

1 **Title:** Evaluating the Financial Impact of a Student-Run Free Clinic in Alabama

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13 Birmingham, whose dedication to service and medical education keeps the clinic running.

14

15 **Abstract:**

16 **Background:** Given significant existing barriers to healthcare, student-run free clinics (SRFCs)
17 play a critical role in serving their community by reducing the burden of healthcare costs for the
18 patients they serve.

19 **Objective:** To characterize the financial impact of free services provided by our SRFC in 2023
20 and understand its role and significance in community health.

21 **Methods:** The annual expenditure was calculated based on our SRFC's spending on supplies,
22 laboratory tests, medications, patient transportation, interpretation, and security costs. Free
23 services provided by the clinic to patients included clinical appointments, medications, and
24 laboratory tests. The value of primary and specialty care appointments was calculated based on
25 2023 Medicare reimbursement rates. The value of laboratory tests was based on the laboratory's
26 standard self-pay rates, and the value of free medications was calculated using the lowest out-of-
27 pocket GoodRx price in the Birmingham area.

28 **Main Measure:** Financial impact of SRFC services in one calendar year

29 **Key Results:** The SRFC provided a total of 744 clinic visits in 2023. The clinic's operating
30 expenditure was \$59,683. The total value of free services from the SRFC included \$99,207 in
31 clinic visits, \$92,848 in laboratory tests, and \$25,205 in free medications. After subtracting the
32 operating expenditures from the value of free services, the SRFC saved the community \$157,370
33 in healthcare services.

34 **Conclusions:** Descriptions of an SRFC's financial impact are a powerful tool that can be used to
35 advocate for the expansion and development of health professions school's SRFCs. Quantifying
36 the financial impact of SRFCs provides a reproducible framework for demonstrating their

37 essential role in reducing healthcare costs and advancing equitable access, gaining insights that
38 can guide and strengthen free clinics nationwide.

39 **Introduction:**

40 Evaluating the impact of student-run free clinics (SRFCs) is a growing area of research,
41 as they are present at over 75% of Association of American Medical Colleges member
42 institutions¹. The benefits of SRFCs are numerous for both student volunteers and patients alike.
43 Participating in SRFCs improves students' interprofessional attitudes and skills, fosters the
44 development of more favorable attitudes towards medically underserved populations, and allows
45 students to explore social determinants of health outside the formal medical school curriculum²⁻⁴.
46 In addition, SRFCs have also been shown to improve patient outcomes by decreasing uninsured
47 patients' hospital readmission rates and emergency department visits while also successfully
48 managing chronic diseases in patients with adverse social determinants of health⁵⁻⁶.

49 Nevertheless, as SRFCs increase in number and popularity at medical schools across the
50 nation, evaluating their outcomes through the lens of their financial impact on their community
51 becomes important in demonstrating their role and significance in community health care. While
52 some cost-analyses of SRFCs exist, our analysis seeks to build upon the existing literature by
53 providing a complete picture of one SRFC's holistic financial impact, including both the value of
54 all medical services and the medication dispensary program⁷⁻⁸. Equal Access Birmingham (EAB)
55 is a SRFC sponsored by the University of Alabama at Birmingham Heersink School of Medicine
56 and primarily serves vulnerable patient populations in Central Alabama who may not otherwise
57 have access to healthcare. The clinic's internal management, workflow, and fundraising is
58 organized by students under the oversight of faculty leadership; all clinic visits are staffed and
59 supervised by faculty physicians at the university.

60 **Methods:**

61 Data was collected from a retrospective review of clinic data and patient charts. The
62 study's methods were exempted under the University of Alabama at Birmingham (UAB) IRB-
63 approved protocol 300013211.

64 The annual expenditure of our SRFC from January 1, 2023 to December 31, 2023 was
65 calculated using costs associated with medical and clinic supplies, laboratory testing (subsidized
66 through a partnership with a local outpatient clinic), medication purchased for the dispensary,
67 rideshare services for patient transportation, interpretation services, and clinic security. The free
68 services provided by the SRFC that were analyzed as part of this study include a variety of
69 essential healthcare services such as primary care visits, specialty care visits (including
70 psychiatry, dermatology, and OB/GYN), laboratory tests, and access to free medications. These
71 services play a crucial role in meeting the healthcare needs of underserved populations. Medicare
72 reimbursement rates were used to estimate the value of the clinic visits for an accurate financial
73 approximation of the clinic's impact in providing healthcare services free of charge.

74 For this analysis, specific Current Procedural Terminology (CPT) codes were employed to
75 represent the different types of patient appointments within the SRFC. These codes were selected
76 based on the type of visit, whether new or returning, and the specialty of care. The CPT codes
77 used in the study included: new patient primary care visit (99204), established primary care visit
78 (99214), new patient psychiatry visit (99204), established psychiatry visit (99214), established
79 OB/GYN visit with testing (99214, G0101, Q0091), and established dermatology office visit
80 (99214). Multiple CPT codes were used to calculate the value of our SRFC's OB/GYN visits as
81 they included cervical cancer screenings and breast/pelvic examinations (G0101) and

82 Papanicolaou (Pap) smear collection (Q0091). Our calculations are based on the 2023 Medicare
83 reimbursement rates for locality 10112 per our SRFC's location. Calculations using the national
84 Medicare reimbursement rates are included in Table 2 to allow for easier comparison with other
85 free clinics across the nation.

86 Patients requiring laboratory studies from the SRFC were sent to a nearby outpatient
87 laboratory run by the UAB Medicine system. The cost of laboratory tests was calculated using
88 both UAB Medicine's subsidized self-pay rates and the non-subsidized outpatient rates for all
89 laboratory tests for which prices were published (Table 2). The higher non-subsidized outpatient
90 lab rates were used in our analysis, as not all health centers have subsidized self-pay rates.
91 Lastly, the cost of medications provided by the SRFC's dispensary service was calculated using
92 the lowest out-of-pocket price on GoodRx in the Birmingham area for each free medication that
93 was dispensed.

94 **Results:**

95 The SRFC's operating expenditures in 2023 totaled \$59,683 (Table 1). In one calendar
96 year, the SRFC provided 214 primary care visits for new patients and 414 primary care visits for
97 established patients, valued at \$33,538 and \$49,713 respectively. Thirty psychiatry visits for new
98 patients and 66 psychiatry visits for established patients totaled \$4,702 and \$7,925 respectively.
99 Twelve OB/GYN services including a routine breast/pelvic exam and Pap smear totaled \$2,249,
100 and 9 dermatology visits totaled \$1,081. A total of \$92,848 in laboratory test services was
101 provided (Table 2). The value of free medications calculated based on the lowest out-of-pocket
102 GoodRx rates were worth \$25,205 (Table 1). Thus, a total of \$216,889 in health care and
103 medication costs was provided by the SRFC in 2023. After subtracting the clinic's operating
104 expenditures, the total cost-savings of the SRFC was \$157,370. The largest portion of free

105 services provided by the SRFC were the \$92,640 in laboratory tests, totaling 42.7% of the
106 clinic's free services, and the \$49,713 in primary care visits for established patients, totaling
107 22.88% of the clinic's free services (Figure 1).

108 **Discussion:**

109 Our analysis highlights the financial impact of an SRFC in providing care for uninsured
110 and under-insured patients. The value of EAB's clinic visits and laboratory services is similar to
111 what has been reported by another SRFC cost-analysis and further expands the cost-saving
112 analysis over a full calendar year, standardizing future efforts to characterize and compare the
113 financial impact of SRFCs nationally⁷. The results of this analysis can be used to advocate for
114 the value that SRFCs provide to their community through eliminating burdensome costs of clinic
115 visits, laboratory tests, and medications for uninsured and under-insured patients. As healthcare
116 costs soar, arguments can be made that larger healthcare systems should provide resources and
117 support to allow clinics like these to expand utilizing similar cost analyses. These results can be
118 shared with health system leaders, community partners, and donors to grow SRFC resources and
119 close gaps in areas such as psychiatry, OB/GYN, dermatology, and preventative health
120 screening.

121 An important part of SRFCs' services that our analysis aimed to highlight was the clinic's
122 medication dispensary. A large proportion of SRFC patients struggle to afford their medications.
123 Although many rely on financial assistance programs, limited resources often prevent them from
124 receiving the support they need⁹. There were 235 stand-alone medication pick-up (MPU)
125 encounters at our SRFC in 2023. While having an in-house dispensary allows patients to leave
126 their clinic visits with at least a 30-day supply of medication, purchasing medications for the
127 dispensary was our SRFC's largest expenditure. Nevertheless, the total medication expenditure

128 may still be lower than that of a smaller dispensaries due to economies of scale; EAB purchases
129 its medications through the university's medical system, allowing for the clinic to pay the same
130 price for medication that the larger health system pays. Other SRFCs have demonstrated success
131 in utilizing pharmaceutical patient assistance programs to increase patients' access to expensive
132 medications¹⁰. Increased utilization of such assistance programs was shown to have an overall
133 increase in cost-savings¹¹. Recognizing both the importance of providing free medications and
134 the task of minimizing clinic expenditures in a resource-limited setting, our future directions will
135 include analyzing ways to reduce clinic expenditure on medications. Potential avenues include
136 partnering with social work teams and surveying options in connecting patients with patient
137 assistance programs to increase patients' access to newer, more expensive medications that
138 neither the clinic nor patients can afford.

139 With a total financial impact of greater than \$157,370 in no-cost health care services in
140 one calendar year, our SRFC provided a vital source of free services to uninsured and under-
141 insured patients in the surrounding community. For institutions with SRFCs, we hope to provide
142 a framework to evaluate their own cost-saving analysis by using a nationally validated system of
143 Medicare reimbursement rates. For institutions without SRFCs in place, our analysis serves as a
144 1-year metric of the economical and health impact that can be used for to advocate for funding
145 and partnerships in their own communities. This would contribute to creating a more equitable
146 healthcare system while optimizing resource allocation and maximizing community impact in a
147 financially sustainable practice.

148 It is important to note that this analysis is impacted by limitations related to the
149 calculation of additional services provided by our SRFC. The calculated financial impact is
150 likely an underestimation of the true financial impact as assigning financial value of services

151 such as social work, care coordination, and educational activities may vary. In addition, our
152 SRFC provides educational opportunities to trainees including but not limited to undergraduate
153 students, medical students, pharmacy students, and optometry students. The benefit-cost ratio of
154 educational value compared to operational costs has been reported as high as 8.13.¹² It is also
155 difficult to estimate how much additional healthcare spending was avoided due to reductions in
156 emergency department use, as our SRFC provides both preventive care and a place for patients to
157 present for an acute complaint. Furthermore, dermatologic procedures at other SRFCs have
158 previously been shown to provide over \$4,000 in free services annually¹³, and we believe that
159 varying procedural documentation practices may have undervalued our dermatology clinic's
160 financial impact. Furthermore, other SRFCs aiming to replicate this analysis may notice
161 discrepancies due inflationary or regional cost variations further limiting the comparability.

162

163 **Tables**

164 Table 1: Operating Expenditures and Value of Services

Operating Expenditure			Value of Free Services		
Item	Cost	Percentage	Item	Cost	Percentage
Medications	\$21,217	35.55%	Laboratory Tests	\$ 92,848	42.74%
Security Services	\$16,086	26.95%	Medications	\$ 25,205	11.60%
Laboratory Test Fees	\$14,735	24.69%	Primary Care Appointments		
Clinic Supplies	\$2,363	3.96%	<i>New Patient Visit</i>	\$ 33,538	15.44%
Medical Supplies	\$3,317	5.56%	<i>Return Visit</i>	\$ 49,713	22.88%
Patient Transport	\$1,470	2.46%	Psychiatry Appointments		
Interpreter	\$495	0.83%	<i>New Patient Visit</i>	\$ 4,702	2.16%
			<i>Return Visit</i>	\$ 7,925	3.65%
			OB/GYN Appointments		
			<i>Return Visit</i>	\$ 2,249	1.04%
			Dermatology Appointments		
			<i>Return Visit</i>	\$ 1,081	0.50%
TOTAL	\$ 59,683	100%	TOTAL	\$217,053	100%

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166 Table 2: Local and National Reimbursement Rates for Clinic Visits

Visit Type	Primary Care New	Primary Care Return	Psychiatry New	Psychiatry Return	OB/GYN Return	Dermatology Return	Total
Quantity	214	414	30	66	12	9	744
CPT Code	99204	99214	99204	99214	99214 G0101 Q0091	99214	
Local Reimbursement Rate	\$156.72	\$120	\$157	\$120	\$187	\$120	
Total Local Reimbursement ¹	\$33,538	\$49,713	\$ 4,702	\$ 7,925	\$ 2,249	\$ 1,081	\$99,208
National Reimbursement Rate	\$167	\$128.43	\$167	\$128	\$208	\$128	
Total National Reimbursement ¹	\$35,823	\$53,170	\$ 5,022	\$ 8,476	\$ 2,498	\$ 1,156	\$ 106,145

167 ¹Local Medicare 2023 reimbursement rate calculated using locality code 10112

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169 Table 3: Laboratory Test Rates

Laboratory Test	Qty	Subsidized Self-Pay Rate	Total Subsidized Self-Pay Rate	Non-Subsidized Outpatient Rate	Total Non-Subsidized Outpatient Rate
AMA/HCFA Panel					
<i>Basic Metabolic Panel</i>	74	\$45.50	\$3,367.00	\$130.00	\$9,620.00
<i>Comp. Metabolic Panel</i>	78	\$61.25	\$4,777.50	\$175.00	\$13,650.00
<i>Hepatic Function Panel</i>	9	\$31.15	\$280.35	\$89.00	\$801.00
<i>Lipid Panel</i>	95	\$25.20	\$2,394.00	\$72.00	\$6,840.00
<i>Renal Function Panel</i>	5	\$33.25	\$166.25	\$95.00	\$475.00
CHEMISTRY					
<i>B-Type Natriuretic Peptide</i>	5	\$60.90	\$304.50	\$174.00	\$870.00
<i>C-Reactive Protein</i>	4	\$21.00	\$84.00	\$7.35	\$29.40
<i>Cortisol Serum</i>	2	\$36.40	\$72.80	\$104.00	\$208.00
<i>Creatinine Clearance</i>	3	\$10.50	\$31.50	\$30.00	\$90.00
<i>HCG Qnt Serum</i>	2	\$41.65	\$83.30	\$119.00	\$238.00
<i>Hemoglobin A1C</i>	128	\$25.90	\$3,315.20	\$74.00	\$9,472.00
<i>Iron Serum</i>	8	\$46.20	\$369.60	\$132.00	\$1,056.00
<i>Iron Binding Capacity Total</i>	1	\$20.30	\$20.30	\$58.00	\$58.00
<i>Plasma Folate RBC</i>	5	\$23.45	\$117.25	\$67.00	\$335.00
<i>Vitamin B12</i>	13	\$31.15	\$404.95	\$89.00	\$1,157.00
<i>PSA Screening</i>	8	\$48.65	\$389.20	\$139.00	\$1,112.00
<i>Thyroxine Free Serum</i>	28	\$42.00	\$1,176.00	\$120.00	\$3,360.00
<i>TSH</i>	69	\$43.75	\$3,018.75	\$125.00	\$8,625.00
<i>Triiodothyronine Free</i>	22	\$37.10	\$816.20	\$106.00	\$2,332.00
<i>Magnesium</i>	4	\$26.95	\$107.80	\$77.00	\$308.00
<i>Uric Acid Serum (Blood)</i>	1	\$33.25	\$33.25	\$95.00	\$95.00
<i>Vitamin D 25-OH Level</i>	4	\$60.55	\$242.20	\$173.00	\$692.00
CHEMISTRY – URINES					
<i>Microalbumin Urine</i>	3	\$20.30	\$60.90	\$58.00	\$174.00
<i>Creatinine Urine</i>	3	\$21.35	\$64.05	\$61.00	\$183.00
<i>Protein Total Urine</i>	3	\$11.20	\$33.60	\$32.00	\$96.00
HEMATOLOGY					
<i>CBC w/o</i>	3	\$17.50	\$52.50	\$50.00	\$150.00
<i>CBC w/ Diff</i>	89	\$25.55	\$2,273.95	\$73.00	\$6,497.00
<i>Sedimentation Rate Auto</i>	8	\$24.15	\$193.20	\$69.00	\$552.00
<i>Urinalysis</i>	45	\$20.65	\$929.25	\$59.00	\$2,655.00
COAGULATION					
<i>Prothrombin Time</i>	4	\$51.80	\$207.20	\$148.00	\$592.00
<i>PTT</i>	2	\$36.75	\$73.50	\$105.00	\$210.00
<i>D-Dimer</i>	1	\$88.90	\$88.90	\$254.00	\$254.00
<i>Fibrinogen</i>	1	\$160.65	\$160.65	\$459.00	\$459.00
<i>Anti-Xa Heparin Monitoring</i>	1	\$51.80	\$51.80	\$148.00	\$148.00
<i>Lupus Anticoagulant</i>	1	\$20.65	\$20.65	\$59.00	\$59.00
IMMUNOLOGY					
<i>Chlamydia by LCR, Swab</i>	11	\$32.20	\$354.20	\$92.00	\$1,012.00
<i>GC Antigen by LCR, Swab</i>	11	\$32.20	\$354.20	\$92.00	\$1,012.00

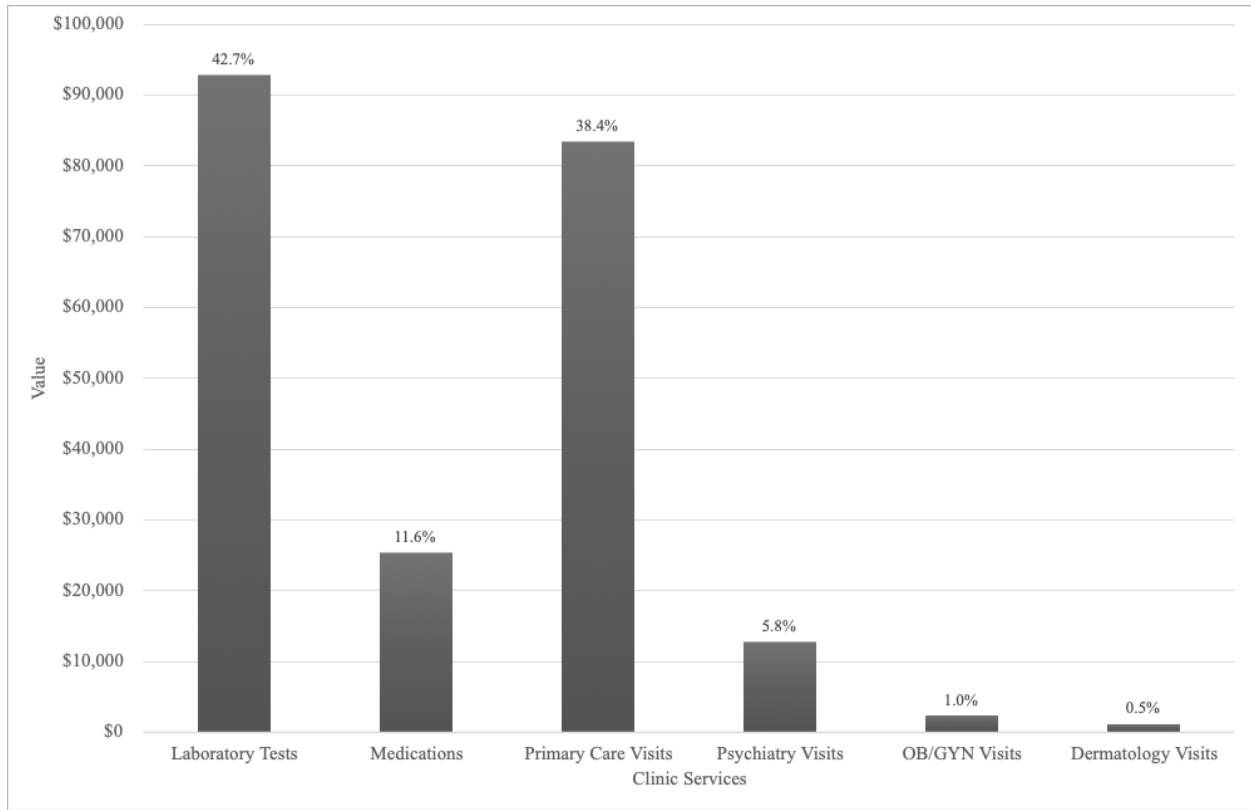
<i>Trichomonas AMP</i>	9	\$32.20	\$289.80	\$92.00	\$828.00
<i>Hepatitis C Antibody</i>	9	\$46.90	\$422.10	\$134.00	\$1,206.00
<i>HIV 1 HIV 2 AB SGL Result</i>	23	\$33.60	\$772.80	\$96.00	\$2,208.00
<i>HIV Viral Load</i>	15	\$114.80	\$1,722.00	\$328.00	\$4,920.00
<i>RPR Serum</i>	13	\$28.00	\$364.00	\$80.00	\$1,040.00
<i>Hepatitis B Surface Ab</i>	8	\$35.70	\$285.60	\$102.00	\$816.00
<i>Hepatitis B Surface Ag</i>	8	\$37.80	\$302.40	\$108.00	\$864.00
<i>Hepatitis B Surface Ag Neut</i>	8	\$26.25	\$210.00	\$75.00	\$600.00
MICROBIOLOGY					
<i>Colony Count Urine</i>	1	\$29.40	\$29.40	\$84.00	\$84.00
MISCELLANEOUS					
<i>Venipuncture</i>	267	\$6.30	\$1,682.10	\$18.00	\$4,806.00
TOTAL			\$32,570.65		\$92,848.40

170 ¹Provided labs with unknown price include ANA (), ANCA (1), Anti-Thyroglobulin (2), Fecal
171 Fat (1), FIT (8), FOBT (1), H. Pylori (1), IgA (1), Lipase (3), Lithium (1), Other Stool Studies
172 (4) SPEP (1), Stool O&P (2), T Spot (3), Transglutaminase (1), Urine Culture (5) Vitamin C (1)

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183 **Figures**

184 Figure 1: Distribution of SRFC's Free Services



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