

An Evaluation of a Public Water Education and Technical Assistance Program in Mississippi

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Introduction

- 1996 Safe Drinking Water Act required capacity assessment in all states
 - Technical
 - Managerial
 - Financial
- Mississippi implemented this requirement through an annual, standardized inspection of *all* public water systems through regional engineers



Capacity Assessment Survey Instrument

288.131

Mississippi Department of Health
Bureau of Public Water Supply

FY 2019 Public Water System Capacity Assessment Form

MSDH Form 288.131
Public Water System: _____ County: _____
Certified Waterworks Operator: _____
Capacity Rating = $\frac{T + M + F}{3}$ Overall Capacity Rating = _____

TECHNICAL CAPACITY ASSESSMENT

Question	Pass	Fail
T1: Was the water treatment process (including properly sized and pH control) the effective in reducing turbidity to 1 NTU or less? (MSDH 415.101)	1.00	0.00
T2: Were residuals available in the original design depth meeting the design requirements? (MSDH 415.101)	1.00	0.00
T3: Was the water treatment operator or facility authorized representative present for the inspection? (MSDH 415.101)	1.00	0.00
T4: Does the water system maintain a record of water quality data? (MSDH 415.101)	1.00	0.00
T5: Does the water system have the ability to generate water billing records? (MSDH 415.101)	1.00	0.00

TECHNICAL CAPACITY RATING = _____ **(Total Points)**

Public Water System: _____ PWS ID# _____
FY 2019 Public Water System Capacity Assessment Form Survey Date: _____

MANAGERIAL CAPACITY ASSESSMENT

Question	Pass	Fail
M1: Were all SDWA requirements maintained in a legal and orderly manner and available for review in the original edition during the period? (MSDH 415.101)	1.00	0.00
M2: Is there an applicable written policy and procedure for operating the water system? (MSDH 415.101)	1.00	0.00
M3: Has the water system had any SDWA violations since the last Capacity Assessment? (MSDH 415.101)	1.00	0.00
M4: Has the water system adopted a long range improvement plan and was it available for review during the period? (MSDH 415.101)	1.00	0.00
M5: Has the water system been an effective cost control program in compliance with MSRB 415.101? (MSDH 415.101)	1.00	0.00
M6: Was a copy of the MSRB approved financial plan available and available for review during the period? (MSDH 415.101)	1.00	0.00

MANAGERIAL CAPACITY RATING = _____ **(Total Points)**

FINANCIAL CAPACITY ASSESSMENT

Question	Pass	Fail
F1: Was the water system water rates in the past 3 years? (MSDH 415.101)	1.00	0.00
F2: Does the water system have an officially adopted policy regarding the water rates? (MSDH 415.101)	1.00	0.00
F3: Does the water system have an officially adopted annual budget? (MSDH 415.101)	1.00	0.00
F4: Was a copy of the water system's official annual budget available for review for the period? (MSDH 415.101)	1.00	0.00
F5: Was a copy of the water system's official annual budget available for review for the period? (MSDH 415.101)	1.00	0.00
F6: Was a copy of the water system's official annual budget available for review for the period? (MSDH 415.101)	1.00	0.00
F7: Was a copy of the water system's official annual budget available for review for the period? (MSDH 415.101)	1.00	0.00

FINANCIAL CAPACITY RATING = _____ **(Total Points)**



MSDH-BPWS Engineering Regions



MSDH Public Health Districts

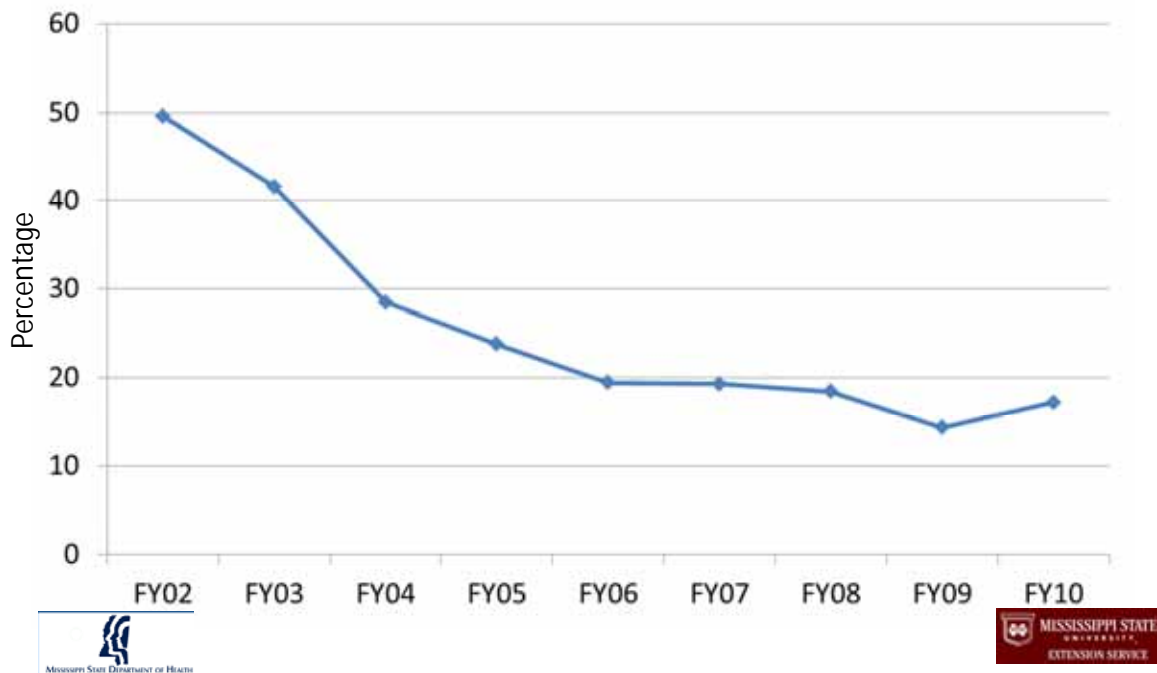


Introduction

- Deficiencies were pointed out and expected to be corrected
- Systems were scored on a scale of 0 to 5
- Mainly advisory in nature; but score was public knowledge and source of pride
- Each section worth 5 points; final score was arithmetic average of three sections



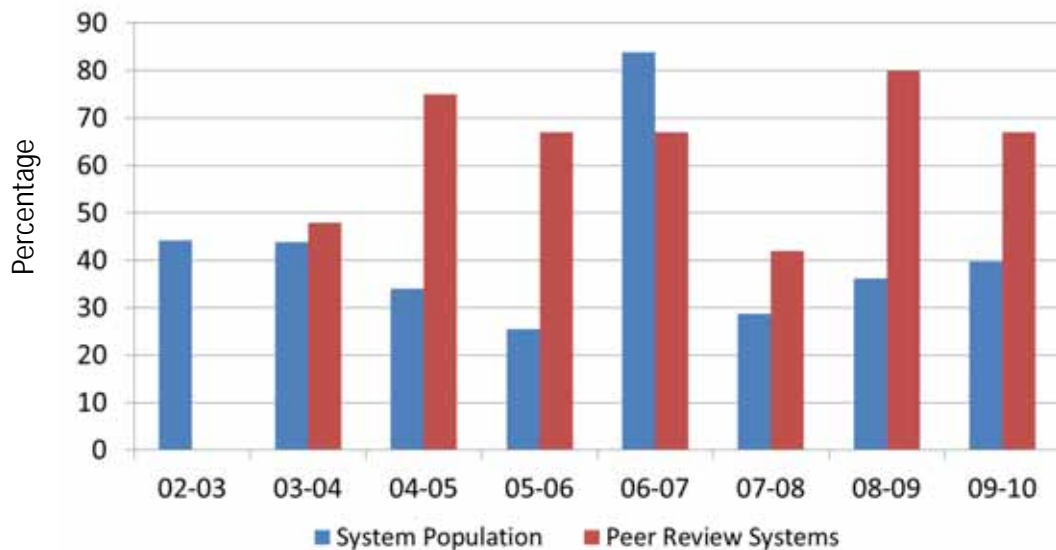
Pct of Systems Scoring 3.0 or Below



Introduction

- Peer Review program established in FY2003
- Brought team of high performing operators to consult with low performing systems
- Targeted systems scored 3.0 or below on capacity assessment inspection survey
- Anonymous for regulatory agencies; completely voluntary
- Funded by State Drinking Water Revolving Fund

Pct of Systems Scoring 3.0 or Below In Year t and Achieving Success in t+1



Introduction

- Peer Review program became more important in December 2009
- Implementation of Groundwater Rule required regulatory Sanitary Surveys
- Regulatory audit to be performed at least every 3 years
- Systems scoring 3.0 or below were considered to be "of concern" by MSDH



Objective

- Develop an evaluation of performance of Peer Review program to be used for future funding and marketing efforts
- Made possible with the availability of data contained in the Safe Drinking Water Information System (SDWIS) database
- Comprehensive database of capacity assessment inspection reports



Question

- What are the factors that comprise a "success"
- Success is defined as a system that scores a 3.0 or below in year t and then scores above a 3.0 in year t+1
- Failure is scoring 3.0 or below in t and t+1



Model

- Linear probability model was formulated
- Binary dependent variable
 - 1 if success
 - 0 if failure
- Analysis performed on 2,646 observations
 - 32.4 percent of systems achieved success
 - 2.8 percent of systems underwent peer review



Model

$SUCCESS = f(PR, OPCHG, OWNER, REG_i, CLASS_j, POPCHG, WEALTHCHG, HHYCHG)$ where

- SUCCESS=Capacity Assessment Success
- PR=Did system undergo Peer Review?
- OPCHG=Was the operator replaced?
- OWNER=Type of system "owner": Association, Private, Municipality, Other (Association was the base)
- REG_i =MSDH Public Health District (9 was the base)
- $CLASS_j$ =System class based on treatment procedure (Class D was the base; A, B, C and E system classes combined)
- SYSPOP=Proportion of county population change



Results

	Marginal Effect	t-ratio/ P> t	Robust Std Error
Intercept	0.3553	11.15, 0.000	0.0319
PR	0.1973	2.38, 0.044	0.0829
OPCHG	-0.0343	-2.32, 0.045	0.0268
MUNI	0.0216	0.60, 0.565	0.0360
PRIVATE	-0.2043	-5.64, 0.000	0.0362
SYSOTHER	-0.1251	-2.07, 0.072	0.0605
CLASSNOD	0.0486	3.05, 0.016	0.0159
POPCHG	1.1505	1.89, 0.095	0.6082



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Results

	Marginal Effect	t-ratio/ P> t	Robust Std Error
PHREG1	-0.1228	-4.03, 0.004	0.3045
PHREG2	-0.0193	-0.75, 0.473	0.0257
PHREG3	-0.0051	-0.16, 0.880	0.0327
PHREG4	0.0789	2.46, 0.039	0.0321
PHREG5	0.1184	4.29, 0.003	0.0276
PHREG6	0.2797	7.00, 0.000	0.0340
PHREG7	0.0652	1.97, 0.084	0.0330
PHREG8	0.1233	3.92, 0.004	0.0315



Conclusions

- PR is positive, significant, large marginal effect – should be satisfactory to funder
- Peer Review program could be successfully applied to other utility sectors (wastewater)
- Delta regions have mostly negative, significant coefficients – most disturbing policy result
- Socioeconomic variables have no significance under robustness; finer data needs to be obtained (census tract level?)
- Change in the operator has negative effect – unexpected



Future Research

- Sustainability issues – success in t+2,3,4
- Significance of managerial issues – examine composition of governing board (municipal and association)?

