

Types of Services Used	Used	Mean Days	Used	Mean Days
Support Services	33%	15	65%	22
Traditional Outpatient	55%	11	76%	18
Intermediate Outpatient	7%	13	27%	102
Residential / Inpatient	15%	38	18%	76

Rural vs. Non-rural
Demographics

- Regression analysis controlled for site
- None of the rural variables predicted
  - Family income
  - Caregiver education
  - Race*

* Race predicted by site by rural interaction terms

Rural vs. Non-rural
Child Characteristics

- Regression analysis controlled for family income, caregiver education, race, and site
- None of the rural variables predicted
  - Internalizing symptoms
  - Externalizing symptoms
  - Social functioning

Rural vs. Non-rural
Family Characteristics

- Regression analysis controlling for child symptoms and social functioning, family income, caregiver education, race, and site
- Relationship between percent urban and
  - Objective strain (linear, quad, cubic)
  - Subjective internalized strain (linear, quad, cubic)
  - Caregiver depression (cubic only)

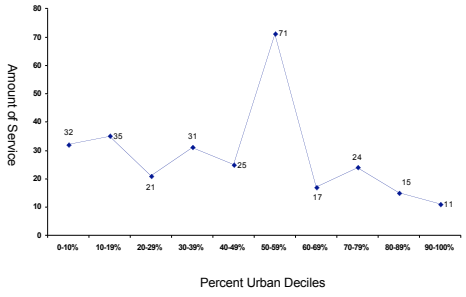
Rural vs. Non-rural
Barriers to Care

- Regression analysis controlling for child symptoms and social functioning, family income, caregiver education, race, and site
- Relationship between percent urban
  - Family perception barriers (linear, quadratic, cubic)
- No relationship found between percent urban and
  - Location and time barriers
  - Provider/payer barriers

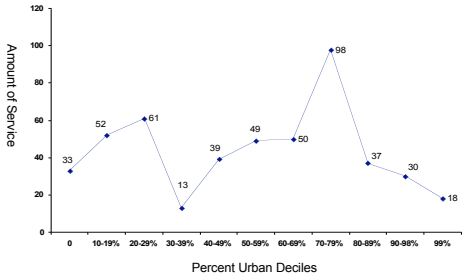
Rural vs. Non-rural
Service Use

- Regressed amount of services on child symptoms, social functioning, caregiver strain, family income, caregiver education, race, percent urban, site, and percent urban by site interaction term
- **Cubic relationship found between percent urban and amount of services**
- Other significant predictors included
  - Site
  - Site by (percent urban)^3 interaction term
  - Child externalizing problems (+)
  - Caregiver education (+)

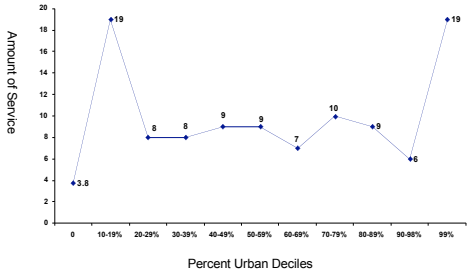
Percent Urban by Amount of Service Use



Percent Urban by Amount of Service Use Mississippi



Percent Urban by Amount of Service Use Tennessee



Conclusions

- No differences in mental health need found among among children living in more and less rural counties
- Curvilinear relationship between rural residence and some caregiver and system variables may provide the best estimate
- Relationship between rural residence and service use also appears to be curvilinear
- Differences in the relationship between service use and rural residence appear to exist across service systems
- That this was a Medicaid-enrolled population limits the generalizability of findings

Future Research

- Analyses need to be repeated in multiple systems and with different populations
- Alternative definitions of rural residence need to be applied
- Closer consideration of supply side influences on service use in rural and non-rural areas is needed