

# Rebuilding a Statewide Network of Community Health Centers for the Medically Underserved: A Longitudinal Assessment

Stephen Verderber, MArch, ArchD, NCARB; Cabrenia M. Thomas, BA

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The Strategic Facility Improvement (SFI) initiative, has resulted in the replacement of 44 outpatient clinics and 28 clinic renovation capital improvement projects across Louisiana's 64 parishes. A total of \$67.3 million has been invested in this effort to date. The goal of the SFI is to improve the health status of medically underserved patient populations. It remains the sole capital improvement effort of its kind and has been in continuous implementation since 1991. The SFI consists of predesign needs assessment, analysis of alternate site planning options, historic preservation options in the adaptation of noteworthy community civic resources to healthcare uses, and the postoccupancy assessment of completed capital improvements with the aim of learning positive lessons that can be carried into future efforts. It is based on advocacy and guided by a statewide public health agency. The discussion is centered on a status report on a 21-year period and is examined critically from the perspective of key stakeholders.

**KEY WORDS:** architecture, facility performance, longitudinal research, occupant needs, medically underserved communities, strategic planning

The role of the outpatient community health center has perhaps never been more critical to the success of the United States' health care infrastructure. Local, state, and federal health agencies collectively endeavor to serve a diverse national population of medically underserved patients, most of whom reside in historically underserved communities.<sup>1</sup> With lack of access to adequate prevention-based health care locally, many

are forced to travel significant distances to receive far more costly emergency care in hospitals.<sup>2</sup> Others, lacking the means of transport, by default, may fall entirely out of the health care equation.<sup>3</sup> Nationally, more than two thirds of the community-based outpatient clinics whose mission is to care for the medically underserved are located in rural communities, far from urban centers.

The quality of the physical environment of this national network remains extremely uneven.<sup>4</sup> The core dilemma is that the facilities themselves are subjected to highly divergent minimum performance standards.<sup>5</sup> This has particularly been a dilemma in the public sector.<sup>6</sup> One might work in a poorly planned, designed, built, and/or maintained care setting for decades.<sup>7</sup> Roughly 49.9 million Americans currently do not have health insurance, and a significant portion of these persons receive some form of federal Medicaid benefits.<sup>8</sup> In light of the federal Affordable Care Act (ACA) of 2010, some uncertainty still prevails, prior to the ACA's full implementation in 2014, concerning its broad ramifications for the nation's public health care facility infrastructure.<sup>9</sup> Meanwhile, this infrastructural inventory continues to limp along, particularly in economically disadvantaged communities. Without adequate funding, it will languish further. A situation persists where, stunningly, no national database of this physical inventory exists as of yet, although the need

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**Author Affiliations:** Graduate Program in Architecture and Health, and the Department of Public Health Sciences, Clemson University, Clemson, South Carolina (Mr Verderber); R-2ARCH (Mr Verderber); and Operations and Support, State of Louisiana Department of Health and Hospitals, Office of Public Health, Baton Rouge, Louisiana (Ms Thomas).

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**Correspondence:** Stephen Verderber, MArch, ArchD, NCARB c/o School of Architecture, 2-141 Lee Hall, Clemson University, Clemson, SC 29634 (sverder@clemson.edu).

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for such an inventory and knowledge repository is great and will only increase when the ACA is fully implemented in 2014.<sup>10</sup>

## ● Evidence-Based Facility Planning and Design

The ACA will provide \$11 billion to bolster and expand nationally this inventory of community health centers over the next 5 years with \$9.5 billion earmarked to construct new health center facilities in medically underserved areas, and to specifically expand preventive and primary health care services. This includes dental and behavioral health.<sup>11</sup> To date, few individual states or local jurisdictions employ their own performance-based facility planning or architectural minimum standards for outpatient community health centers. The postoccupancy evaluation, in this regard, is capable of empowering care providers in helping them learn what works and in turn that which does not work in a given facility.<sup>12</sup> Health care administrative policies which actively address the role and function of facilities can yield many positive outcomes.<sup>13</sup> And as such, innovation is called for and is warranted at this time.<sup>14</sup> The emerging field of evidence-based research and design in health care architecture is nascent yet gaining in momentum, acceptance, and funding sponsorship by provider organizations.<sup>15</sup> However, little empirical research in the United States has focused on outpatient public health care settings or on primary care settings of any type.<sup>16</sup>

In response, the design, implementation, and assessment of a 21-year evidence-based design initiative for Louisiana's statewide health and hospitals agency is reported below. In the fall of 1990, the State of Louisiana Department of Health and Hospitals' Office of Public Health (DHH-OPH) embarked upon (under the first author's consultative in-the-field co-ordination) a strategic, evidence-based facility planning and design project. This effort, the Strategic Facility Improvement Initiative, or SFI, was created to assess, redefine, and redevelop its network of then-132 freestanding program sites across Louisiana's 64 parishes (counties).<sup>17</sup> The network consisted at that time of administratively coordinated 9 regional offices, 7 regional laboratories, and 17 specialty clinics (sexually transmitted disease and tuberculosis clinics) 9 Children's Special Health Services clinics, and 74 parish health units (centers), abbreviated as HU.<sup>18</sup> The SFI now stands as the longest running health agency-sponsored evidence-based facility improvement effort of its kind anywhere.<sup>19</sup>

Before 1990, Louisiana's network of public health facilities was highly uneven. Parishes operated autonomously, without any sort of coordination or knowl-

edge sharing. As each parish is mandated by the 1974 Louisiana State Constitution to pay for, build, and operate its own parish HU, irrespective of its physical amenity, DHH-OPH is nonetheless mandated to staff and operate each program site. Suffice to say, the situation across parishes was anything but equivalent or equitable. New facilities sometimes did not meet Americans With Disabilities Act minimum standards; others lacked sinks in examination rooms, and so on. As of November 1990, 66% of all DHH-OPH facilities had been housed in the same quarters for 30 years or longer. The majority of program sites suffered from chronic deferred maintenance.

The SFI process, beginning in the fall of 1991, first yielded an evidence-based compendium of 140 facility site planning and architectural design guidelines. These were based on a statewide facility survey (reported below) and 25 on-site postoccupancy evaluations. The latter consisted of photos, interviews, focus groups, and a detailed walk through.<sup>20</sup> Its longevity has been predicated upon its continued grassroots support combined with effective agency-level administrative oversight.<sup>21</sup> The objectives of the present discussion are threefold: (1) to report on the status of the SFI initiative as of August, 2012; (2) to discuss the efficacy of the SFI and its various metrics; and (3) to report on its broader access-to-care ramifications. This network is autonomous from the 103 federally qualifying health centers in Louisiana funded by the US Department of Health and Human Service's Health Resources and Services Administration.

## ● Methods

A longitudinal profile is reported on this network of DHH-OPH facilities. Information elicited in 1991 is compared and contrasted with data acquired in 2000 and again in 2012. At the time of survey 1 (S1) 138 facilities were operational statewide. This number was consolidated to 106 by survey 2 (S2). At the time of survey 3 (S3) in 2012, this number was consolidated further to 102 program sites. Similarly, the number of full-time employees within DHH-OPH was consolidated from slightly more than 1600 to less than 1000 during this period. The first survey (S1) was 11 pages in length. Its length was reduced somewhat for S2 (9 pages). However, no content changes were made. S1 and S2 surveys were administered as paper and pencil questionnaires, were completed, and returned to the agency's central office for data analysis. S3 was an e-survey. Pretests were conducted in the field at 3 preselected program sites in each survey iteration, and the feedback obtained was incorporated into the full-scale version. The S1 respondent pool consisted of 138 surveys. The S2 pool

was then expanded to 1147 total respondents. For logistical purposes, the S3 respondent pool was consolidated once again to 161 completed surveys. In all 3 survey iterations, every facility in the statewide network was evaluated. Institutional review board approval was not required for the research protocol, as no names of participants were provided, nor were participants subjected to any tests or experiments. The most recent (S3) survey instrument is discussed in detail in the following paragraphs.

Part I of the 2012 S3 online survey consisted of 15 questions (Q1-Q15). These items addressed the location of the facility and its type (region administrative office/parish-based HU or if the facility housed a specialty clinic), the amount of parking spaces on site as well as near in proximity to the facility, year the facility was constructed, the type of construction, that is, brick, concrete block, modular, if the facility is fully accessible to the physically disabled (yes/no), the amount spent annually on repairs and maintenance, the length of time it has been open, whether or not it has undergone any significant renovations since its opening (yes/no), the maximum number of full-time staff personnel able to be domiciled there, the actual current number of full time staff domiciled, the role of specific local government and private sector special interests in establishing policy for the facility's daily operation (no role/minor role/moderate role/strong role), the facility's average total weekly patient volume (utilization), and finally, for those facilities that have been replaced since the 2000 survey, had this led, in one's opinion, to an increase in its use by the local community (yes/no).

Part II of the S3 survey consisted of questions Q16 through Q22. These addressed (all with *Yes/No/Unsure* response) events relative to "Have any of the following events occurred in the past 10 years?" "An increase in staffing in this facility?" "A change in the availability of public transportation to and from this facility?" "Construction or improvement of access roads/streets leading to this facility?" "Implementation of new DHH-OPH programs and/or expansion of existing ones?" "Designation of this community as a 'health professional shortage area' or 'medically underserved area'?" "If the 'local parish government provides the necessary annual facility maintenance?" and "If you answered 'Yes' to any of the above questions, please rate the impact, on a 7-point rating scale from minimum impact (column 1) to maximum impact (column 7) of each of the following *agency policies* in relation to the average weekly utilization of this facility."

Part III of the 2012 S3 survey consisted of 5 survey items on respondents' satisfaction with the facility's location and access to and from it (see Table 3), 6 questions on one's satisfaction with its aesthetic appearance (Table 3), and 6 questions on one's satisfaction with

staffing issues in relation to the facility. This set of survey items constituted Q23 through Q38. Each item was accompanied by a 4-point Likert response scale, with column 1 indicating "not at all satisfied," column 2 indicating "somewhat satisfied," column 3 indicating "quite satisfied," and column 4 indicating "very satisfied." A fifth column was provided for N/A responses. Beneath each question, a box was provided for open comments.

Survey items Q39 through Q41 queried respondents on their degree of satisfaction with various aspects of their facility's interior spaces, consisting of its size, lighting level, noise level, furnishings, color scheme, security, the degree of privacy/confidentiality afforded, view to the outside, temperature levels, the amount of storage space for bulk supplies as well as medical supplies, and its overall image. Each of these aspects were rated, in addition: the main entry/reception counter, corridors, waiting rooms, patient restrooms, intake/interview areas, the medical records storage area, nurses' offices, health education classrooms, examination rooms, laboratory spaces, patient specimen restrooms, the nutritional education, that is, WIC classroom/kitchen, and the environmental health program section, housing the parish sanitarians, their offices, and related support spaces. As for data analysis, the Student 2-sample *t* tests were computed to compare S2 and S3 data.

In part IV, items Q42 through Q46, respondents were asked to name 3 (or more) interior features (of this facility) one is particularly pleased with, 3 (or more) interior features one would change, and how, and similarly, 3 or more exterior features one is particularly satisfied with, and 3 one would change, and how. Finally, "Please list any major repairs needed in priority order." The final survey item, Q47, stated, "Please feel free to provide any additional comments in the space below." A box was provided beneath each question for comments. Respondents were given 10 days to complete and return the S3 online survey. A similar amount of time had been allotted for completion of the 1990 and 2000 surveys. Its completion (as in the 2 prior SFI surveys) was required. Each facility was categorized within 1 of 3 geographic regions within the state: Southeast Region (E), Southwest Region (SW), and North-Central Region (N-C). The types of facilities are reported below as of one of these types: the main parish HU, satellite parish HU, and specialty program site.

## ● Results

The utilization of this network of facilities increased across the two-plus decades in all 3 geographic regions (Table 1). Statewide, average Main HU monthly visits

**TABLE 1 ● Monthly Patient Utilization of Facility**

Type/Attribute	Region <sup>a</sup>						Statewide								
	X̄ (SE) <sup>b</sup>			X̄ (N-C)			1990			2000			2012		
	1990	2000 <sup>c</sup>	2012	1990	2000	2012	1990	X̄ (N)	SD	X̄ (N)	SD	X̄ (N)	SD	X̄ (N)	SD
1. Main HU															
a. Patient visits <sup>d</sup>	1153	1397	1429	1435	1524	1627	1184	1225	1440	1258	0.72	1382 (61)	0.80	1499	0.66
b. Increased (% Yes)	57.9 (2)	66.3 (11)	88.0 (22)	84.6 (6)	83.5 (11)	86.7 (13)	51.7 (8)	59.8 (15)	86.3 (19)	64.7 (16)	0.95	69.9 (37)	0.77	87.1 (54)	0.68
c. No change (%)	42.1 (2)	33.7 (8)	12.0 (3)	15.4 (2)	16.5 (2)	13.3 (2)	48.3 (1)	40.2 (14)	13.7 (3)	35.3 (5)	0.80	30.1 (24)	0.86	12.9 (8)	0.61
2. Satellite HU															
a. Patient visits	1155	1301	1395	834	959	1067	951	1007	1196	980	0.68	1088	0.85	1219	0.68
b. Increased (% Yes)	37.5 (7)	59.6 (5)	100.0 (2)	64.3 (7)	69.3 (13)	100.0 (3)	60.0 (6)	...	100.0 (2)	63.3 (20)	0.92	64.5 (18)	0.77	100.0 (7)	0.79
c. No change (%)	62.5 (7)	40.4 (7)	...	34.5 (4)	30.7 (7)	...	40.0 (2)	...	...	36.7 (13)	0.83	37.1 (14)	0.71	...	...
3. Specialty program site															
a. Patient visits	534	529	671	150	166	193	295	332	381	326	0.83	342	0.77	415	0.72
b. Increased (% Yes)	42.9 (2)	67.5 (0)	75.0 (3)	...	...	75.0 (3)	25.0 (1)	...	100.0 (3)	30.8 (3)	0.75	67.5 (1)	0.85	71.2 (9)	0.59
c. No change (%)	57.1 (1)	32.5 (1)	25.0 (1)	100.0 (2)	100.0 (2)	25.0 (1)	75.0 (2)	100.0 (1)	...	69.2 (1)	0.89	77.5 (1)	0.78	18.2 (2)	0.64

<sup>a</sup>Southeast Region (SE), Southwest Region (SW); North-Central Region (N-C). Average patient-client use computed across 12-month period.

<sup>b</sup>Number of facilities in parentheses.

<sup>c</sup>This question was phrased as "If this facility has been replaced since 1990, has this led, in your opinion, to an increase in its use by residents of this community?" (Yes/No response only). Only facilities that were renovated or replaced in previous decade were assessed.

<sup>d</sup>Patient visits per month reported. Region Office and Region Laboratory data not reported, as patients do not directly utilize those facilities. In 2012 survey, 62 Main HU facilities reporting, 7 satellite HU facilities reporting, 11 specialty clinics reporting.

increased from 1258 in S1 to 1499 by S3 (16.1% increase). This was also the case for satellite HU facilities, with utilization rising from 980 in S1 to 1219 by S3 (20.0% increase). Similarly, specialty program sites also experienced increase in usage, with average monthly visits rising from 326 in S1 to 415 by S3. No facilities reported a decrease in the average number of patient visits per month (Table 1). As for interior spaces, arrival areas, staff clerical work areas, medical records storage/retrieval, clinical, and staff support spaces, it was found that many room types had increased in both their size and quantity across the reporting period (Table 2). Main waiting rooms grew from an average size of 768 departmental net square feet (DNSF) in S1 to 997 DNSF by S3 (23.0% increase). These included waiting rooms (from 1.5 in S1 to 2.3 in S3), staff-only restrooms (from 2.2 at the time of S1 to 3.1 by S3), biohazardous waste holding rooms (from 1.0 in S1 to 2.0 by S3), and immunology rooms (from 1.2 at the time of S1 to 1.8 by S3). In the case of waiting rooms, while each facility previously had a main waiting room, a number of facilities had lacked secondary, or subwaiting, rooms. Every new or renovated facility now featured a subwaiting room, relieving overcrowding. In the past, some patients were forced to wait outside in the intense midday sun, or in the rain, because no seats were available indoors.

Total space in facilities dedicated to staff workspace also increased in size from an average of 1942 DNSF in S1 to 2344 DNSF by the S3 survey (17.2% increase). Storage spaces had also increased, from 486 aggregate DNSF to 829 (41.4% increase), and examination rooms grew in the aggregate, from an average of 571 DNSF in S1 to 851 DNSF by S3 (32.9% increase). Immunology rooms also grew in aggregate size, from an average of 189 DNSF to 215 DNSF (12.0% increase). As for the ability to secure the component spaces within the room typology, it was reported that the securability of the rooms across the entire typology had increased 27.7% from S1 to S3. Previously, an aged, dysfunctional facility had been difficult to keep secure. New or renovated facilities feature security systems with multiple cameras stationed to provide surveillance of exterior entrances and related areas such as the parking lot.

Comparisons between the 2000 (S2) and 2012 (S3) data, on the subject of respondents' satisfaction levels with various features of their facility, revealed significant differences (Table 2). Significant differences at or greater than  $P < .05$  were identified across 11 of the 16 rooms (69.1%). These rooms were the entry/reception area (2.91 in S2 to 3.26 by S3), waiting rooms (2.93 in S2 to 3.37 by S3), staff offices (2.96 in S2 to 3.12 by S3), medical records areas (2.47 in S2 to 3.20 by S3), staff break rooms/kitchens (2.69 in S2 to 3.04 by S3), health education classrooms (2.37 in S2 to 2.87 by S3), storage rooms (2.63 in S2 to 3.17 by S3), biohazardous waste

holding rooms (2.61 in S2 to 3.14 by S3), examination rooms (2.57 in S2 to 2.91 by S3), laboratory rooms (2.66 in S2 to 2.94 by S3), and health education/WIC kitchens (2.82 in S2 to 3.10 by S3). In sum, occupants' statewide ratings of their facility improved as more new and renovated facilities opened. The quality, size, and securability of these individual rooms were assessed to have been improved significantly.

## ● Assessment of Facility Environs

It was found that significant differences exist only with regard to the amount of parking available on site. This is attributable to the newer replacement facilities often providing as much as twice the amount of parking spaces on site in accord with current zoning requirements as compared with the facility it replaced (Table 3). With respect to aesthetics 6 aspects were examined: its image in the eyes of the local community, the appearance and upkeep of the grounds, the image of the building itself, the placement of exterior signage, interior signage, and the overall appearance of the immediate neighborhood. Three of these aspects yielded significant differences between the S2 and S3 surveys. First, the image of one's facility was rated significantly higher in 2012, as was its appearance and upkeep. The placement of exterior signage on the grounds and on the facility was rated highest in 2012 as well. This is perhaps attributable to a new or renovated facility being viewed as more attractive than its predecessor.

## ● Assessment of Policies Relative to Facility Performance

Statewide agency policies, combined with site locational factors, were found to have an impact on patients' access to care. In no instance reported had staffing levels increased at any facility since 2000 and in localized cases, the opposite had occurred.<sup>22</sup> Some ramifications of this pattern are discussed in the following paragraphs.

### Availability of public transit

#### *Past policy decisions*

Respondents reported no significant improvement in their facility's access to public transit amenities. This is attributable to the trend in replacement facility construction to disfavor the retention of landlocked, center-of-town sites in favor of more remote exurban sites where public transit options are few to nonexistent.

**TABLE 2 • Assessment of Facility<sup>a</sup>**

Room Type	Quantity			Size <sup>b</sup>			Securable (%Y) <sup>c</sup>			Evaluation <sup>d</sup>					
	1990	2000	2012	1990	2000	2012	1990	2000	2012	1990	2000	2012			
				$\bar{X}$	SD	(n)	$\bar{X}$	SD	(n)	$\bar{X}$	SD	(n)			
a. Entry/reception	1.3	1.5	1.8	1045	1127	1277	30.4	33.3	66.2	2.76 (48)	0.72	2.91	0.77	3.26	0.71 <sup>e</sup>
b. Waiting room(s)	1.5	1.7	2.3	768	949	997	35.7	29.1	67.5	2.86 (50)	1.08	2.93	0.62	3.37	0.72 <sup>e</sup>
c. Staff offices	8.2	9.7	9.8	1942	2227	2344	35.6	66.7	98.6	2.43 (56)	1.07	2.96	0.54	3.12	0.59 <sup>f</sup>
d. Medical records	1.2	1.4	1.7	411	547	621	31.0	75.6	96.1	2.13 (51)	0.82	2.47	0.49	3.20	0.62 <sup>e</sup>
e. Conference room	1.8	1.9	2.2	450	475	486	70.5	60.5	95.1	...	...	2.63	0.61	2.91	0.64
f. Staff break room	1.1	1.2	1.4	245	254	264	34.3	35.3	96.4	2.52 (29)	0.77	2.69	0.79	3.04	0.81 <sup>e</sup>
g. Health education classroom	1.0	1.7	1.8	376	421	428	85.0	65.0	77.6	2.27 (38)	0.92	2.37	0.84	2.87	0.77 <sup>e</sup>
h. Staff washroom(s)	2.2	2.9	3.1	135	146	154	12.1	82.8	85.9	2.40 (50)	0.80	2.47	0.54	2.68	0.90
i. Patient washroom(s)	1.5	2.3	2.7	74	86	91	27.6	81.4	85.6	2.79 (29)	0.86	2.83	0.49	2.98	0.91
j. Public washroom(s)	2.3	2.7	2.9	149	177	184	7.7	67.9	74.4	2.84 (54)	0.84	2.89	0.62	2.96	0.77
k. Storage	3.8	4.2	5.4	486	824	829	17.5	79.3	81.9	2.51 (48)	0.90	2.63	0.73	3.17	0.70 <sup>e</sup>
l. Biohazardous storage	1.0	1.7	2.0	157	167	180	50.0	75.0	93.4	2.32 (3)	0.96	2.61	0.75	3.14	0.71 <sup>e</sup>
m. Examination rooms	5.1	6.1	6.4	571	842	851	54.4	71.4	77.9	2.34 (59)	0.79	2.57	0.69	2.91	0.62 <sup>f</sup>
n. Laboratory	1.2	1.3	1.3	157	174	196	46.9	68.2	86.6	2.37 (30)	0.78	2.66	0.82	2.94	0.74 <sup>e</sup>
o. Kitchen/MC education	1.2	1.4	1.4	291	298	304	56.3	60.9	79.6	2.73 (44)	0.95	2.82	0.66	3.10	0.69 <sup>f</sup>
p. Immunology room(s)	1.2	1.6	1.8	189	208	215	50.0	66.7	78.5	2.67 (29)	0.98	2.71	0.79	2.76	0.72

<sup>a</sup>1990: 74 HU sites; 2000: 72 HU sites; 2012: 62 HU sites.

<sup>b</sup>Reported as average total square feet in facility for this room type.

<sup>c</sup>Percent respondents reporting "yes."

<sup>d</sup>Assessment of occupant satisfaction with the architectural environment, on a 4-point Likert scale (1 = not at all satisfied, 4 = very satisfied). These data are a summary mean computed across survey items contained in Part III, Question 2: Size of room, lighting quality, noise level clinic, quality of furnishings, color scheme, security system quality, location of room within overall facility, views to the outside (if any) from the room, and temperature level.

<sup>e</sup>Significant 2000-2012 overall evaluation difference,  $P < .01$  (Student  $t$  test)

<sup>f</sup>Significant 2000-2012 overall evaluation difference,  $P < .05$  (Student  $t$  test)

**TABLE 3 • Assessment of Facility (continued): Site Environs and Staffing Patterns**

Characteristic	Statewide <sup>a</sup>					
	1990 (N = 74)		2000 (N = 72)		2012 (N = 62)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
1. Location/Access						
a. Location within the parish	3.39	0.89	3.26	0.70	3.11	0.77
b. Sense of safety on the grounds	2.91	0.88	2.80	0.81	2.90	0.62
c. Amount of parking available on the site	2.52	0.66	2.65	0.49	2.91	0.81 <sup>b</sup>
d. Distance to entrance from parking lot	3.30	0.71	3.10	0.55	3.05	0.62
e. Availability of public transportation	1.71	0.52	1.55	0.92	1.77	0.69
2. Aesthetic Appearance						
a. Image of facility in the eyes of community	2.44	0.64	2.70	0.90	3.24	0.80 <sup>c</sup>
b. Appearance and upkeep of the grounds	2.60	0.88	2.75	0.91	2.98	0.77
c. Appearance and upkeep of the building	2.78	1.03	2.55	0.85	3.19	0.82 <sup>c</sup>
d. Placement of exterior signage	3.09	0.92	2.90	0.81	3.14	0.80 <sup>b</sup>
e. Placement of interior signage	2.55	0.87	2.40	0.94	2.55	0.72
f. Appearance of neighborhood	2.95	0.85	2.63	0.95	2.71	0.57
3. Staffing issues in relation to facility						
a. Reputation of the facility at this time	3.26	0.93	3.44	0.99	3.27	0.63
b. Ability to recruit staff to this facility	2.48	0.61	2.40	1.02	2.07	0.67 <sup>c</sup>
c. Ability to retain staff at this facility	2.91	0.68	2.25	0.73	2.40	0.70
d. Freedom to self-modify the physical setting	2.33	0.82	2.41	0.89	2.49	0.55
e. Coworkers' attitudes toward this facility	2.27	0.90	2.31	0.95	2.05	0.80 <sup>b</sup>
f. Degree of support this facility provides for the work one does on a daily basis	2.23	0.88	2.35	0.94	2.52	0.86 <sup>b</sup>

<sup>a</sup>Summary across all main HU, satellite HU, and specialty clinic program sites.

<sup>b</sup> $P < .05$  significant 2000-2012 difference (Student  $t$  test).

<sup>c</sup> $P < .01$  significant 2000-2012 difference (Student  $t$  test).

### **Impact on access to care**

Respondents' open format comments were neutral on this, with many saying it did not have either a positive or overtly negative impact on their patients' access to health care. Respondents reported that those who needed to get to the clinics would walk or would otherwise obtain a ride.

### **Accessibility via local roads**

#### **Past Policy decisions**

No significant S1-S2 differences were identified. However, improvements such as regrading of the access arteries leading to-from some facilities were reported. In most communities, however, the status quo prevailed in this regard.

#### **Impact on access to care**

In the open format comments, a lack of handicap access stalls and/or their far distance from the main entrance to the facility was reported. This remains a particular access impediment for the families of patients who require specially equipped vans with mechanical lifts, as

these patients also typically require the use of specially fitted wheelchairs.

### **New and/or expanded health promotion programs**

#### **Past policy decisions**

Respondents reported a significant increase in new programs launched between 2000 and 2001 (Main PH sites: S1 mean = 2.99; S2 mean = 3.65, with a similar pattern reported for satellite HU program and specialty clinics). These included new initiatives in sickness prevention, sexually transmitted disease, tuberculosis early detection, smoking cessation, and early childhood immunization drives.

#### **Impact on access to care**

Respondents' open format comments indicated that the aforementioned new programs had a direct positive impact on attracting more new patients to their facility during the 12-year period. This, combined with the rising number of uninsured patients statewide during this period, was manifesting in an across the board increase in facility utilization levels.

**TABLE 4 • Utilization of This Facility in Relation to Health Agency Policies (2000–2012)<sup>a</sup>**

Type-Assessment	Staffing Level (if decrease)		Access to Public Transportation		Quality of Access Roads		New Programs/ Expanded Existing Programs		Designation as Medically Underserved Community		Program Funding Level (if increase)	
	2000	2012	2000	2012	2000	2012	2000	2012	2000	2012	2000	2012
1. Main HU (% , N)												
Yes	90.0 (56)	96.7 (60)	53.2 (33)	96.7 (60)	37.1 (23)	58.1 (36)	72.5 (45)	93.4 (57)	72.3 (45)	93.4 (57)	27.4 (17)	...
No	10.0 (6)	3.3 (2)	43.6 (27)	3.3 (2)	61.3 (38)	41.9 (28)	25.8 (16)	4.9 (3)	24.5 (15)	4.9 (3)	66.2 (41)	93.5 (58)
No opinion	...	...	3.2 (2)	...	1.6 (1)	...	1.7 (1)	1.6 (1)	3.2 (2)	1.6 (1)	6.4 (4)	6.5 (4)
Rating ( $\bar{X}$ , SD) <sup>b,c</sup>	N = 62	62	62	62	62	62	62	61	62	61	62	62
	(2.61, 0.41)	(5.90, 0.56) <sup>d</sup>	(2.71, 0.72)	(3.33, 0.61)	(2.79, 0.77)	(3.01, 0.64)	(2.99, 0.59)	(3.65, 0.71) <sup>e</sup>	(3.66, 0.67)	(3.35, 0.69)	(3.52, 0.72)	(3.43, 0.59)
2. Satellite HU (% , N)												
Yes	82.3 (14)	100.0 (5)	23.5 (4)	83.3 (5)	35.3 (7)	66.7 (4)	53.3 (9)	100.0 (7)	39.4 (6)	100.0 (7)	17.7 (3)	...
No	17.7 (3)	...	70.6 (12)	16.7 (1)	64.7 (11)	...	26.7 (7)	...	29.4 (5)	...	64.7 (11)	85.7 (6)
No opinion	...	...	5.9 (1)	...	...	33.3 (2)	20.0 (3)	...	41.2 (7)	...	17.6 (3)	14.3 (1)
Rating ( $\bar{X}$ , SD)	N = 17	7	17	6	18	6	19	7	18	7	17	7
	(2.93, 0.63)	(5.71, 0.69) <sup>d</sup>	(2.99, 0.78)	(3.49, 0.70)	(2.72, 0.77)	(3.19, 0.61)	(2.71, 0.64)	(3.72, 0.59) <sup>e</sup>	(3.11, 0.82)	(3.47, 0.67)	(5.50, 0.68)	(3.61, 0.74)
3. Specialty program site (% , N)												
Yes	100.0 (17)	81.8 (9)	88.2 (15)	100.0 (11)	50.0 (7)	63.6 (7)	76.9 (10)	90.1 (10)	58.3 (7)	90.1 (10)	8.3 (1)	... (0)
No	...	...	11.8 (2)	...	50.0 (7)	36.4 (4)	23.1 (3)	9.9 (1)	41.7 (5)	9.9 (1)	75.0 (9)	100.6 (11)
No opinion	...	18.2 (2)	...	...	...	...	...	...	...	...	16.7 (2)	...
Rating ( $\bar{X}$ , SD)	N = 17	8	17	8	14	8	13	8	12	8	12	8
	(2.77, 0.80)	(5.40, 0.74) <sup>d</sup>	(2.10, 0.44)	(3.59, 0.59)	(3.61, 0.71)	(3.76, 0.74)	(3.78, 0.72)	(4.19, 0.70) <sup>d</sup>	(2.29, 0.59)	(2.62, 0.61)	(3.08, 0.74)	(4.71, 0.77)

<sup>a</sup>Data reported by facility. Percentage reported, followed by number of reporting facilities (in parentheses).

<sup>b</sup>Each outcome response item rated on a 7-point response scale from "minimum impact" (1.0) to "maximum impact" (7.0).

<sup>c</sup>2000 and 2012 data comparatively analyzed (2-sample Student *t* test).

<sup>d</sup>*P* < .01.

<sup>e</sup>*P* < .05.



## Designation as a health professional shortage area or medically underserved area

### Past policy decisions

Sixty seven percent of respondents to the 2012 statewide facility survey reported their facility to be within a catchment area of a medically underserved community, and this was relatively unchanged from 2000. However, the state did become poorer during this period, based on 2010 US Census data.<sup>23</sup>

### Impact on access to care

Typically, the Main HU remains the best option. Albeit, many federally qualifying health centers have opened in recent years in medically underserved communities. The agency launched in 2005 a home visitation nursing outreach program and expanded its federally funded WIC program within the praxis of *Healthy People 2010*<sup>24</sup> and the *National Partnership for Action to End Health Disparities*.<sup>25</sup>

## Funding levels for wellness- and sickness-prevention programs

### Past policy decisions

Few respondents reported any increase in agency funding levels for the programs they currently provide at their facility. The exception to this pattern was for the Children's Special Health Services programs, all since 2000 consolidated within nearby Main HU facilities.<sup>26</sup>

### Impact on access to care

Patient access was maintained and in some facilities was reported to have risen because of a rise in parish-salaried Main HU and satellite HU clinic and parish sanitarian staff personnel. This measure was nearly always taken, however, to counterbalance staff and facility consolidation.

## ● Public Health Capital Improvements: Statewide 1990-2012

A total of 64 capital improvement projects were completed during the years 1991-2012. Of these, 41 completely new replacement facilities were constructed, 15 facilities were renovated and/or expanded, and 9 existing buildings were adapted to health care uses (Table 5). The average project planning phase, inception to groundbreaking, was 12.8 months; average length of time from groundbreaking to opening day was 10.9 months. With respect to the distribution of construction activity, the average size of a new facility was 9949 total building gross square feet (BGSF). This

represented 407 909 total BGSF in new construction. Renovations and adaptive uses of existing buildings averaged 4972 BGSF per project, totaling 150 547 BGSF. The average capital improvement project costs \$1 020 512 (unadjusted for inflation). Capital improvement expenditures across the 9 administrative regions totaled \$67.3 million. This construction activity has been counterbalanced to some extent by consolidations (30) across the reporting period. Rather than expanding per se the network of program sites, the aim across the two-plus decades was to condense and improve the overall quality of the network.

## ● Performance-Based Health Care Facilities

The SFI program is reviewed annually, as is the performance of each facility. An annual composite facility performance rating is assigned and is based on 3 types of data: (1) firsthand appraisals by its end-user occupants (patients and full-time staff), (2) the assessment of the Region Administrator, and (3) information acquired in the field by the SFI coordinating team. Together, this information is translated into a 4-point scale to reflect the degree of architectural intervention required (see Ref 21). This rating is based on 5 individual assessments: (1) its site context and neighborhood, (2) its aesthetic appearance, (3) its functionality from the standpoint of internal patterns of use and occupant and materials flow, (4) the ability to adequately maintain the facility, that is, routine repairs and the like, and (5) the condition and operation of the building's environmental control systems (heating, ventilation, air conditioning, and electrical systems). The 4 levels of ranking for priority improvement are (1) urgent priority to (4) no change recommended at this time.

From a longitudinal perspective, the architectural quality, internal size and amenity, effective maintenance, and occupant satisfaction levels have risen in all 9 administrative regions across the reporting period. The most significant region-by-region improvements have been realized in regions 2, 4, 7, 8, and 9 with Region 7 having the lowest score at the outset of the SFI and having attained the highest relative facility improvement rating score by 2012. These improvement scores are as follows based on differences between the 1990-1991 fiscal year (T1) and the 2011-2012 fiscal year (T2): Region 1: T1 = 2.24; T2 = 3.18; Region 2: T1 = 2.27; T2 = 3.81; Region 3: T1 = 2.36; T2 = 3.11; Region 4: T1 = 2.17; T2 = 3.55; Region 5: T1 = 2.36; T2 = 3.65; Region 6: T1 = 2.32; T2 = 3.69; Region 7: T1 = 1.67; T2 = 3.75; Region 8: T1 = 2.11; T2 = 3.48; and Region 9: T1 = 2.25; T2 = 3.90. This is not to say that every facility in need of replacement has in fact been replaced: 2 high-use urban facilities still stand out (Baton Rouge and Houma).

**TABLE 5 • Statewide Strategic Facility Improvement Initiatives (1991-2012)**

Region <sup>a</sup>	Completed Projects	Replacement Facility (Y/N)	Renovation (Y/N)	Adaptive <sup>b</sup> Use (Y/N)	Planning <sup>c</sup> ± Phase (mo)	Construction <sup>c</sup> Phase (mo)	Square Feet <sup>d</sup>		Total Expenditure <sup>e</sup>
							New Construction	Other	
1. 7 (12)	5	Y(1)	Y(3)	Y(1)	8.8	10.7	12 250 (12 258)	8881 (44 404)	780 240 (3.90M)
2. 9 (9)	6	Y(5)	Y(1)	N(...)	13.4	9.4	13 763 (36 250)	3000 (3000)	1 259 244 (7.81M)
3. 8 (11)	8	Y(4)	Y(2)	Y(2)	10.2	11.1	9920 (49 584)	5227 (16 241)	727 112 (7.91M)
4. 8 (17)	7	Y(6)	Y(1)	N(...)	13.1	9.9	8328 (63 941)	... (...)	1 029 995 (5.54M)
5. 6 (10)	8	Y(4)	Y(3)	Y(1)	18.2	11.4	10 898 (61 554)	4966 (7822)	1 311 128 (10.2M)
6. 10 (11)	5	Y(2)	Y(3)	Y(1)	11.4	10.8	9320 (37 280)	6388 (12 776)	1 061 405 (7.79M)
7. 10 (14)	8	Y(4)	Y(2)	Y(2)	9.8	11.6	7776 (26 404)	5265 (39 754)	894 215 (6.55M)
8. 10 (12)	9	Y(8)	N(...)	Y(1)	15.4	12.8	10 178 (84 410)	3250 (3250)	927 114 (9.63M)
9. 9 (11)	8	Y(7)	N(...)	Y(1)	14.6	10.6	7110 (36 228)	7767 (23 300)	1 194 160 (7.94M)
77 (107) <sup>f</sup>	64	41	15	9	12.8	10.9	9949 (407 909)	4972 (150 547)	1 020 512 (67.3M)

<sup>a</sup>Number of freestanding program sites in region as of 12/31/11. Number in parentheses denotes total freestanding program sites in region in 1991 (with exception of 16 school-based clinics statewide in 1991).

<sup>b</sup>Certain projects involve combination of either new and/or renovated or adaptive reuse strategies.

<sup>c</sup>Mean across projects reported (in months).

<sup>d</sup>"New Construction" data reported as Building/Gross Square Feet (BGSF). Number in parentheses denotes total BGSF. "Other" category consists of renovation and adaptive reuse projects. These data are reported as Departmental Gross Square Feet (DGSF). Number in parentheses denotes total DGSF.

<sup>e</sup>Mean total project cost, including land acquisition, site improvements, parking areas, access drives, signage, landscaping, furnishing equipment, and building expenses (in millions). Number in parentheses denotes total capital expenditure in Region (in millions).

<sup>f</sup>A total of 30 program sites have been closed or consolidated statewide since 1990-1991 FY.

## ● Discussion

The SFI has facilitated the delivery of outpatient care to the medically underserved and is the longest running health care evidence-based effort of its kind anywhere. In Louisiana, most program sites in need of capital improvement have been completed as of 2012 although, as mentioned, work remains.<sup>27</sup> Projects are in various stages of planning at this writing.<sup>28</sup> To date, no instance has been reported of the SFI having had an adverse impact. The survey results reflected the oft-reported view of staff personnel in this regard: a halo effect occurs whenever a new or renovated facility opens. Patient utilization rises as much as 20% and longtime as well as new patients comment on its generally more inviting atmosphere, underscoring the infrastructural importance of the built environment within the access-to-care equation.

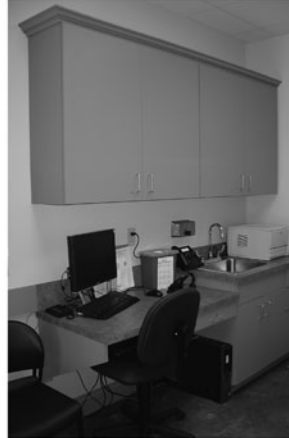
A number of replacement facilities have opened recently, including the new campus in New Iberia, Louisiana (region 4), designed by the Architects Design Studio (Figure 1A-H). This clinic, its porte' cochere', and an adjoining environmental health building are connected by a covered walkway (1A). The interior is attractive and presents a positive, dignified image to its users, with a large main waiting room that adjoins a sign-in station, 5 spacious intake/clerical offices, and a vital records office. Large full-height glass doors allow the staff to have visual contact with the main waiting room, without compromising patient confidentiality during intake interviews (1B). The labora-

tory is linked with an adjoining restroom for use by patients via a pass through specimen window (1C). The intake/clerical offices are spacious (1D). The examination rooms are equipped with a gowning alcove, flex examination table, sink, charting desk, and supply cabinets and double as the nurses' workstation (1E). The environmental health program section features a waiting area, open plan work area, laboratory for specimen storage, and offices for parish sanitarians (1F). The WIC nutritional education demonstration kitchen is configured to simulate the scale and functionality of a residential kitchen (1G). Lingering paper-based medical records are housed in a Spacesaver system (1H).

A building's daily inhabitants possess a wealth of pragmatic knowledge and insights.<sup>29</sup> Their experience has been reflected in the SFI and in its metrics. Early intervention is a cornerstone of overall success in any facility improvement initiative.<sup>30</sup> Choosing the most suitable location to build a replacement facility can be painstaking, requiring weeks, months, and even years of deliberations, even before an architect is hired. First, the project scope and construction and furnishings budget must be established, after the decision whether to build or not to build has been reached, or whether to renovate instead.<sup>31</sup> Once again, the reader is referred to Verderber and Kimbrell<sup>21</sup> for a broader discussion of the SFI protocols, field operationalization, and health policy implications.<sup>32</sup>

In rural communities, a new health care facility is a prominent civic asset that can rival a new local

**FIGURE 1a-h** ● SFI Clinic Case Study.



SFI indicates Strategic Facility Improvement.

public library: a source of pride and accomplishment.<sup>33</sup> As each community's facility has been upgraded, the "playing field" has become leveled and access to care is elevated ever higher. A new clinic will often spark a competitive spirit, where, a neighboring parish will elect to soon follow suit. This is positive and has been encouraged. The SFI remains cost-effective against the persistent reality that Louisiana is a state that persistently ranks at or near the bottom in national health statistics. It has one of the highest poverty rates, lowest median income levels, and highest percentages of uninsured.<sup>34</sup> Approximately 947 000 residents lived below the poverty line in 2011, the state's poverty rate was 21.1% (second highest in the nation), and the median family income was \$40 658 (ranking 46 of 50 states). Worse, 20.8% of residents, or 938 000 persons, did not have health insurance. Only Texas and Nevada had higher rates of uninsured.<sup>35</sup> Unfortunately, no before-after data exist on any specific positive direct health outcomes as a possible consequence of this research. However, this certainly warrants further examination in Louisiana as well as elsewhere.

In Louisiana, stubborn rivalries persist between urban, suburban, and rural communities over the equitable distribution of limited taxpayer dollars.<sup>36</sup> The SFI has sought to transcend such rivalries and turf wars while yet embracing local vernacular architecture traditions.<sup>37</sup> As for the role of the Architect, his or her mission is to serve the best interests of the public's "health, safety, and welfare."<sup>38</sup> Unfortunately, the promise of a genuine, evidence-based architecture in the service of the medically underserved and of communities suffering from a legacy of chronic health disparities remains largely unfulfilled and architects are hereby called upon to act.<sup>39</sup> Architecturally, meaningful advancements will require an unprecedented commitment.<sup>40</sup> The aforementioned ACA is a promising landmark, holding much potential, because it provides a new source of funds for strategic capital improvements.

From the start, advocacy—defined here as caring for those in need—has been at the heart of this effort. Sadly, the medically underserved (and their caregivers) too often continue to coexist in overcrowded, dysfunctional settings.<sup>41</sup> All the while, public health care providers are being called upon to do more, yet with diminishing fiscal resources.<sup>42</sup> One highly promising means to increase patient access to care, especially in rural locales, is to bring mobile health clinics into the fold. These "moving buildings" can be deployed quickly and relatively cheaply compared to always building a stationary building. A mobile clinic is far less costly to build and operate and can help counterbalance chronic funding woes.<sup>43</sup> The alternative is unacceptable—making do with an overcrowded 40- to 50-year-old fixed-site clinic

with a leaky roof and a gravel parking lot and with no hope of meeting federal Health Insurance Portability and Accountability Act or Americans With Disabilities Act minimum guidelines.<sup>44</sup> Innovative solutions are needed.<sup>45</sup> There has perhaps never been a more opportune moment to innovate—reinvent—the settings where community public health care is provided.

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