

HCE Case Study: Emergency Room Visit Reduction

**Applied Business Analytics
BAN5650**

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HCE Case Overview

- **Introducing the Challenge:** Good Health Physicians' Struggles with Hospital Emergency Room Utilization
- **'Ready Access to Care'** as Key Factor Driving ER Visits at Good Health
- **GOAL :** Reduce Utilization to an Annual Rate of 450 Emergency Room Visits per 1,000 Members within Three Years
- 3 options proposed to prevent avoidable ER visits
 - **Option 1:** Hire one additional practitioner to accommodate patients who call the doctor's office with urgent needs, so that the practitioner can see them on the same day in the office.
 - **Option 2:** Build an additional urgent care center in Good Health's service area that patients can use instead.
 - **Option 3:** Add a new phone line for members to call, so that triage nurses on the other end of the line can guide the member to the appropriate site of care.





Option 1: Hiring one additional practitioner

- **Hiring one additional practitioner** would reduce the ER visits per 1000 to **472.5 visits** from 525 visits per 1000 in the **first year**.
- In the **second year**, the ER visits reduced to **448.9 visits** per 1000 and **448.9 visits** per 1000 in the **third year**
- This reduction in emergency visits resulted in a return on investment of 315.49%, 463.493% and 486.73% in each of the year, respectively.

Hiring one additional practitioner			
	Year 1	Year 2	Year 3
Membership			
Average annual membership	5000	5500	6000
Member Months	60000	66000	72000
Assumptions			
Baseline Utilization			
ER Visits per k	525	525	525
Raw ER visits	2625	2887.5	3150
Cost of Raw ER Visit	1200	1200	1200
Total Cost of Raw ER visit	\$3,150,000	\$3,465,000	\$3,780,000
Reduced utilization based on assumptions			
Reduction %	10%	5%	0%
Reduced ER Visits (Raw)	2362.5	2468.8125	2693.25
Reduced ER visit per k	472.5	448.875	448.875
Avoided reduced ER visits	262.5	418.6875	456.75
Total Cost_Reduced ER visits	\$2,835,000	\$2,962,575	\$3,231,900
Gross cost savings from reduced utilization	\$315,000	\$502,425	\$548,100
Added costs based on assumptions			
Offsetting Cost	\$75	\$75	\$75
Added costs based on offsetting cost	\$9,843.75	\$15,700.78	\$17,128.13
PCP Salary Cost	\$90,000	\$92,700	\$95,481
Net Savings: Gross savings – added costs	\$215,156.25	\$394,024.22	\$435,490.88
Return On Investments	315.49%	463.49%	486.73%

Option 2: Building one additional Urgent Care Center

- **Building one additional urgent care center** would reduce the emergency visits each year by 15% on the baseline emergency visits of 525 visits per 1000
- This option led to a reduction to approx. **446 emergency visits** from 525 visits per 1000 in the **first year**.
- The ER visits remains approx. **446 visits per 1000** the same for the next two years as Good Health plans an overall increase of 15% each year.
- This reduction in emergency visits resulted in a return on investment of 136.34%, 141.68% and 146.19% in each of the year, respectively.

Build an additional urgent care center			
	Year 1	Year 2	Year 3
Membership			
Average annual membership	5000	5500	6000
Member Months	60000	66000	72000
Assumptions			
Assumptions 40% accesibility	24,000	26,400	28,800
Baseline Utilization/100			
ER Visits per k	525	525	525
Raw ER visits	2625	2887.5	3150
Cost of Raw ER Visit	\$1,200	\$1,200	\$1,200
Raw ER visits_40% Population	1050	1155	1260
Total Cost of Raw ER visit 40% accesibility	\$ 1,260,000	\$ 1,386,000	\$ 1,512,000
Reduced utilization based on assumptions			
Reduction %	15%	15%	15%
Reduced ER Visits	446.25	446.25	446.25
Reduced ER visit based on 40% accesibility_RAW	892.5	981.75	1071
Total Cost_Reduced ER visits	\$ 1,071,000	\$ 1,178,100	\$ 1,285,200
Gross cost savings from reduced utilization	\$ 189,000	\$ 207,900	\$ 226,800
Added costs based on assumptions			
Operating cost increment	5%	5%	5%
Operating cost	\$115,000	\$120,750	\$126,788
Offsetting Cost	\$150.00	\$150.00	\$150.00
Urgent care added cost	\$23,625.00	\$25,987.50	\$28,350.00
Net Savings: Gross savings – added costs	\$50,375.00	\$61,162.50	\$71,662.50
Return On Investments	136.34%	141.68%	146.19%

Option 3: Adding a new phone line staffed by Triage nurses

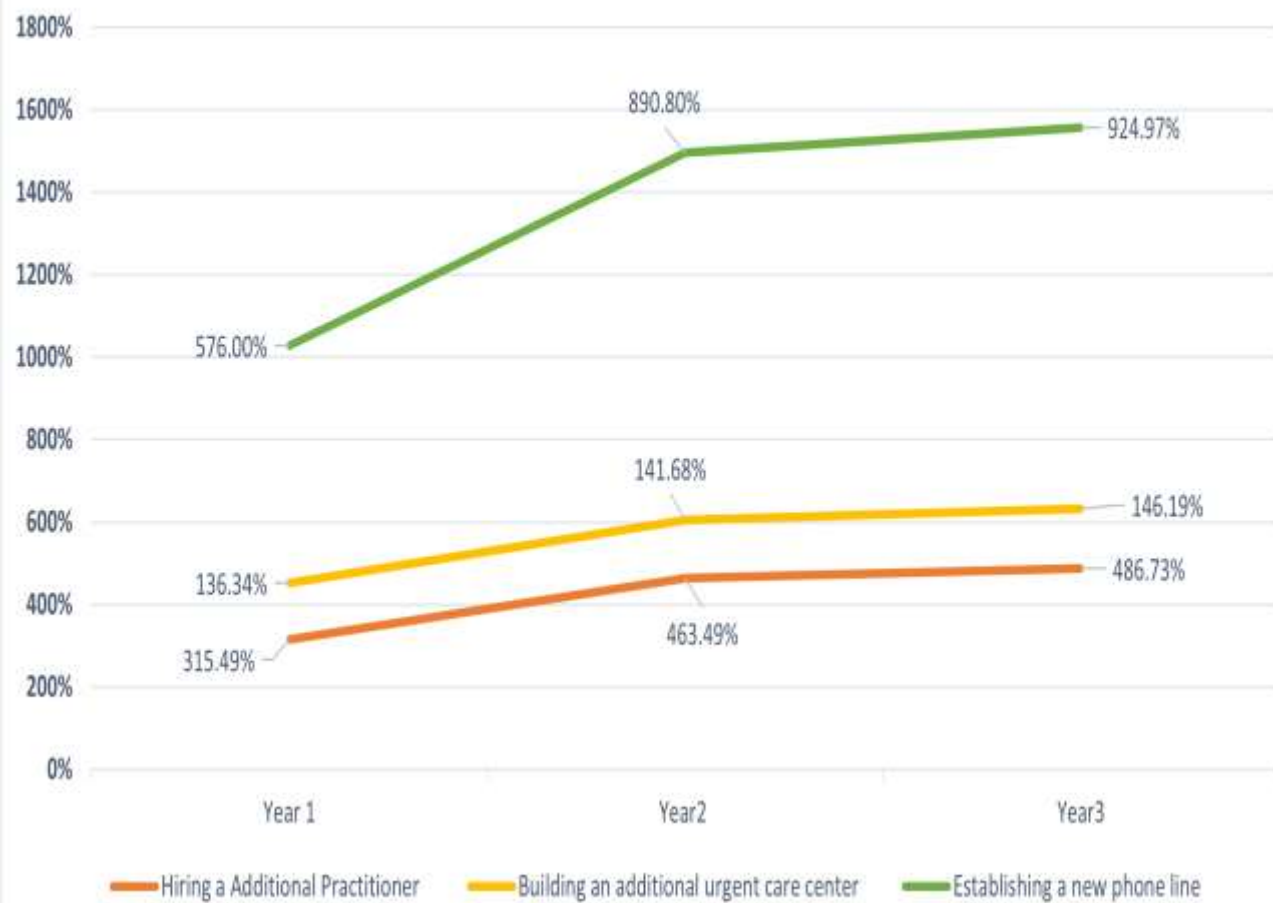
- **Adding a new phone line staffed by Triage nurses** would reduce the ER visits per 1000 to **472.5 visits** from 525 visits per 1000 in the **first year**.
- In the **second year**, the ER visits reduced to **448.9 visits** per 1000 and it remained the same at **448.9 visits** per 1000 in the third year
- This reduction in emergency visits resulted in a return on investment of **576%, 890.8%** and **924.97%** in each of the year, respectively

The new phone line staffed by triage nurses			
	Year 1	Year 2	Year 3
Membership			
Average annual membership	5000	5500	6000
Member Months	60000	66000	72000
Assumptions			
Baseline Utilization/100			
ER visits per k	525	525	525
Cost of Raw ER Visit	\$1,200.00	\$1,200.00	\$1,200.00
Raw ER visits	2625	2887.5	3150
Total Cost of Raw ER visit 40% accesibility	\$ 3,150,000	\$ 3,465,000	\$ 3,780,000
Reduced utilization based on assumptions			
Reduction %	10%	5%	0%
Reduced ER Visits per K	472.5	448.875	448.875
Reduced ER Visits RAW	2362.5	2468.8125	2693.25
Total Cost Reduced ER visits	\$2,835,000	\$2,962,575	\$3,231,900
Gross cost savings from reduced utilization	\$315,000.00	\$502,425.00	\$548,100.00
Added costs based on assumptions			
30% Avoided ER visit	78.75	125.60625	137.025
Cost for local urgent care	150	150	150
40% Avoided ER visit	105	167.475	182.7
Cost for Good Health's PC	75	75	75
Total Offsetting cost	\$19,687.50	\$31,401.56	\$34,256.25
Telephone Set Up Cost	\$10,000.00	\$0.00	\$0.00
Marketing Cost	\$5,000	\$5,000	\$5,000
Overhead Cost	\$20,000	\$20,000	\$20,000
Total added costs based on assumptions	\$54,687.50	\$56,401.56	\$59,256.25
Net Savings: Gross savings – added costs	\$260,312.50	\$446,023.44	\$488,843.75
Return On Investments	576.00%	890.80%	924.97%

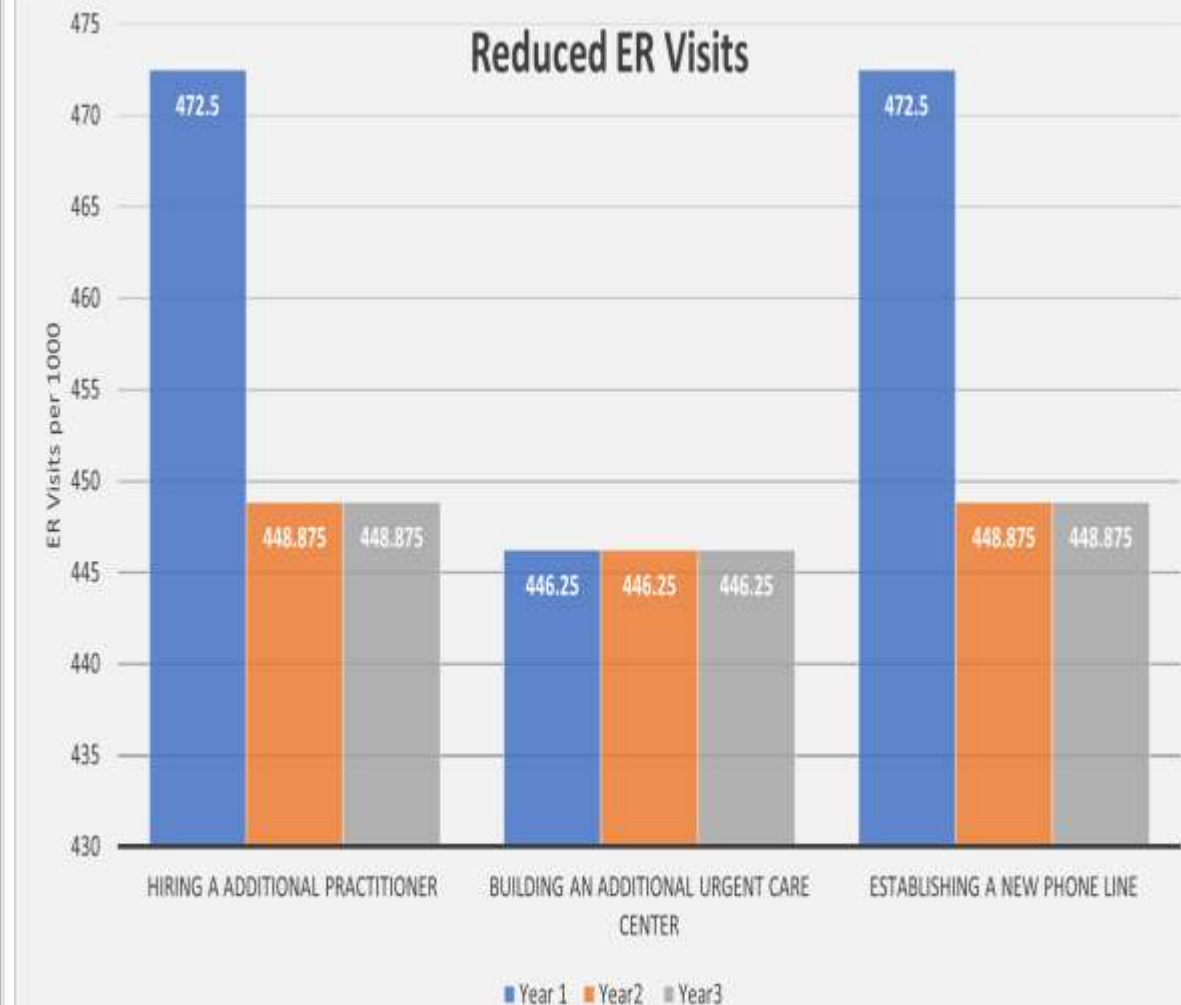


Analysis

Return On Investment For Each Option



Reduced ER Visits





Analysis

- **Adding a new phone line staffed by Triage nurses** would incur the highest return on investments overall for all the years.
- **Adding a new phone line staffed by Triage nurses** also ensures the reduction of ER visits per 1000 to less than 450 visits by the end of third year at approx. 448 visits per 1000.
- **Building one additional Urgent Care Center in** Good Health's service area reduces the ER visits to 446 visits per 100 which is even better than the target ER visits. But the option **does not yield** the best return on investment as compared to adding a new phone line.
- **Building one additional Urgent Care Center** yield less than half as compared to adding new phone line.




Recommendations

- Opting to **Add a new phone line** would be the best option for Good Health to lower utilization in terms of ER visits.
- Adopting to **add new phone lines** would benefit Good Health by:
 - promoting cost-effective healthcare utilization
 - improving the patient experience and,
 - contributing to the achievement of their goal to reduce ER visits
- Triage nurses play a crucial role in helping manage emergency situations through phone calls by providing timely and appropriate care guidance to callers
- They ensure that patients receive appropriate care and support, even when they are not physically present



Recommendations

- This option ensures that healthcare facilities are available for critical situations leading to improved quality of care for those with true emergencies
- It also provides a convenient way for patients to seek help in making informed decisions about their healthcare needs
- People who require immediate healthcare facilities will appreciate having access to expert guidance when they are unsure about where to go for care
- This service can enhance patient satisfaction by ensuring that they receive the right level of care at the right time, which is aligned with Good Health's mission



Thank
You!!!