

Impact of Community-Based Intervention on Hospital Utilization – the Maryland Health Enterprise Zone Initiative

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February 23, 2018

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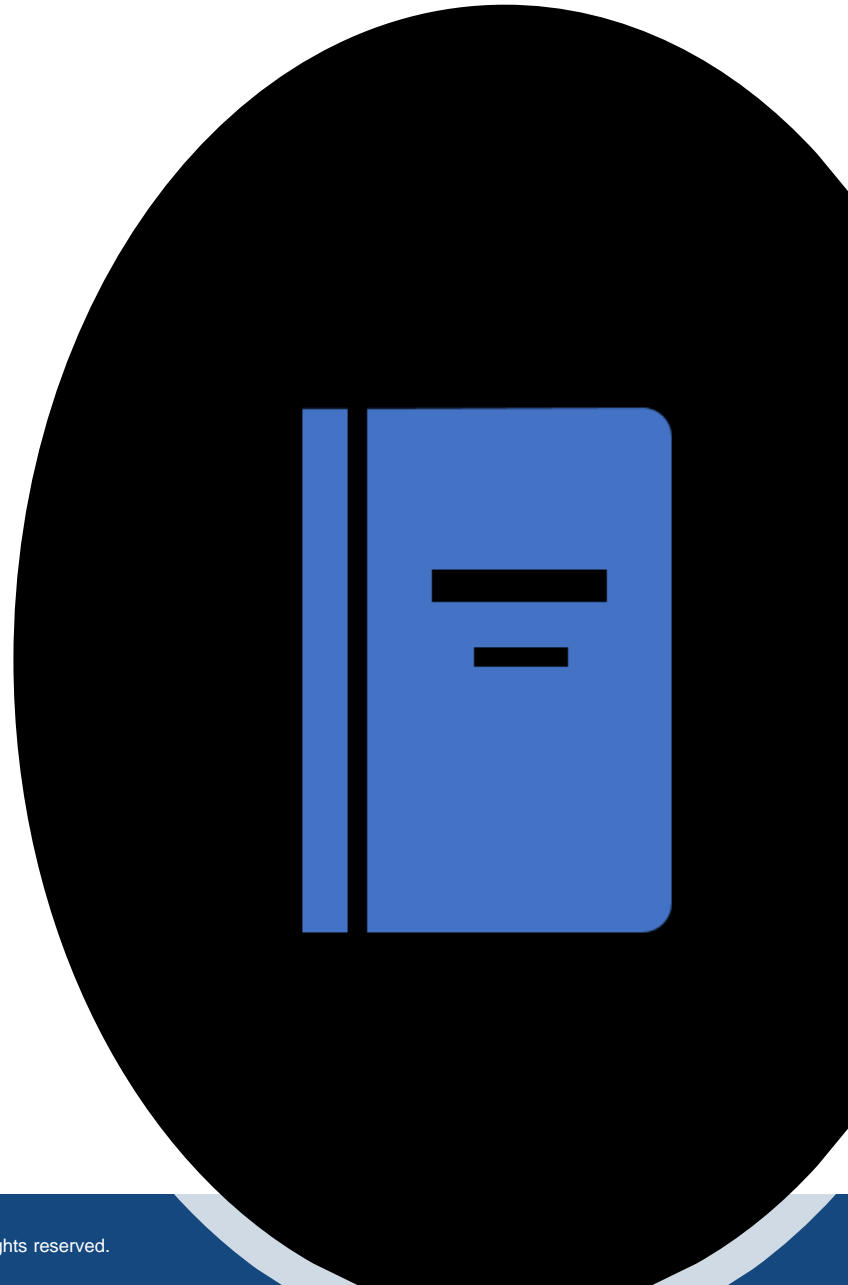
HEZ Evaluation Team

- Roland Thorpe, Jr. Associate Professor of Health Behavior and Society and Deputy Director, Hopkins Center for Health Disparities Solutions
- Yolanda Klemmer, MSN, MPH, DrPH Candidate in Health Behavior and Society
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Evaluation Objectives

- To examine whether the HEZ Initiative was associated with changes in hospital utilization that achieved these goals.
- To estimate the economic impact of the HEZ initiative on Maryland's Economy.
- To assess residents' and providers' satisfaction and experiences with the HEZ initiative.



Objective One

- To examine whether the HEZ Initiative was associated with changes in hospital utilization that achieved these goals



Data

Hospital inpatient stay and emergency visit data for 2009-2016 from the Maryland Health Services Cost Review Commission (HSCRC)

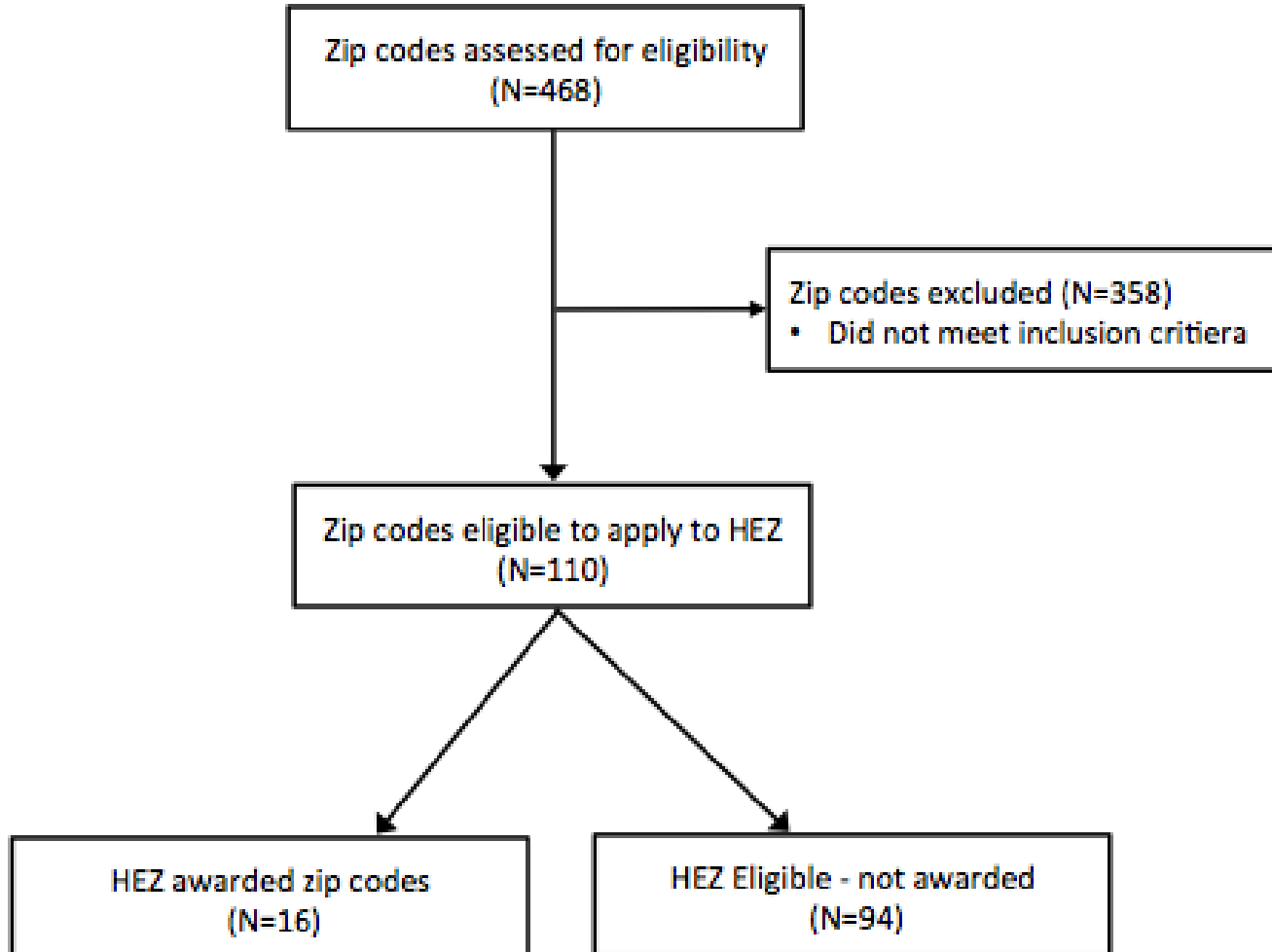


Hospital readmissions data for 2012-2015 from the Chesapeake Regional Information System for our Patients (CRISP)



Zip Code level socio-demographic data from the 2010 US Census and from the 2010-2014 U.S. Census American Community Survey (ACS).

Zip Code Level Analysis



HEZ Awarded Zip Codes compared to HEZ Eligible Zip Codes

- Smaller populations
- Higher percentage of black residents
- Higher poverty rates
- Higher unemployment rates
- Lower labor force participation rates
- Lower marriage rates
- Higher percentage of renter-occupied homes
- Higher percentage of vacant homes

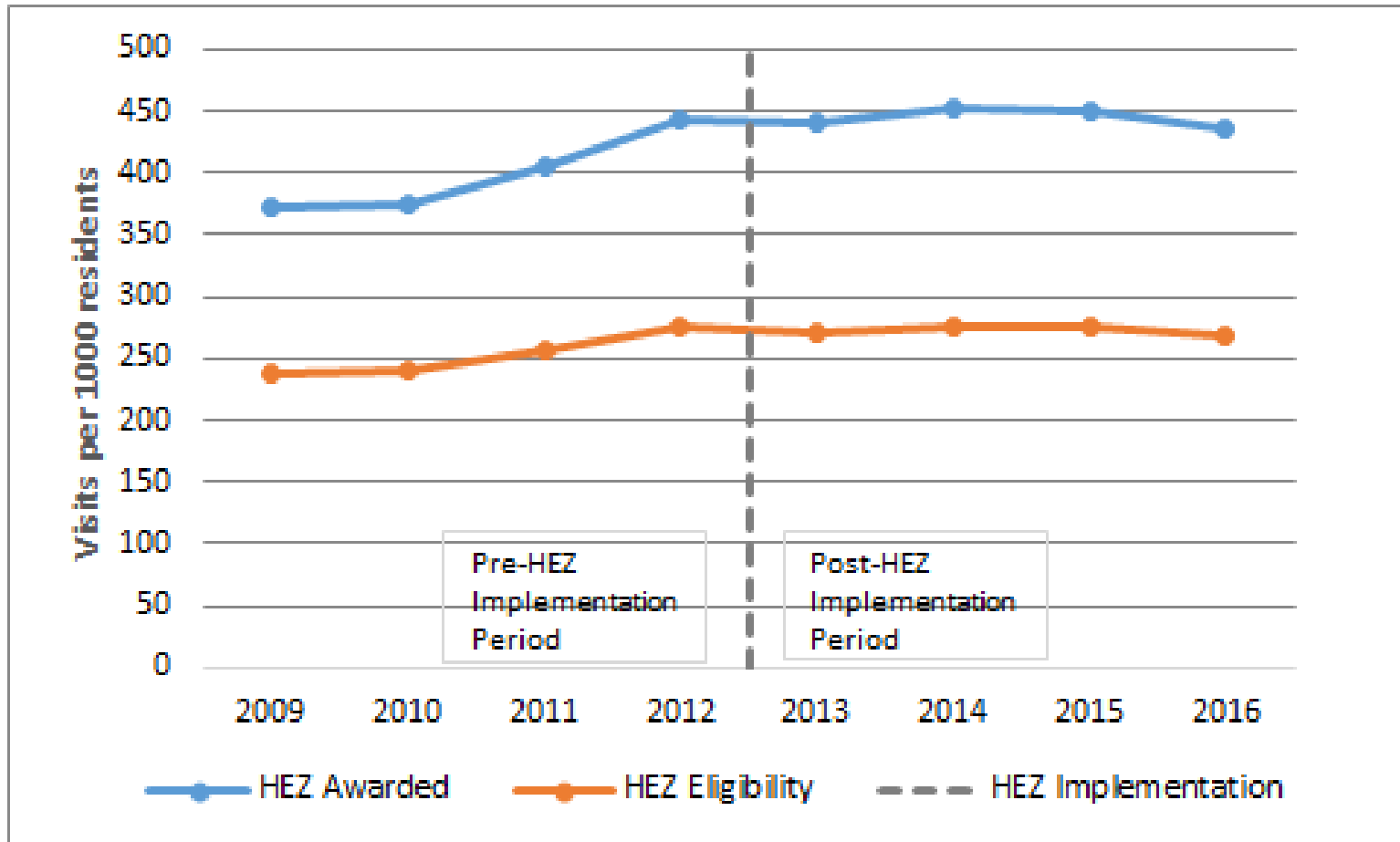


13 Outcome Measures

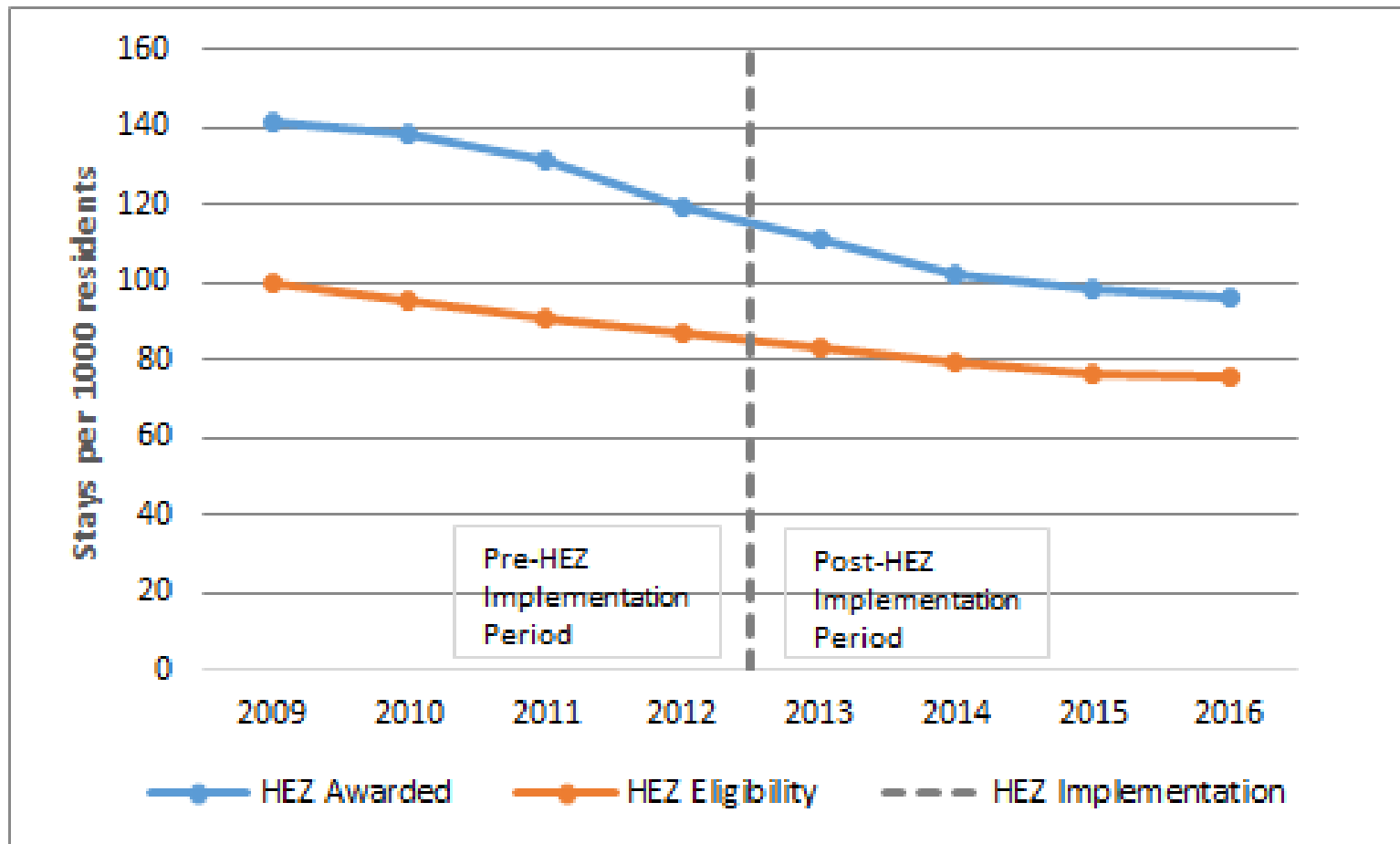
- ED visits and charges per 1,000 residents
- ED visits and charges with a primary diagnosis for a potentially preventable condition per 1,000 residents
- ED visits and charges with a primary diagnosis for an HEZ-related (or target) condition per 1,000 residents
- Inpatient discharges and charges per 1,000 residents
- Inpatient discharges and charges with a primary diagnosis for the potentially preventable conditions per 1,000 residents
- Inpatient discharges and charges with a primary diagnosis for an HEZ-related (or target) condition per 1,000 residents
- Hospital readmissions per 1,000 residents



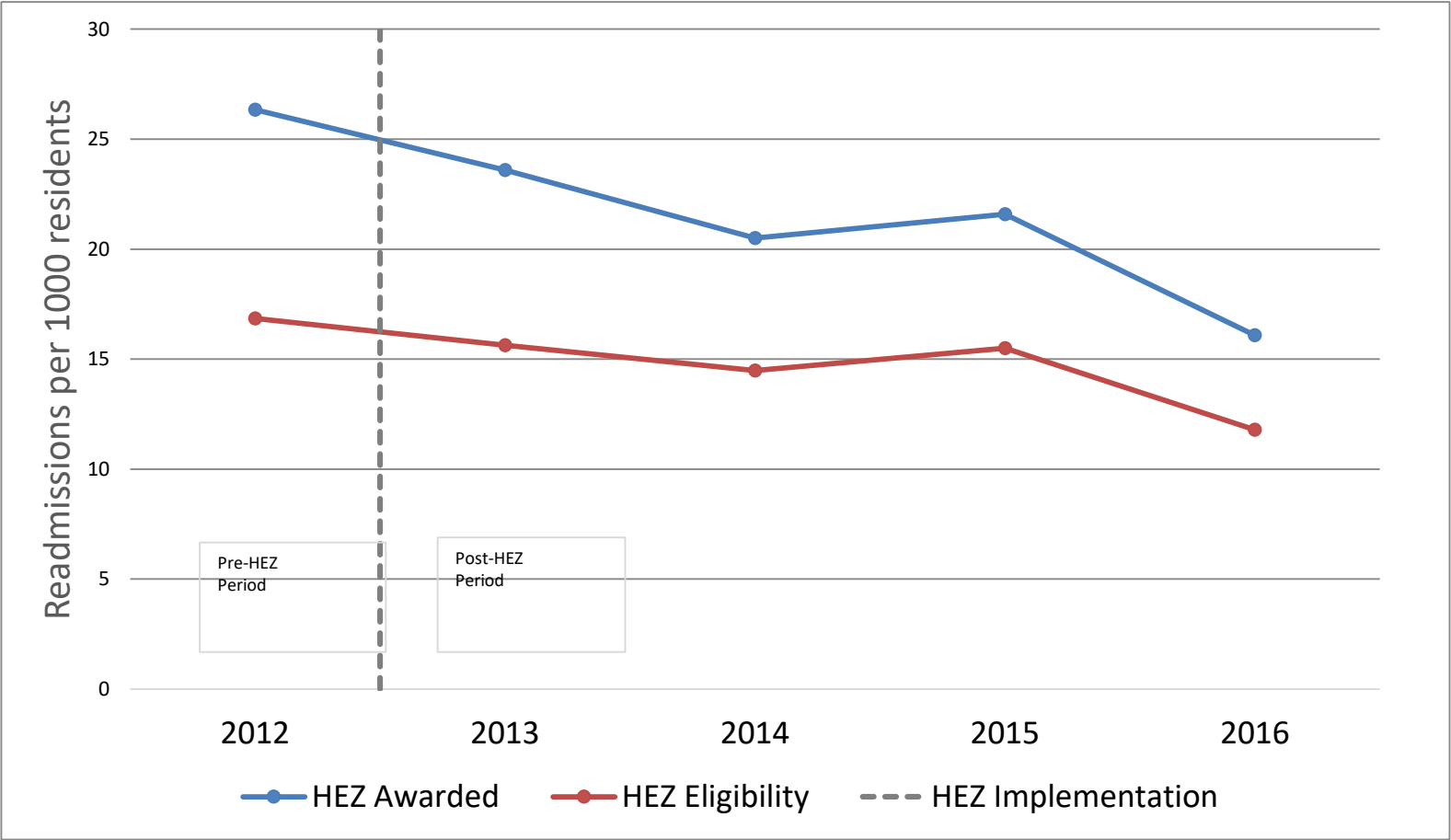
Emergency Room Visits (per 1000)



Hospital Discharges (per 1000)



Hospital Discharges for Readmissions (per 1000)



Statistical Analysis

Difference-in-Differences Analysis Using Fixed and Random Effects

$$\begin{aligned} \text{Outcome}_{it} = & \alpha_0 + \alpha_1 \text{HEZ} + \alpha_2 \text{YR09} \\ & + \alpha_2 \text{YR10} + \alpha_3 \text{YR11} \\ & + \beta_1 \text{YR12} + \beta_2 \text{HEZ} * \text{YR12} \\ & + \beta_3 \text{YR13} + \beta_4 \text{HEZ} * \text{YR13} \\ & + \beta_5 \text{YR14} + \beta_6 \text{HEZ} * \text{YR14} \\ & + \beta_7 \text{YR15} + \beta_8 \text{HEZ} * \text{YR15} \\ & + \beta_9 \text{YR16} + \beta_{10} \text{HEZ} * \text{YR16} + \mu_{it} \end{aligned}$$

Random effects model include age, gender, race and ethnicity, poverty, educational attainment, housing vacancy



Estimated Per Capita Difference in Emergency Department Use from 2012 to 2016 for HEZ Awarded Zip Codes compared to HEZ Eligible Zip Codes (per 1000 residents)

	Emergency Department Visits Per Capita	PQI Related ED Visits Per Capita	HEZ related condition ED visits Per Capita
2012	28.0 [7.4, 48.6]**	4.5 [0.9, 8.2]*	3.5 [-0.6, 7.5]
2013	32.3 [9.8, 54.9]**	6.1 [1.8, 10.3]**	4.2 [-0.7, 9.1]
2014	40.4 [11.1, 69.6]**	5.2 [0.0, 10.5]*	7.1 [0.4, 13.8]*
2015	37.5 [6.2, 68.8]*	5.9 [1.7, 10.1]**	6.1 [-0.3, 12.5]
2016	30.0 [7.0, 53.0]*	3.2 [-0.5, 6.8]	3.3 [-0.7, 7.3]



Estimated Per Capita Difference in Hospital Inpatient Use (2012 to 2016) and for Readmissions (2013 to 2016) for HEZ Awarded Zip Codes compared to HEZ Eligible Zip Codes (per 1000 residents)

	Inpatient Discharges Per Capita	PQI Discharges Per Capita	HEZ related condition discharges Per Capita	Readmissions Per Capita
2012	-8.8 [-17.6, -0.1]*	-2.5 [-4.3, -0.7]**	-2.3 [-4.5, -0.1]*	
2013	-13.9 [-24.4, -3.4]*	-3.5 [-2.7, -1.6]***	-1.8 [-3.7, 0.1]	-1.5 [-3.1, 0.0]
2014	-19.5 [-33.8, -5.1]**	-4.6 [-7.9, -1.2]**	-3.8 [-7.0, -0.5]*	-3.5 [-6.3, 0.1]*
2015	-19.8 [-38.5, -1.0]*	-4.2 [-8.2, -0.2]*	-4.4 [-9.1, 0.4]	-3.4 [-6.6, -0.3]*
2016	-21.4 [-41.4, -1.4]*	-5.4 [-9.6, 1.2]*	-6.24 [-12.2, 0.3]*	-5.2 [-9.7, -0.7]*



Estimated Change in Hospital Charges from 2013 to 2016 for HEZ Awarded, and Individual HEZ, (in millions of dollars)

Outcome	HEZ Awarded	Annapolis	Caroline-Dorchester	PG County	St. Mary's	West Baltimore
ED Visit	\$64.25	\$8.23	\$7.99	\$8.82	\$5.55	\$32.15
Inpatient Discharges	-\$189.79	-\$24.30	-\$23.61	-\$26.06	-\$20.85	-\$94.97
Cost of HEZ program	\$16.39	\$0.80	\$3.75	\$3.38	\$4.23	\$4.50
Net Savings	-\$109.15	-\$15.27	-\$11.87	-\$13.86	-\$11.07	-\$58.32





How can \$16M yield
\$109M?

In Camden, New Jersey, one per cent of patients account for a third of the city's medical costs.

- The Hot Spotters: Can we lower medical costs by giving the neediest patients better care? By Atul Gawande in the Medical Report of the New Yorker January 24, 2011 Issue access at <https://www.newyorker.com/magazine/2011/01/24/the-hot-spotters>
- The Camden Coalition of HealthCare Providers. <https://hotspotting.camdenhealth.org/getting-started-with-data/>



Conclusions

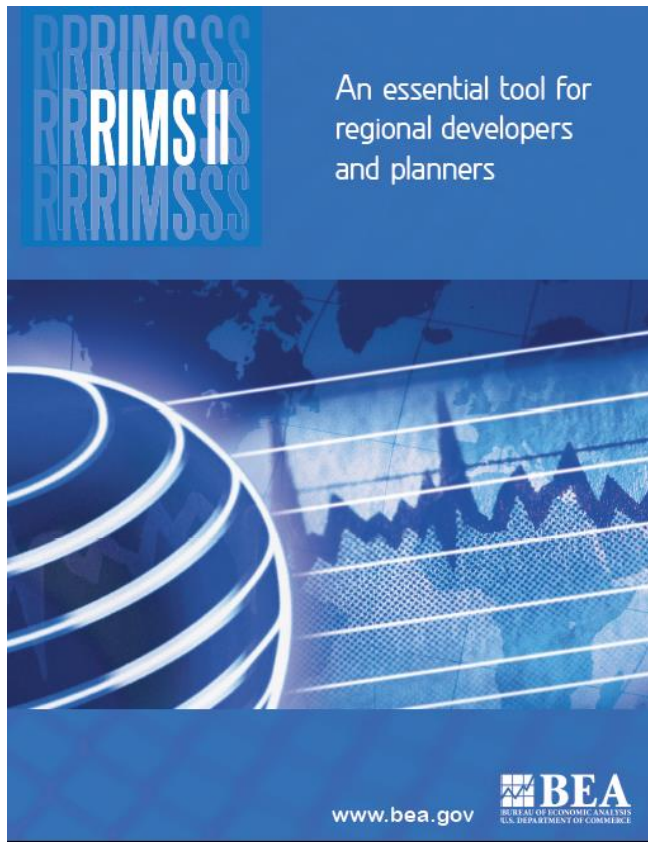
- In this quasi-experimental study, we found that HEZ Initiative is associated with a reduction of 20,955 inpatient stays during 2013 to 2016. However, ED visits increased by 39,427. We estimated the net savings to the health care system was \$109.15 million.
- Initiatives like HEZ are viable ways to reduce inpatient admissions. These initiatives may more than pay for themselves.



Objective Two

- To estimated the economic impact of the HEZ initiative on Maryland's Economy.





***Cletus C. Coughlin and
Thomas B. Mandelbaum***

Cletus C. Coughlin is a research officer and Thomas B. Mandelbaum is an economist at the Federal Reserve Bank of St. Louis. Thomas A. Pollmann provided research assistance.

A Consumer's Guide to Regional Economic Multipliers

BEA Regional Input-Output Model System

Impact on Maryland Economy

HEZ	Amount Invested by the State	Actual HEZ Jobs (FTE)	Estimated Type II Benefit	Estimated Jobs Created –Type II (FTE)
Annapolis	\$800,000	4.00	\$1,634,960	6.8
Caroline/ Dorchester	\$3,475,234	29.23	\$5,244,500	43.5
Prince George's County	\$3,379,117	21.86	\$7,822,542	50.2
St. Mary's	\$4,232,202	21.20	\$4,324,774	20.2
West Baltimore	\$4,504,510	22.80	\$8,589,686	62.5
Total	\$16,391,063	99.09	\$27,616,462	183.2



Objective Three

- To assess residents' and providers' satisfaction and experiences with the HEZ initiative.

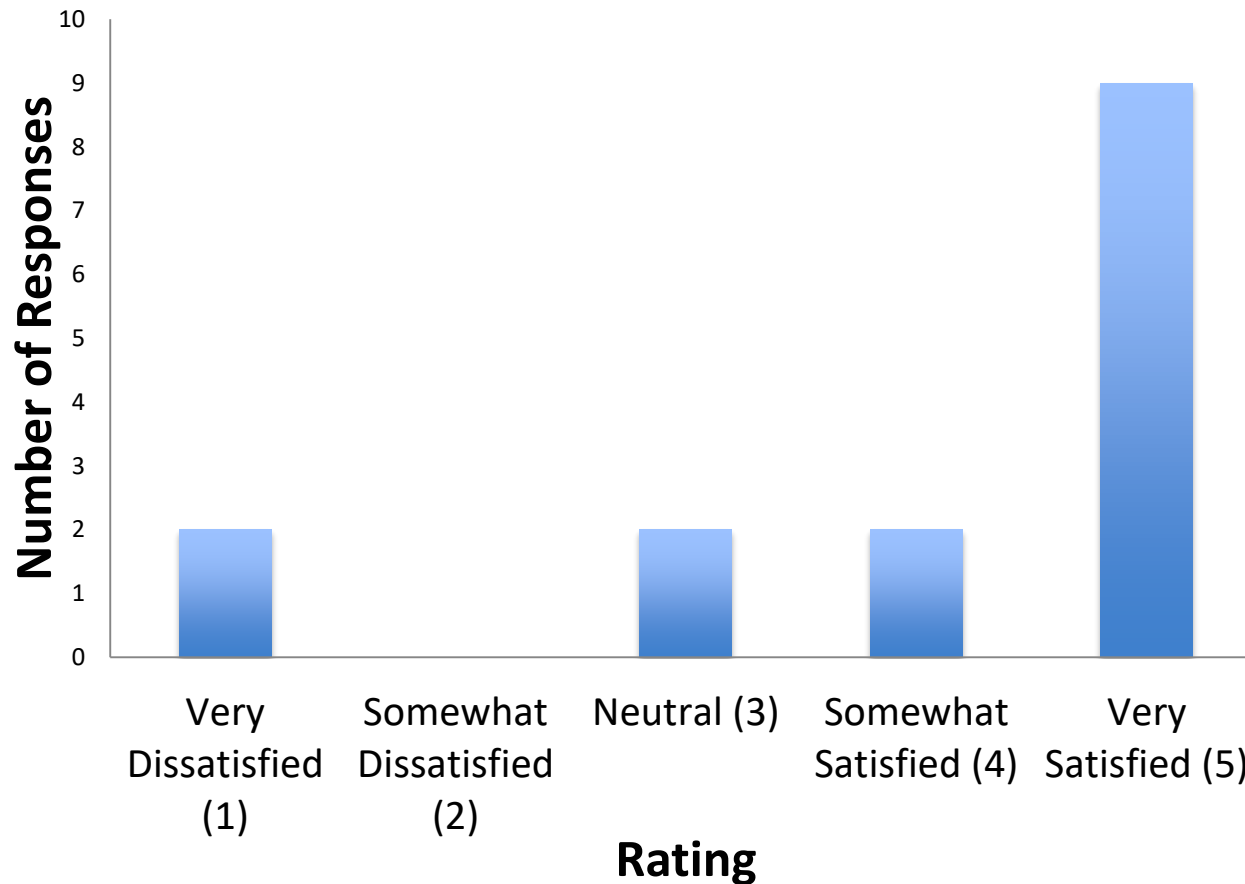


Experiences of Residents

- Findings from Resident Interviews
 - Majority of residents were either very satisfied or satisfied with the services they received.
 - Residents believed the HEZ objectives were meeting community needs.
 - Residents felt the biggest impact of the HEZ initiative was to improve access to health services and chronic condition management.
 - Residents felt the HEZ help them improve their health behaviors



HEZ Residents Ratings for Their Satisfaction With the Services They Are Receiving from the HEZ



HEZ Residents Ratings for the Quality of Care that They Currently Receive From the HEZ



Experiences of Residents

- Findings from Focus Groups
 - Residents were pleased with the services their HEZ provided.
 - Residents would like to see the HEZ initiative expanded to provide more clinical services, mental health, vision and housing services.
 - Residents were very satisfied with the performance of the HEZ staff.
 - Residents felt that the HEZ initiative should continue and suggested that government, health insurance plans, local businesses and HEZ participants should partner to fund the program.



The HEZ encouraged healthy behaviors

“One of the things that I found very encouraging was when I first got involved with the HEZ program, when they went out in the community to these various community health fairs or community gatherings where they brought all of these different health organizations together and it gave me an opportunity to see what was in my community. So just by going and them having this, really helped us, helped me, learn more about my community. I didn't know a lot of those organizations were even in the community. So again, it's about educating and helping people to understand what's right in their own communities because a lot of people don't know.”



The HEZ improved access to care

- *“A lot of people didn't have places to go, couldn't get to doctors. I know a lot of people have been getting a lot of better care.” “Anyone who needs a clinic can come here. Even if they are uninsured, they are accepted.” “I think it made a big impact... For everybody. Blacks, Whites, Hispanics and everybody that come here.”*
- *“Transportation, which means a lot to me, because I gave my license up, because I can't drive, and to get to my doctors and get back from seeing them, they helped.”*



The HEZ improved self care

- *"I've been an active diabetic for seven, eight years ... They gave pill bottles so I can you know, set up my pills for over a week at a time so ... It's the most wonderful thing anybody ever invented because, we get our age, we get forgetful. Now with the pill bottle thing I can see when I miss a dose. That's one of the most wonderful things, and everything."*

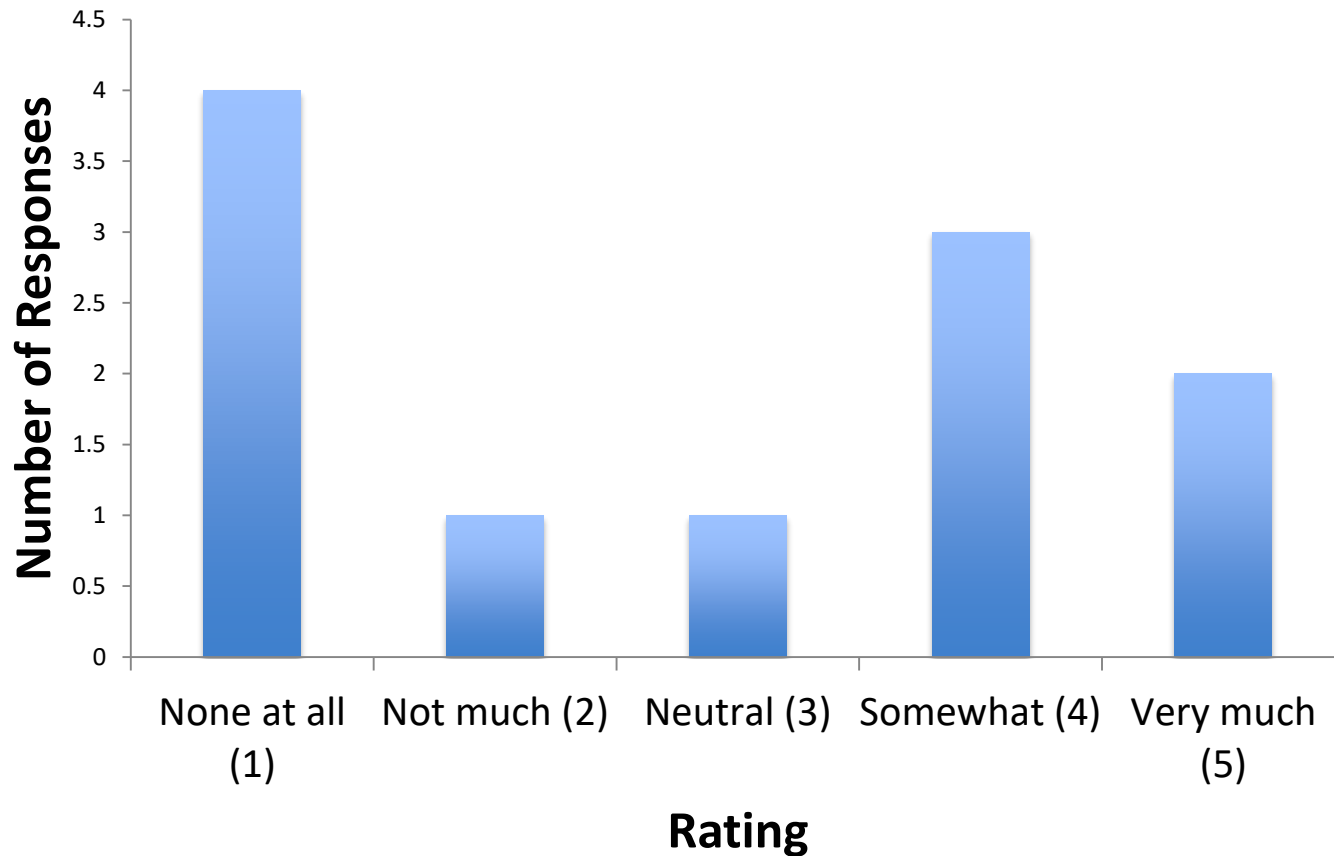


Experiences of HEZ Providers

- We conducted structured telephone interviews with 21 providers (across all 5 HEZs?) between April 2016 and January 2017.
- Interviewees were physicians, nurse practitioners, pharmacists, and care coordinators.
- They provided patient care, prevention services, pharmacy support, health education and service administration.
- Providers were questioned about
 - their understanding of the goals and objectives of the HEZ,
 - their experience with the HEZ initiative while participating, and
 - their perceptions of the initiative.



HEZ Provider Ratings for the Impact of Financial Incentives on Their Decision to Participate in HEZ Initiative



Provider Participation

- Some HEZ providers voiced the feeling of not being supported in their role while others felt that they were well-supported and that they were able to realize the true meaning of providing medical care, which is distinctly different from customary medical care.
- Many providers expressed that it would be difficult to continue participating in the HEZ initiative without compensation. Most providers indicated that financial incentive did influence their decision to participate in the HEZ initiative.
- About half of the providers agreed that financial incentives have impacted their initial decision to participate in the program and that tax credits are perceived as the most effective



Providers Perceptions

- Some providers noted the important role of neighborhood advocates in helping to make sure that patients kept their doctor's appointments and were able to receive the different services that providers offered.
- All providers felt that the HEZ initiative had been successful not just in improving access to care, but also helped patients with chronic condition management. They highlighted the provision of preventive services and health education that enabled patients who are often marginalized to improve their health-seeking behaviors and be more aware of their health-related issues.



**The HEZ
empowered
providers to
serve
underserved
patients**

“Through HEZ I have been able to continue my passion to provide care for underserved and really there is nobody more underserved than this group of folks we provide care for (through the HEZ).”



**The HEZ
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“We started this practice in 2013 this area where there was no primary care at all available. Patients were basically utilizing the emergency room for all services, and due to the lack of primary care, there was things like diabetes and hypertension, cardiovascular disease, psychiatric problems...Patients were only seeking help when they were sick...and preventive care was nonexistent... We are two primary care physicians here and they recognize us as their doctor, and I think that is a big improvement. Our ED utilization is lesser since we started here because there is a very very very large COPD population here, who only went to the emergency room whenever they couldn't breathe.”



Sustainability

- Hospital systems are seeking funds to support activities through insurance revenues, HSCRC and private foundation grants.
- The Health Department System are apply for funds through partner organizations which have 501c(3) status.



Questions?

Thank You!



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