# Are Blue States More Evidence-Based?

## Associations between State Context, Behavioral Health Structures, and Use of Data and Evidence

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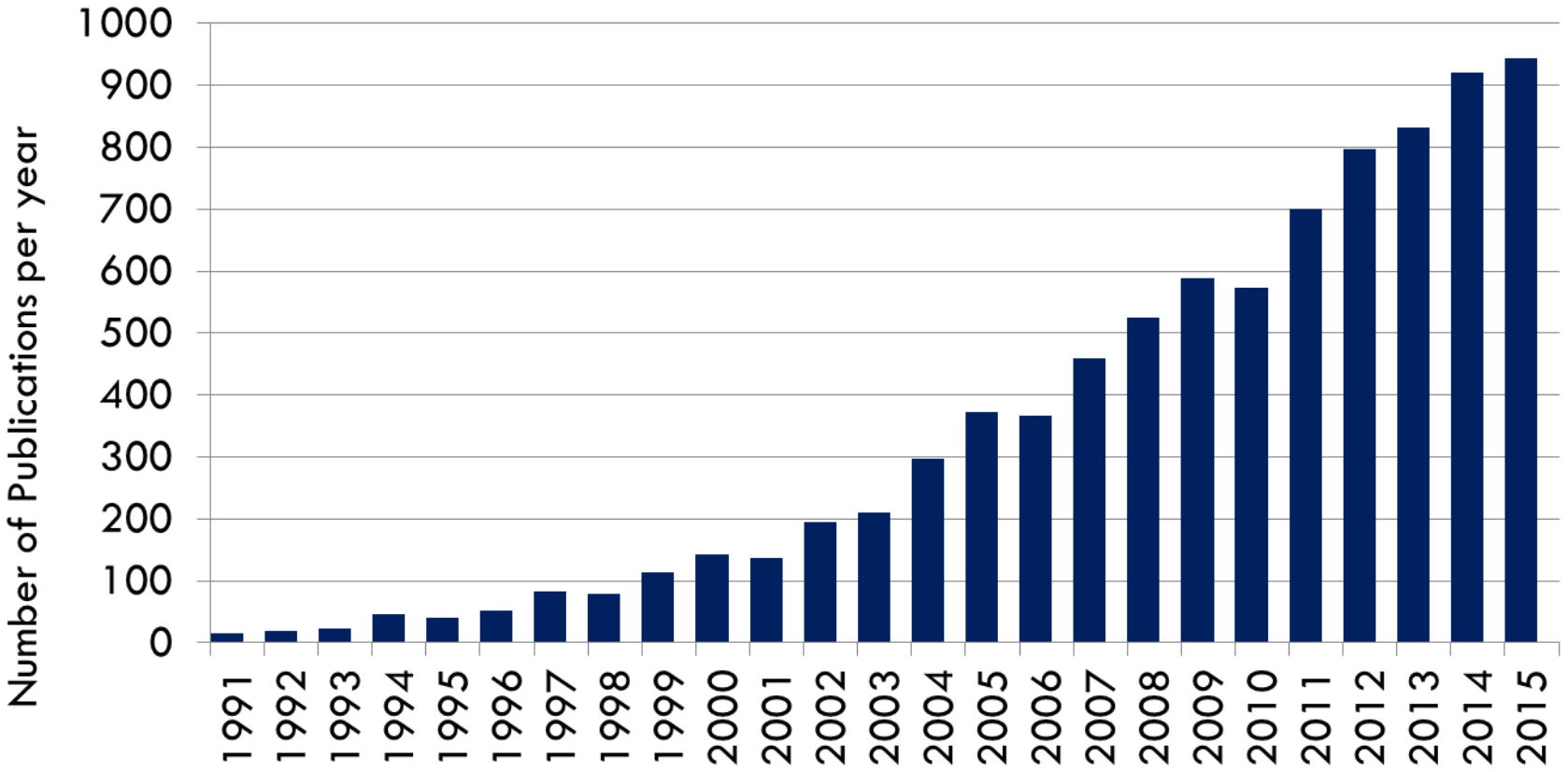
# Growth in Literature on Evidence Based Treatment (EBT)



Web of Science Search:
Evidence-based * treatment



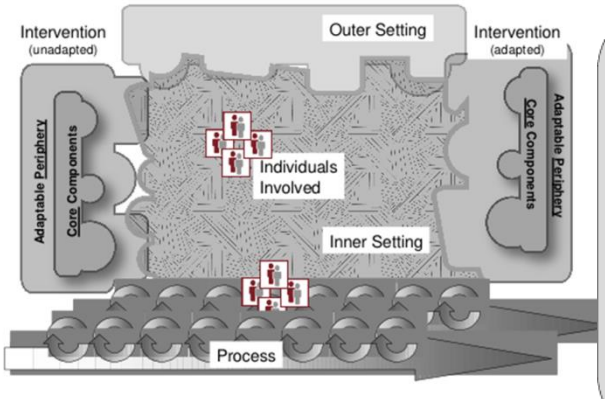

- WOS Categories searched: = Psychiatry, Psychology, Social Work, Substance Abuse

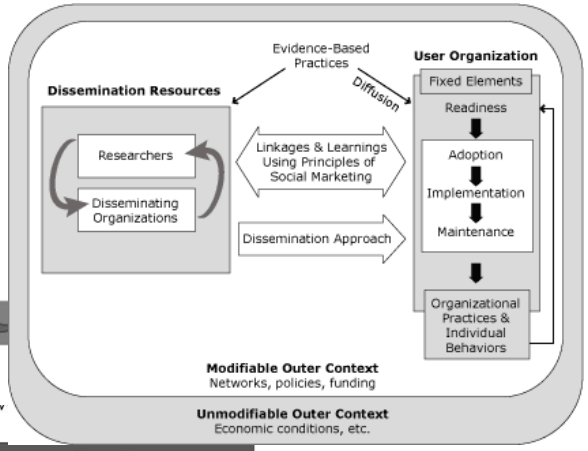
# Proliferation of Reports on Health and Behavioral Health Systems

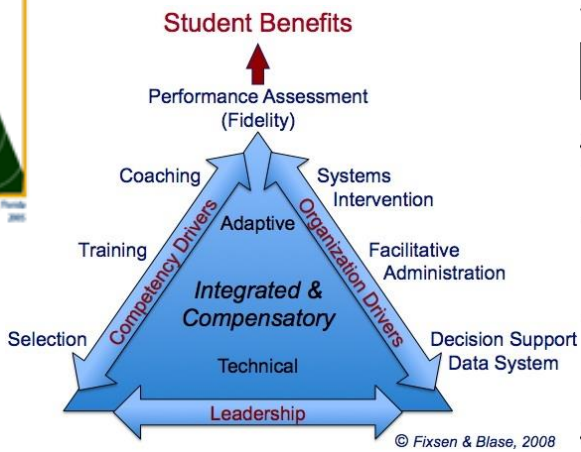


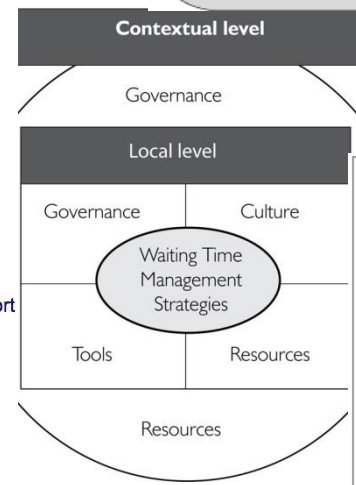
# Emphasis on the Science of Implementing EBTs

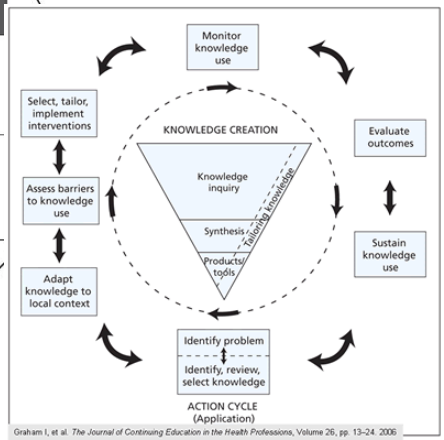


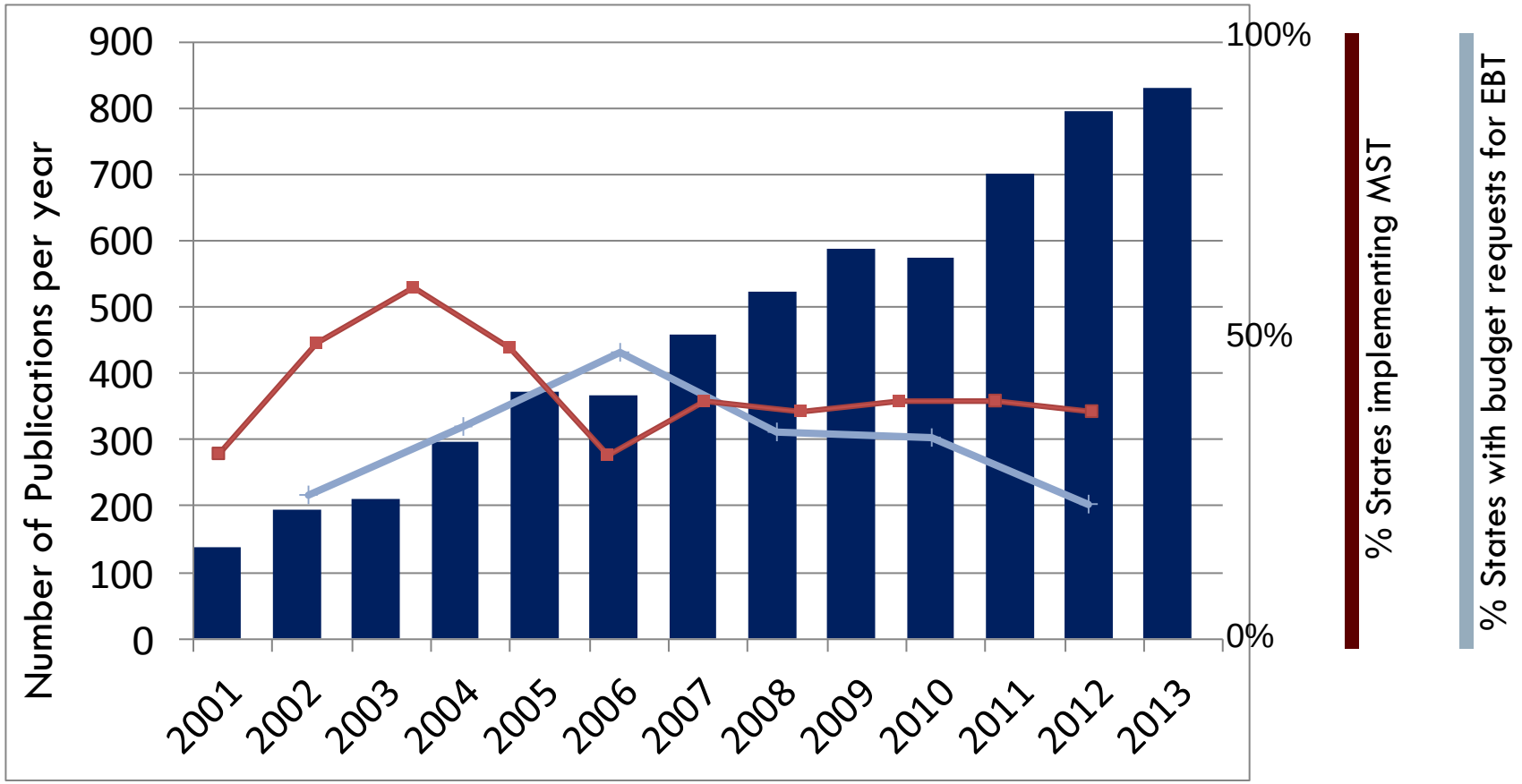




Implementation Science

IMPLEMENTATION SCIENCE

# Growth in Literature on EBT, 2001-2012 versus trends in SMHA adoption/investment





# Continuing the Inquiry:

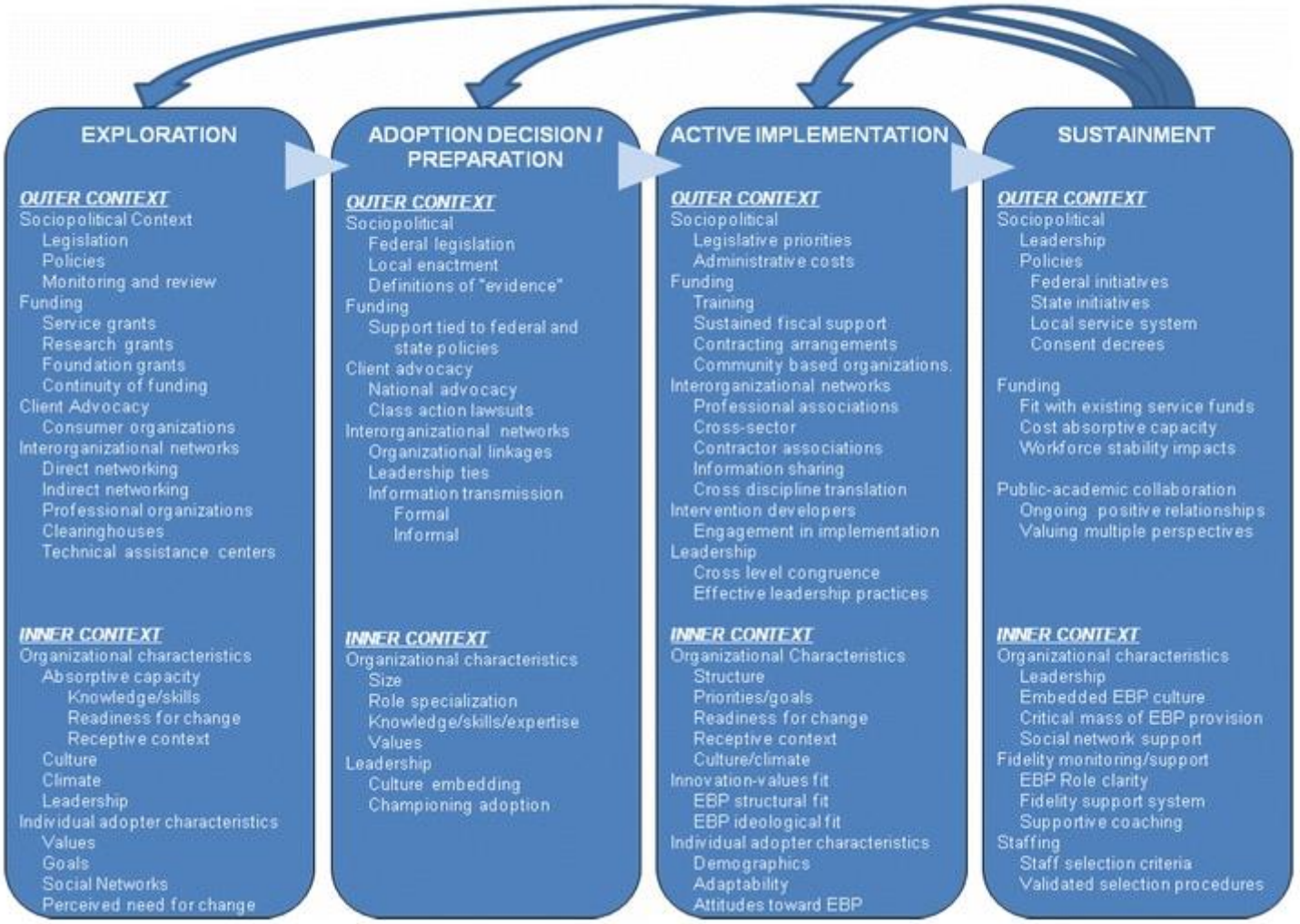
## *What predicts states' use of data and research?*



1. What is the relationship between state characteristics and fiscal and policy supports to promote EBPs?
2. What is the relationship between state characteristics, fiscal and policy supports, and actual EBP adoption and penetration?

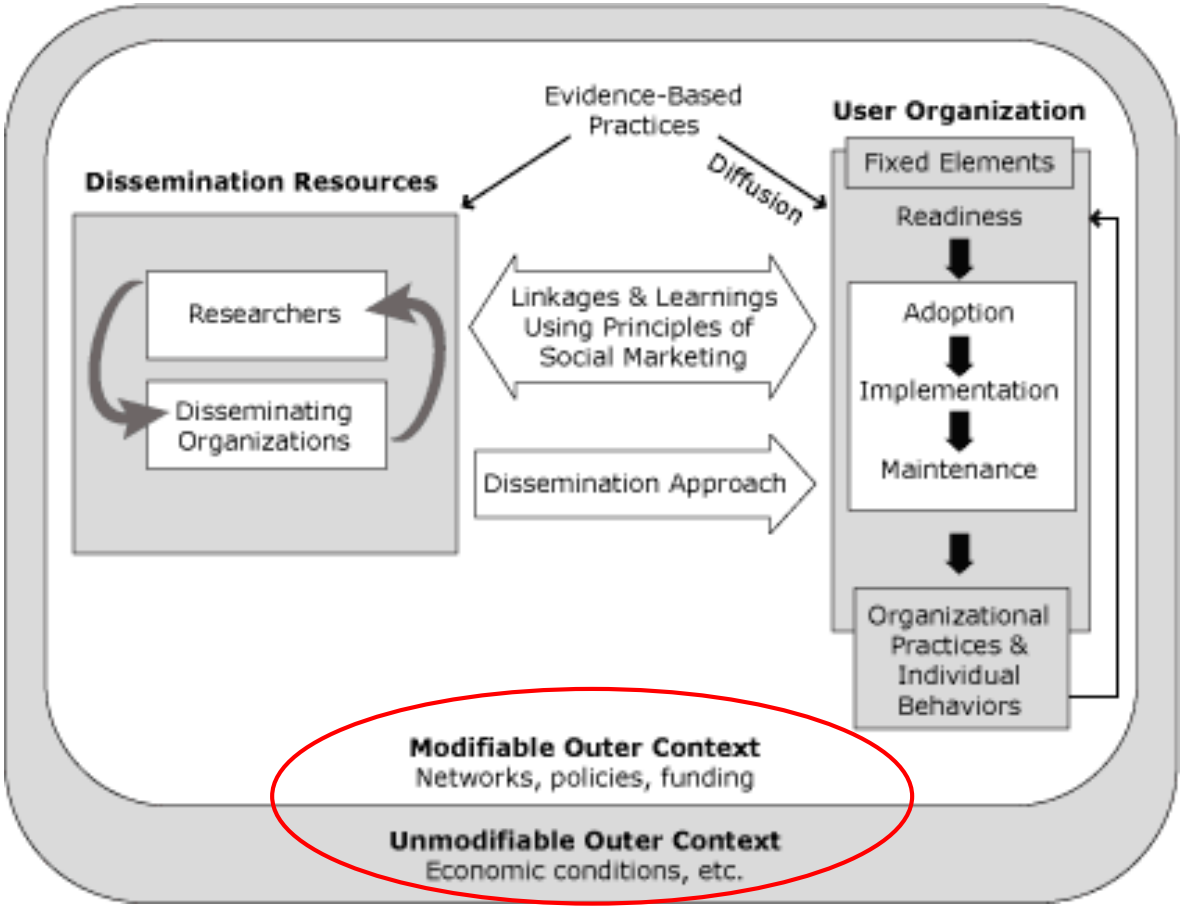
# Conceptual model of EBP implementation in public sectors (Aarons et al., 2011)





# Focus on the "Outer Context"






The HPRC Dissemination Framework

Harris JR, Cheadle A, Hannon PA, et al. A Framework for Disseminating Evidence-Based Health Promotion Practices. *Preventing Chronic Disease*. 2012;9:E22.

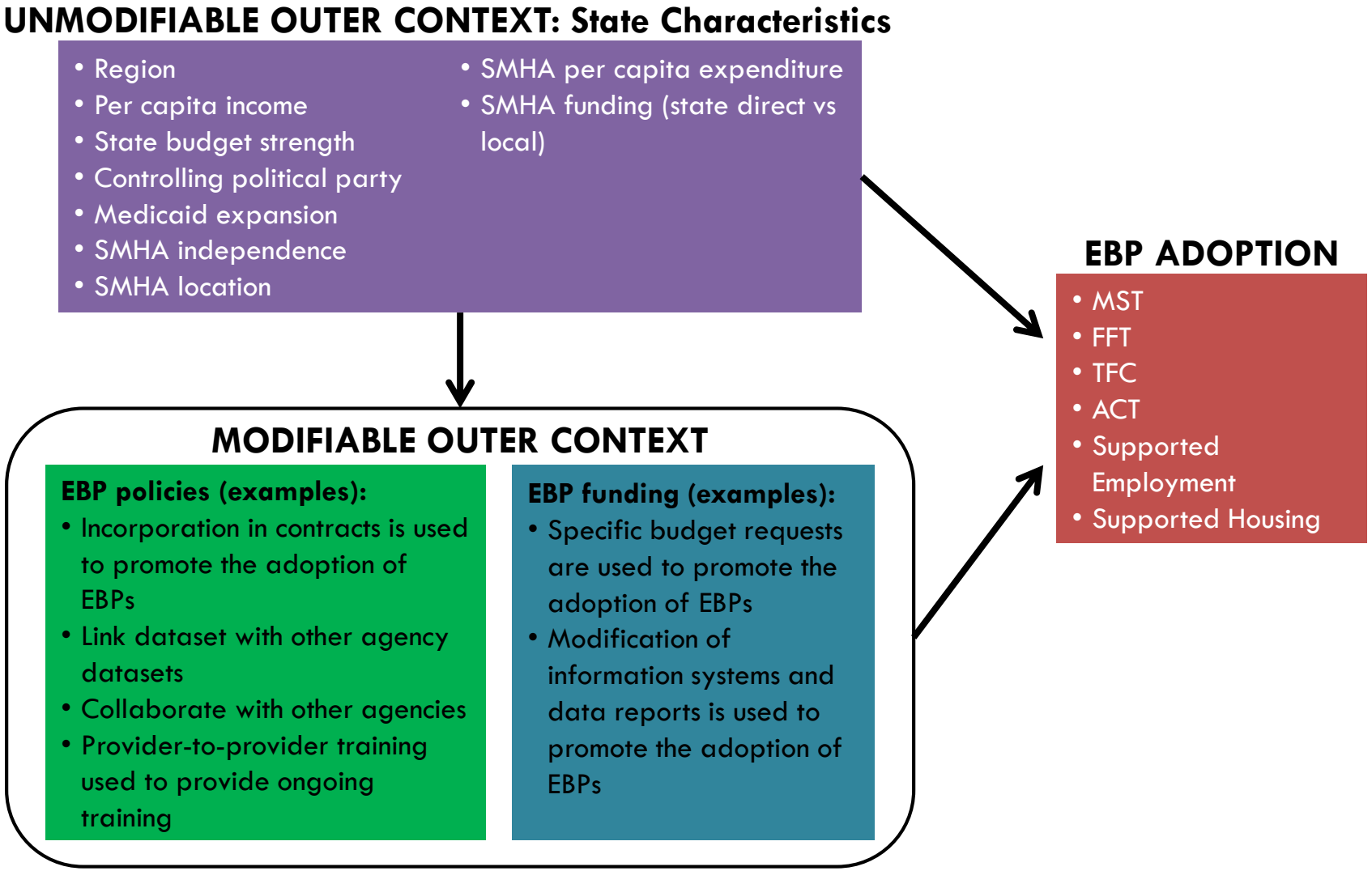
# Research on state efforts to "modify the outer context"



- Magnabosco (2006):106 unique state activities to support implementation of EBPs for adults with SMI
  - State infrastructure building
  - Stakeholder relationship building
  - Financing
  - Continuous quality management
  - Services delivery practices and training

# Model guiding current research





# Data sources



- National Association for State Mental Health Program Directors Research Institute (NRI):
  - State Profiles System (SPS) ← Modifiable outer context
  - Uniform Reporting System (URS) ← EBP adoption
- U.S. Census Bureau
  - Total Adults and Children
  - Region
- U.S. Department of Commerce
  - Per capita income
- Kaiser Family Foundation
  - Medicaid Expansion Status
- Carl Klarner's Dataverse Project
  - Budget Surplus or Deficit

Unmodifiable outer context

# URS and SPS data



- State Profiles System (SPS)
  - Asks about each State Mental Health Authority's (SMHA)
    - Organization and structure
    - Service systems
    - Eligible populations
    - Emerging policy issues
    - Numbers of consumers served
    - Fiscal resources
    - Consumer issues
    - Information management structures, and
    - Research and evaluation initiatives
- Uniform Reporting System (URS)
  - Use of EBPs (TFC, FFT, MST, SE, SH, ACT)

# URS and SPS data



- Respondents are SMHA representatives in all 50 states, DC, Puerto Rico, and Virgin Islands.
- Good response rates by states and territories over the study period
  - Range = 86.6% (46 of 53) in 2001 to 98.1% (52 of 53) in 2005.

# Years examined



- Analyses today include longitudinal data from several years:
  - 2002
  - 2004
  - 2005
  - 2007
  - 2009
  - 2010
  - 2012

# Key Variables



- EBP Policy Index and Investment Index
  - Created through calculating the percent of items related to policy (5 items) or investment (12 items) that were endorsed
  - Possible range: 0 (no items endorsed) to 100 (all items endorsed)
- Individual EBP variables
  - Dichotomous variable indicating availability/unavailability of 6 EBPs (3 adult, 3 child)
- EBP count variable
  - Created by summing the number of different EBPs available
  - Possible range: 0 (no EBPs) to 6 (all 6 EBPs available)

# Examples of state EBP policies and investments



| EBP Policies (examples) | 2012 Frequency |
|---|---|
| Incorporation in contracts is used to promote the adoption of EBPs | 57% |
| The SMHA has linked its client datasets with datasets from other agencies | 47% |
| SMHA has initiatives to work with other state government agencies to coordinate, reduce, or eliminate barriers between delivery systems and funding streams? | 86% |
| Provider-to-provider training used to provide ongoing training | 57% |

| EBP Investments (examples) | 2012 Frequency |
|---|---|
| Specific budget requests are used to promote the adoption of EBPs | 24% |
| Financial incentives are used to promote the adoption of EBPs | 29% |
| Modification of information systems and data reports is used to promote the adoption of EBPs | 43% |

# Data analysis



- Multilevel Models (MLM) used to examine change over time
  - Population-average models with robust standard errors, full MLE and randomly varying terms
  - Best-fitting, most parsimonious models reported

# Summary of Findings

# State characteristics (2012)

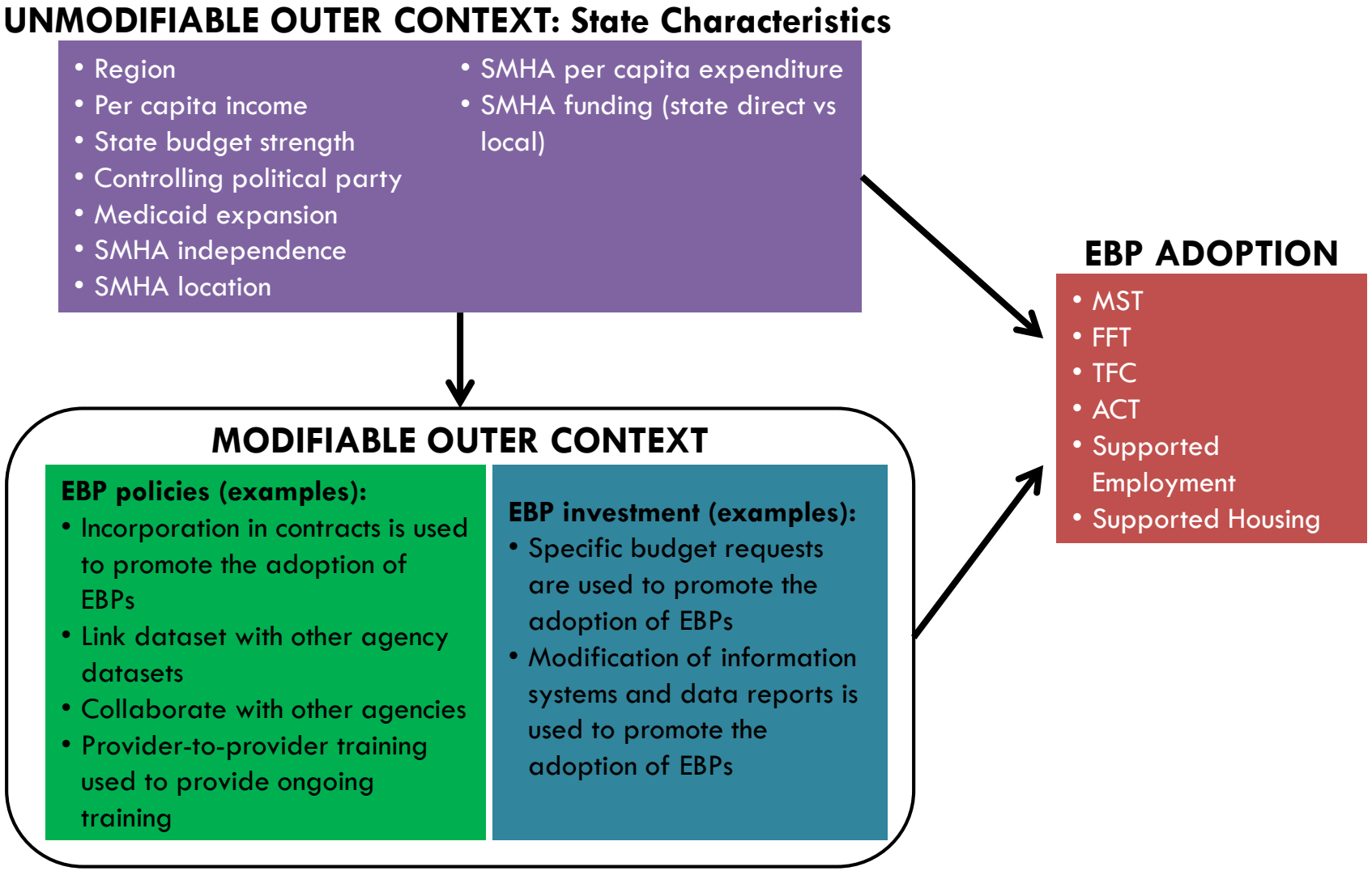


| Characteristics (2012) | | Frequency |
|---|---|---|
| Region | South | 33% |
| | West | 25% |
| | Midwest | 24% |
| | Northeast | 9% |
| Per capita income (mean, SD) | | $42,492 ($7,605) |
| Budget surplus/deficit (mean, SD)* | | -$589,792 ($2,382,388) |
| Adopted Medicaid expansion | | 63% |
| Governor party affiliation | Republican | 58% |
| | Democratic | 40% |
| | Independent | 2% |
| Legislative branch affiliation | Both Republican | 55% |
| | Both Democratic | 31% |
| | Split | 8% |

* 2010

# Results: State characteristics & EBP investment





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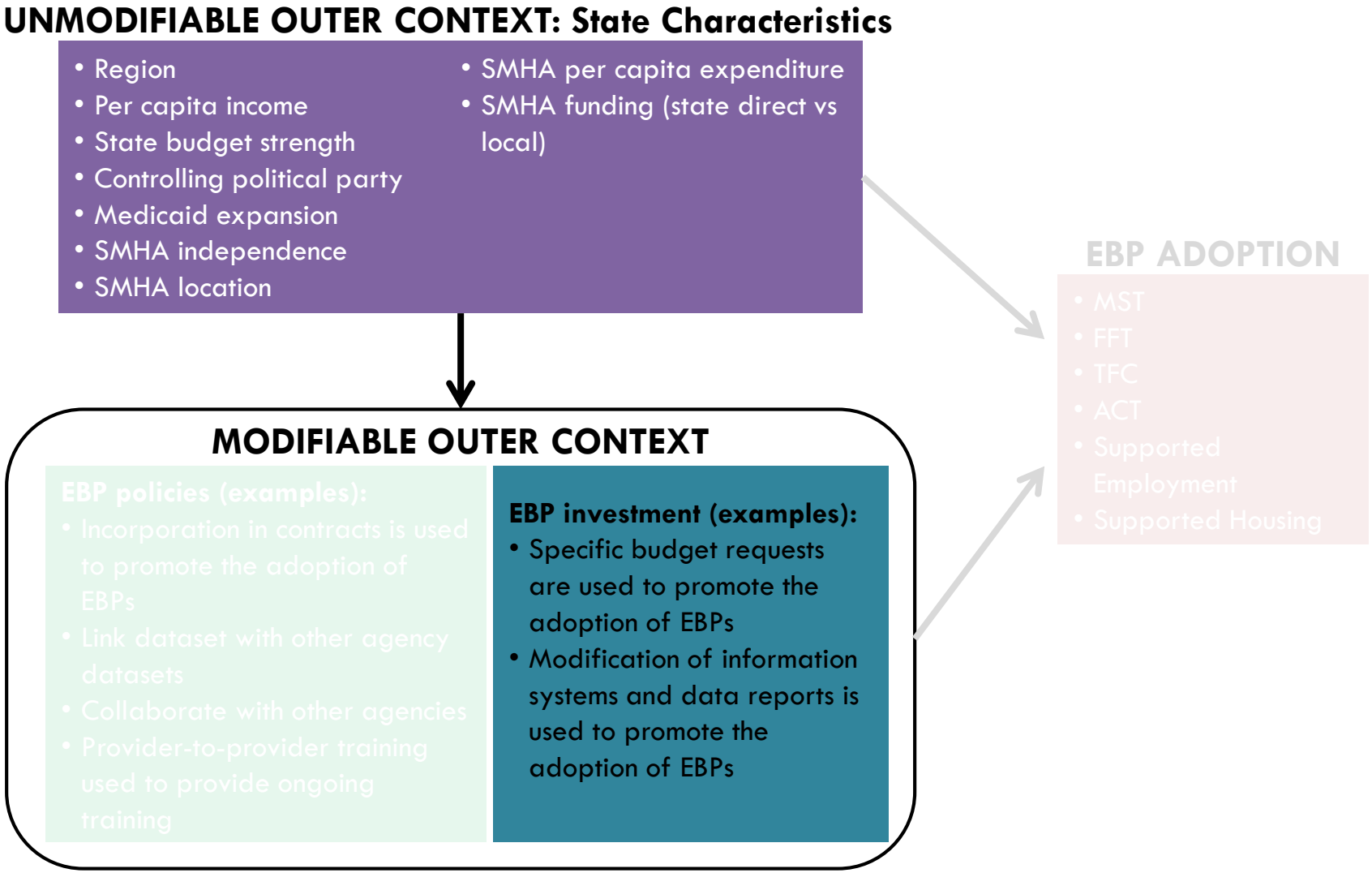


# Results: State characteristics & EBP investment



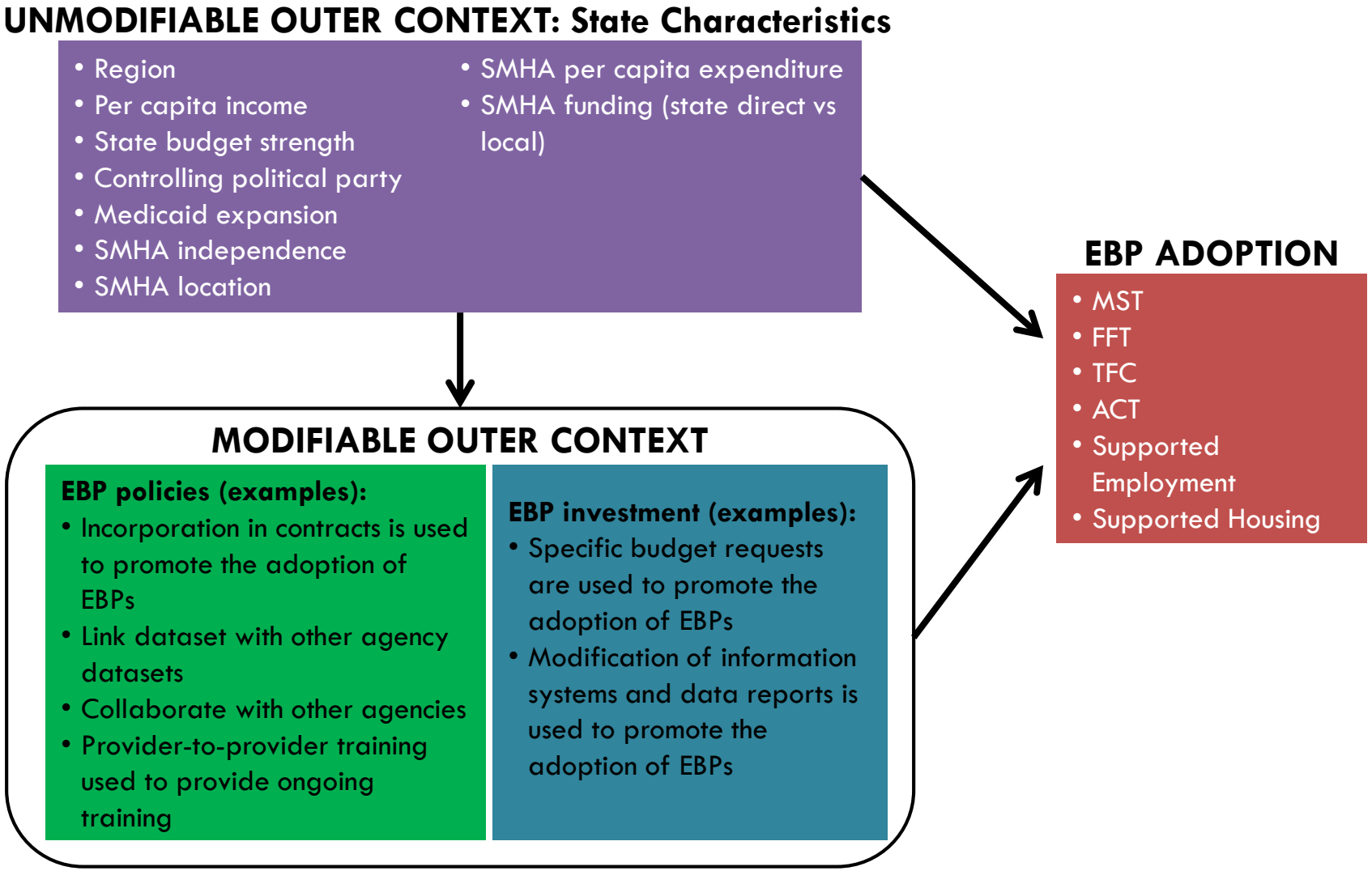
| Predictors of EBP Investment Index | Unstandardized Coefficient (p-value) |
|---|---|
| Research conducted outside SMHA | 9.8 (0.002) |
| Medicaid expansion | 9.3 (0.02) |
| Research conducted within SMHA | 8.1 (0.01) |
| Per capita income (in thousands of dollars) | 4.3 (0.04) |
| Control of legislative and executive branches | 2.7 (0.03) |
| # of EBPs available | 2.2 (0.04) |

* Normal distribution MLM; linear time centered at 2002 and quadratic time included in the models as a covariates. Quadratic time only retained when significant.

**State characteristics not significantly associated with the EBP investment index:** Budget surplus, SMHA funding structure, SMHA location (in another state agency or independent), SMHA membership in governor's cabinet, SMHA promotion of survivor participation in resource allocation, consumer participation, SMHA involvement in collaborative initiatives to eliminate barriers to treatment, government agency representatives are members of the SMHA planning group, location of information management functions, SMHA actively downsizing/being reconfigured, mental health per capita expenditures

# Results: State characteristics & EBP policies





# Results: State characteristics & EBP policies



**UNMODIFIABLE OUTER CONTEXT: State Characteristics**

- Region
- Per capita income
- State budget strength
- Controlling political party
- Medicaid expansion
- SMHA independence
- SMHA location
- SMHA per capita expenditure
- SMHA funding (state direct vs local)

**MODIFIABLE OUTER CONTEXT**

**EBP policies (examples):**

- Incorporation in contracts is used to promote the adoption of EBPs
- Link dataset with other agency datasets
- Collaborate with other agencies
- Provider-to-provider training used to provide ongoing training

**EBP investment (examples):**

- Specific budget requests are used to promote the adoption of EBPs
- Modification of information systems and data reports is used to promote the adoption of EBPs

**EBP ADOPTION**

- MST
- FFT
- TFC
- ACT
- Supported Employment
- Supported Housing

# Results: State characteristics & EBP policies



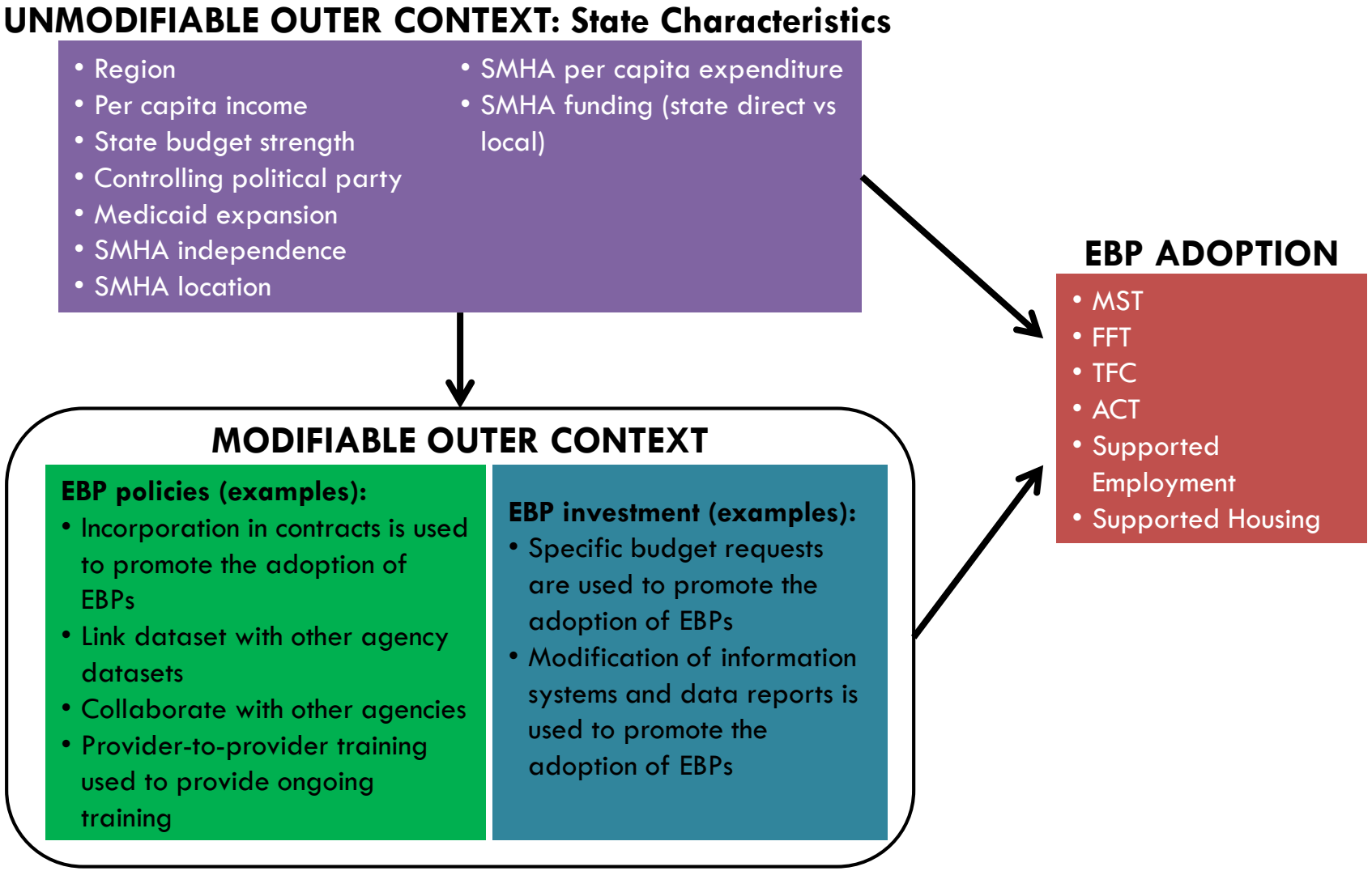
| Predictors of EBP Policy Index | Unstandardized Coefficient (p-value) |
|---|---|
| SMHA collaborates with other agencies | 27.9 (0.00) |
| Reps from state government agencies are members of the SMHA planning group | 10.6 (0.05) |
| Research conducted outside SMHA | 9.1 (0.02) |
| Research conducted within SMHA | 8.9 (0.02) |
| # of EBPs available | 2.2 (0.03) |
| SMHA is located within another state agency | -8.7 (0.05) |

* Normal distribution MLM; linear time centered at 2002 and quadratic time included in the models as a covariates. Quadratic time only retained when significant.

**State characteristics not significantly associated with the EBP policy index:** Control of legislative and executive branches, budget surplus, per capita income, region, Medicaid expansion, SMHA funding structure, SMHA membership in governor's cabinet, SMHA promotion of survivor participation in resource allocation, consumer participation, location of information management functions, SMHA actively downsizing/being reconfigured, mental health per capita expenditures

# Results: EBP investments/policies and EBP adoption





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**EBP investment (examples):**

- Specific budget requests are used to promote the adoption of EBPs
- Modification of information systems and data reports is used to promote the adoption of EBPs

# Results: EBP investments/policies and EBP adoption



| Outcome: MST | Odds Ratio (p-value) |
|---|---|
| EBP Policy Index | 1.01 (0.03) |

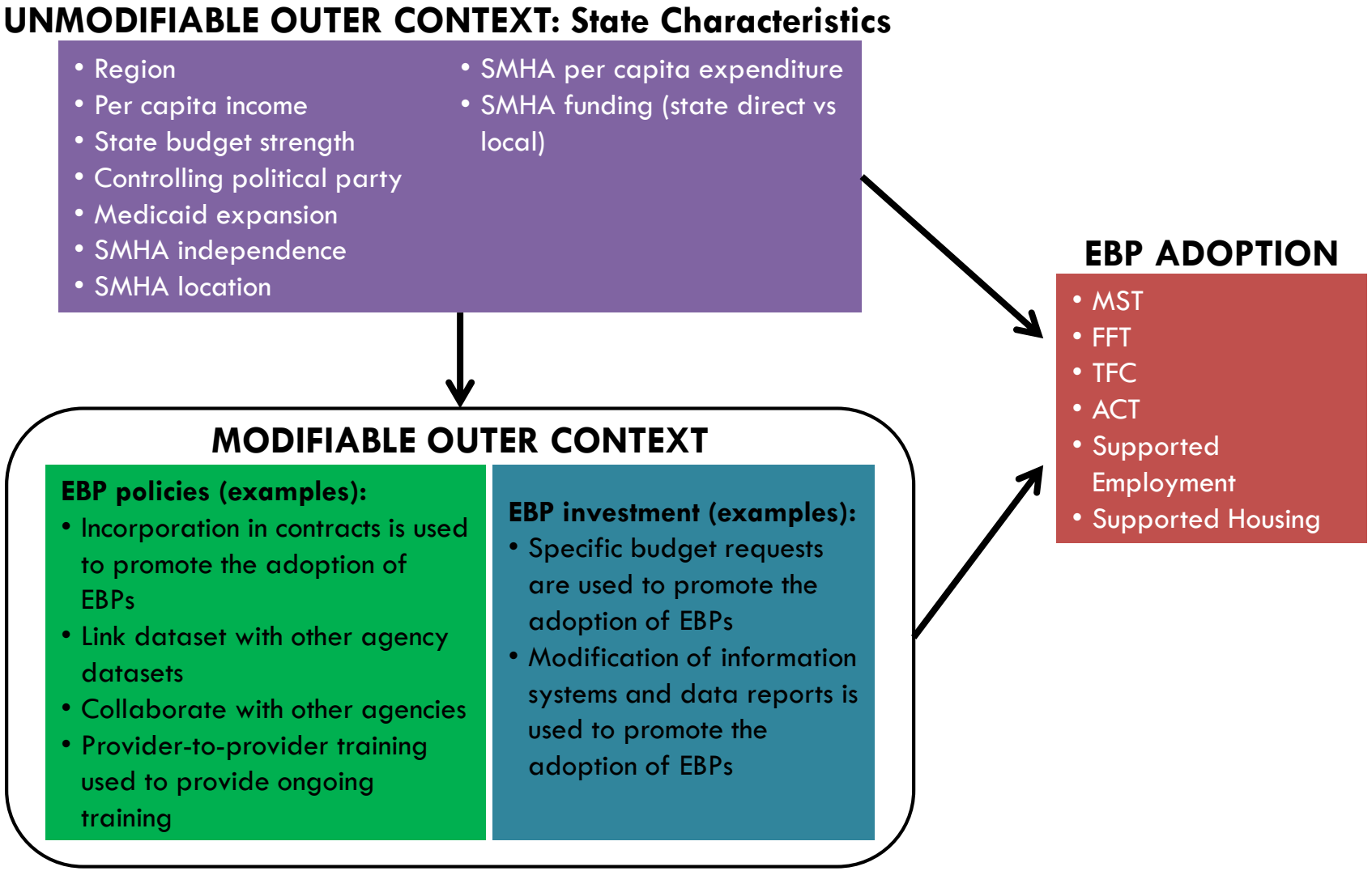
| Outcome: FFT | Odds Ratio (p-value) |
|---|---|
| EBP Policy Index | 1.02 (0.001) |
| EBP Investment Index | 1.01 (0.04) |

| Outcome: SE | Odds Ratio (p-value) |
|---|---|
| EBP Investment Index | 1.03 (<0.001) |

* Bernoulli distribution MLM; linear time centered at 2002 and quadratic time included in the models as a covariates. Quadratic time only retained when significant.

# Results: State characteristics & EBP adoption





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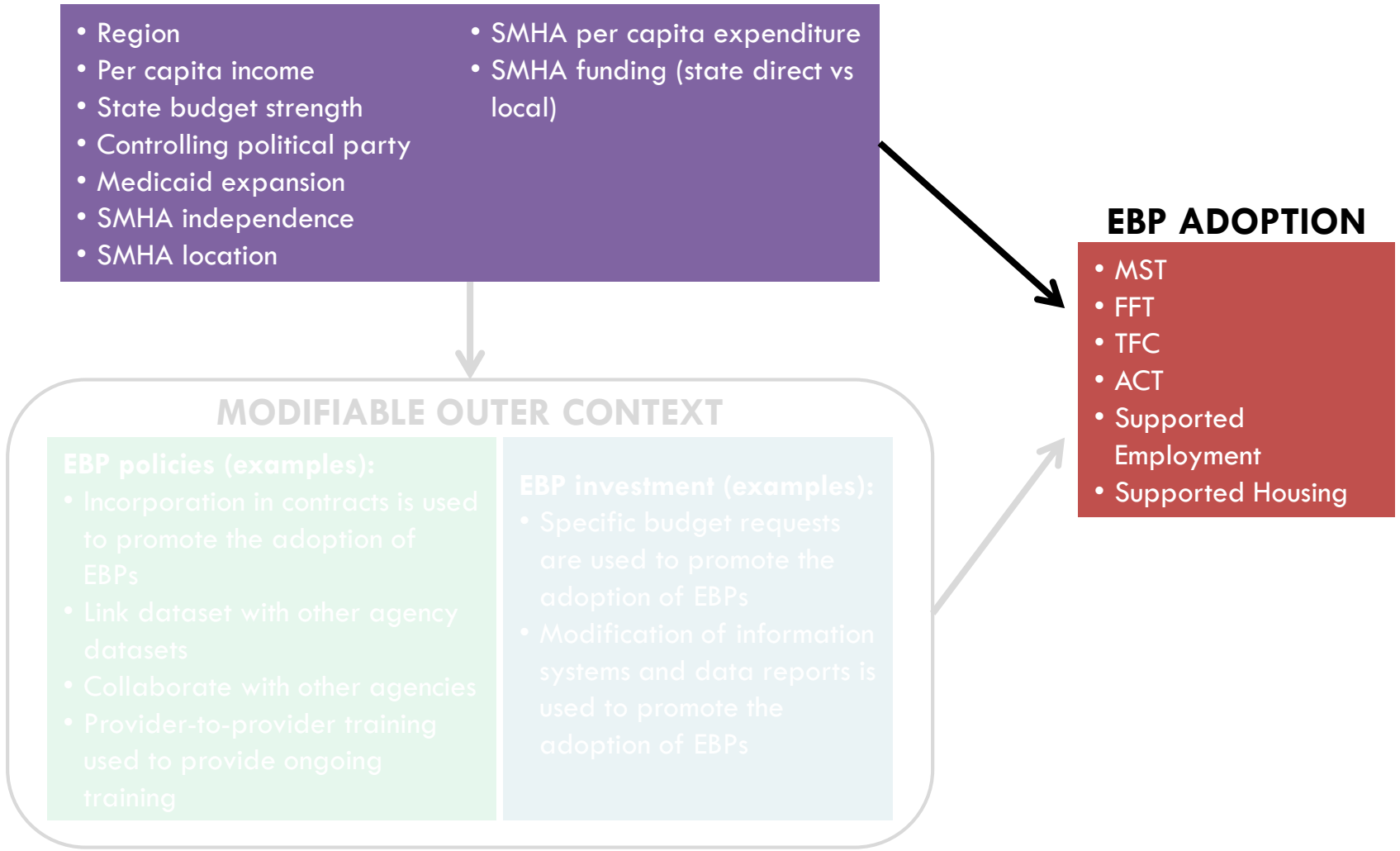


# Results: State characteristics & EBP adoption



| Predictors | Event Rate Ratio (p-value) |
|---|---|
| SMHA promotes survivor participation | 1.2 (0.05) |
| Information management function located within the SMHA | 0.75 (0.05) |
| SMHA directly operates community-based programs | 1.3 (0.03) |

* Poisson distribution MLM; linear time centered at 2002 also included in the models as a covariate.

**State characteristics not significantly associated with EBP adoption:**
Control of the legislative and executive branches, budget surplus, region, Medicaid expansion, SMHA location (in another state agency or independent), SMHA membership in governor's cabinet, SMHA research location (within/outside), consumer participation, SMHA involvement in collaborative initiatives to eliminate barriers to treatment, government agency representatives are members of the SMHA planning group, SMHA actively downsizing/being reconfigured, mental health per capita expenditures

# Summary of findings



- State EBP investments increase when:
  - Democrats control the legislative and executive branches
  - Per capita income increases
  - State has expanded Medicaid eligibility under the PPACA
  - Research is conducted within and outside the SMHA
  - More EBPs (adult and child) are being implemented

- State EBP policies increase when:
  - Research is conducted within and outside the SMHA
  - SMHA collaborates with other agencies to ensure the provision of MH services
  - Representatives from state government agencies are members of the SMHA planning group
  - More EBPs (adult and child) are being implemented

# Summary of findings



- Availability of specific adult and youth EBPs:
  - An increase in EBP policies is associated with an increased odds of having MST available
  - An increase in EBP policies and investments is associated with an increased odds of having FFT available
  - An increase in EBP investments is associated with an increased odds of having SE available

- States have a greater rate of EBP adoption when:
  - SMHAs directly operate community-based programs compared to funding but not operating community-based programs
  - SMHAs promote survivor participation

# Limitations



- Reliance on self-report from SMHA officials
- SMHAs are not the only systems that may provide these EBPs – or oversee investments and policies – in a state
  - SMHA respondents may not be fully informed
- Selected EBPs provide a very limited picture
  - Surveys inquired only about EBPs designed for adults and children with serious conditions, per MH Block Grant
- Can only speculate about directionality of relationship
  - EBP adoption may promote research investments and policies as much as vice versa
- Other factors related to EBP implementation not examined, e.g. costs associated with implementing EBPs, workforce
- Small sample size precluded use of more complex statistical modeling

# Conclusions OTHERS' THOUGHTS



- State investment in EBPs, implementation, and use of data has not kept pace with the volume of literature on these topics over the same time period:
  - Recession of 2007 proposed to have a major role
- However, other factors may be equally if not more important than state fiscal outlook:
  - Relative affluence of the population
  - Political party in power
  - Direct funding of services by the state (rather than funding local agencies)
  - Medicaid expansion
  - Interagency collaboration
  - Investment in research infrastructure

# Conclusions OTHERS' THOUGHTS



- State implementation of adult EBPs may be reliant on fiscal investments, e.g.:
  - Financial
  - Fund research center
  - Awareness
- Adoption and penetration of child EBPs may be related to policy, e.g.:
  - Academia EBP curricula
  - Provider to provider
  - Contractual arrangements with providers
  - Internal staff

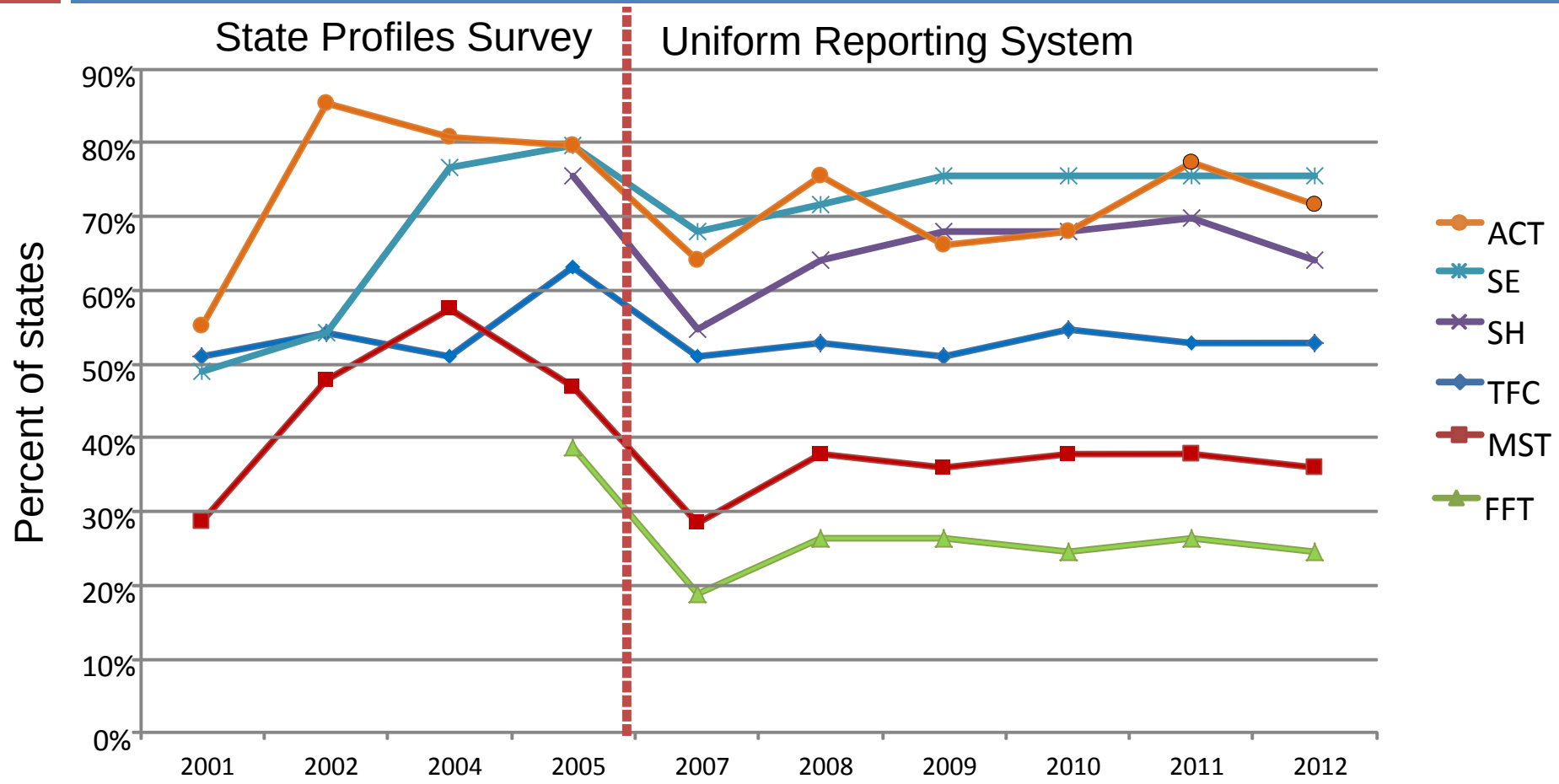
# Conclusions UPDATE



- More research is needed on these dynamics
  - Examination of predictors
  - Reliable and valid measurement of implementation and uptake – investment in more rigorous monitoring
  - Take advantage of the "natural experiments" presented by the range of state strategies
- How can the system of care philosophy and resources provided (e.g., by SAMHSA grants, Technical Assistance) promote better uptake and support to EBP?

# Percentage of states using specific evidence-based practices

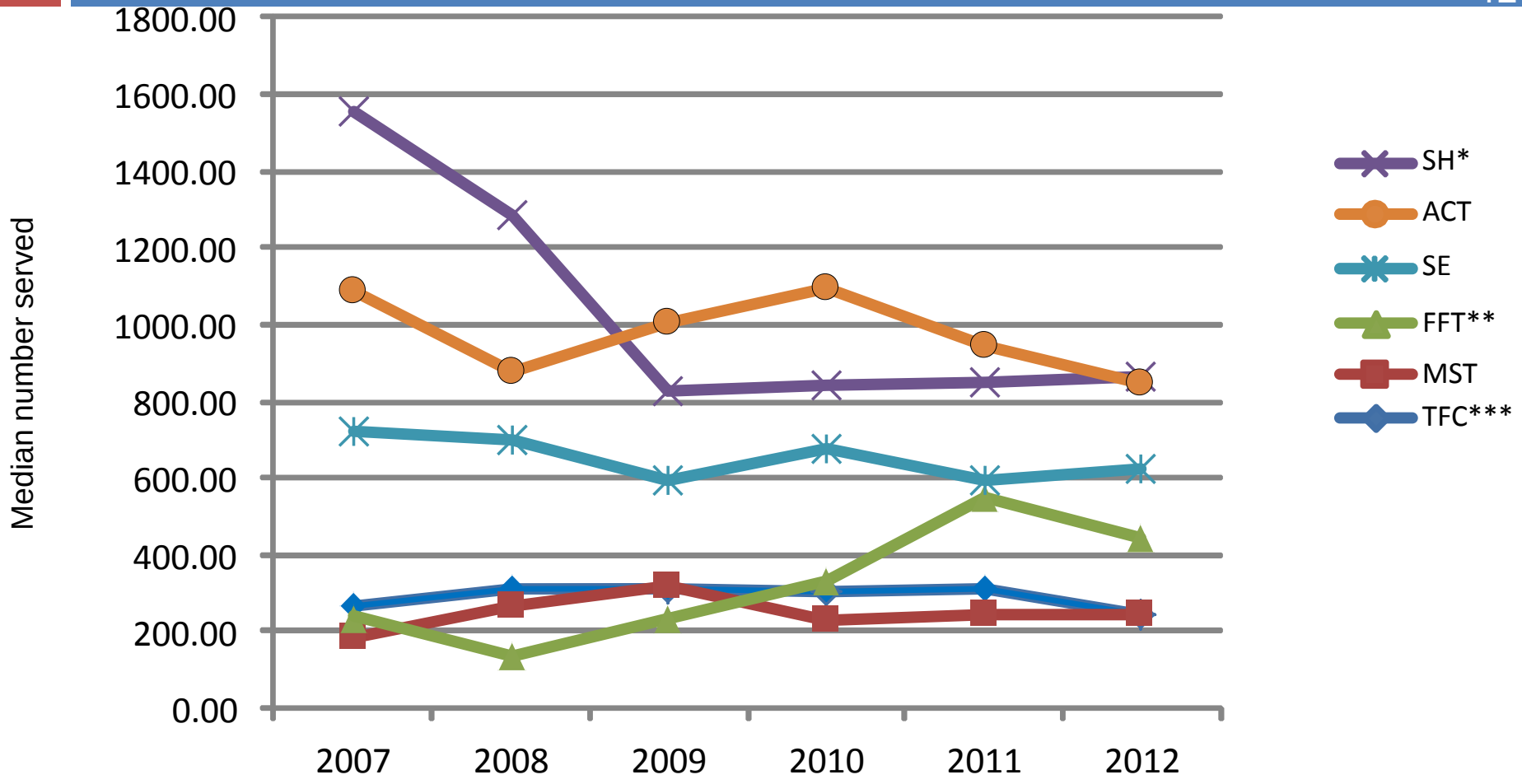





- Pre-2007 (SPS), SMHA reps were asked Yes or No about adopting selected EBTs
- Post-2007 (URS), states were asked for counts of clients served and were assumed to NOT be implementing if they answered "0."
- **Piecewise linear time trends find significant increases from 2001-2005, followed by no change from 2007-2012**

# Median numbers of people served by specific evidence based practices



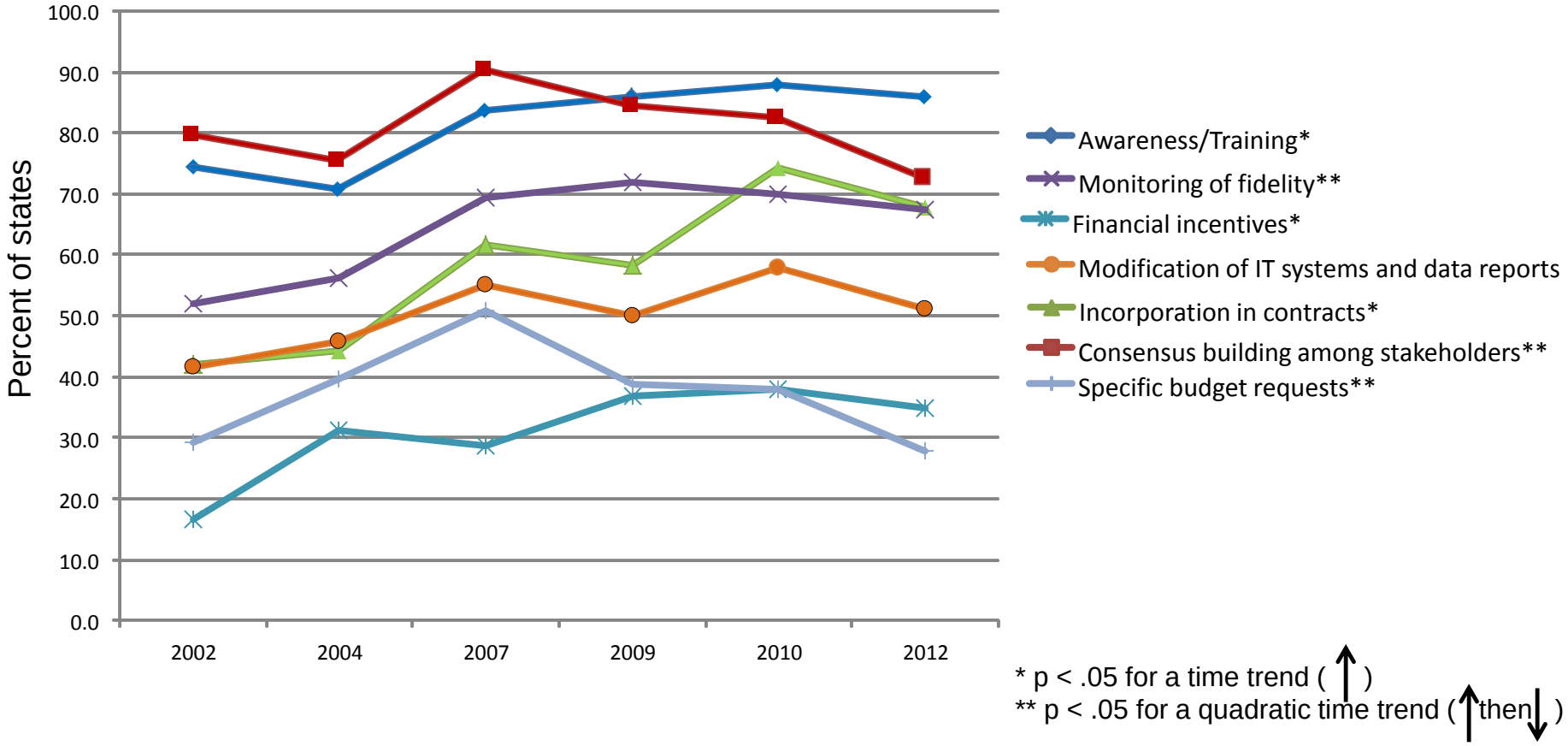



*Sig. cubic change (↓then flat); ** Sig. linear change (↑);
***Sig quadratic change (↑then↓).

# Initiatives to Support EBP Implementation



**What initiatives, if any, are you implementing to promote the adoption of EBTs?**




* p < .05 for a time trend ( ↑ )

** p < .05 for a quadratic time trend ( ↑ then ↓ )

# EBP Utilization



- 65-80% of states use selected adult EBPs
  - Median clients served in these states 400-700
  - Penetration rates = 1.5% - 3.0% of estimated adults with SMI
- 25%-50% of states use selected child EBPs
  - Median clients served in these states 250-400
  - Penetration rates = 0.75% - 2.5% of all youths with SED
- Several EBPs showed increases in early 2000s followed by decreases or flattening from 2007-2012

# For more information



- Eric J. Bruns – ebruns@uw.edu
- IDEAS Center -- www.ideas4kidsmentalhealth.org
- NASMHPD Research linstitute -- https://www.nri-inc.org/