

Locational Study of ATMs in
the U.S. by Ownership

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ATM
Analysis
Based on
National
Data

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The Locational Study of ATMs in the U.S. by Ownership

Executive Summary:

Analysis based on national data shows that, compared to ATMs owned by banks or financial institutions, the independent ATMs tend to be located in areas with less population, lower population density, lower median and average income (household and disposable), lower labor force participation rate, less college-educated population, higher unemployment rate, and lower home values.

1. INTRODUCTION

The United States is one of the world's largest Automatic Teller Machine (ATM) markets, with 17 ATM networks operating in the nation. The U.S. enjoys the highest per capita ATM deployment of any country in the world. The ownership structure of ATMs has evolved over time, with a growing share of independent ATM networks. Today few bank-owned networks remain, while non-bank owned networks range from those provided by payment processors such as First Data and Fidelity National Information Services (FIS), to card programs and other independent ATM networks. Many of the non-bank ATM deployers began positioning themselves in the U.S. in the 1990s, following Visa and MasterCard's relaxation of rules on directly imposing end user surcharges upon cardholder customers and non-customers for using ATMs. Currently, there are approximately 470,135 ATMs in the U.S., with 191,741 bank-owned and 278,394 independent. The top 10 banks in the U.S. in 2016 with the largest ATM fleets are as follows.¹

BANK	Number of ATMs	Percentage
JPMorgan Chase & Co.	18,623	17.50%
Bank of America Corp.	16,062	15.10%
Wells Fargo & Co.	12,800	12.10%
PNC Bank	8,996	8.50%
U.S. Bancorp	5,001	4.70%
BMO Harris Bank	4,775	4.50%
BB&T	3,361	3.20%
Citizens Bank	3,200	3%
Citigroup Inc.	3,200	3%
Fifth Third Bank	2,650	2.50%

The largest non-bank ATM provider in the U.S. is Cardtronics, with in excess of 100,000 ATMs deployed in America, and the second largest U.S. independent ATM provider is Payment Alliance International, with over 70,000 ATMs in service. These companies own/operate many of their own ATMs and also support numerous other ATM providers. Beyond these two large independent providers, there are thousands of other independent ATM providers across the U.S., some operating as ISOs (Independent Service Organizations) and some independent ATM deployers who operate as affiliates of those ISOs. These companies range from very large ATM ISOs with thousands of ATMs under their aegis, to small affiliates with only one ATM owned/operated.

More than two thirds of ATMs in the U.S. are deployed in various retail locations. This is primarily due to the high proportion of terminals in the market that have been deployed by non-banks. Convenience stores and drugstores are the most popular locations for deployers, though a

¹ Information is collected from <https://www.bankrate.com/>.

wide range of retail, leisure, travel and workplace locations are also common choices by both banks and independent ATM owners.

The aim of this project is to carry out a locational study of ATMs by ownership type in the U.S. and determine whether independent ATMs tend to be located in areas that significantly differ from bank-owned ATMs, in terms of demographics and socioeconomic status of their locations at the census block level. By utilizing statistical and GIS analysis, this study has the following findings:

Based on the national data, the locations of independent ATMs, compared to those of bank-owned ATMs, tend to have less population, lower population density, lower labor force participation rate, less college-educated population, higher unemployment rate, lower median and average income (household and disposable), and lower home values. All mean differences are statistically significant at 1% level.

The report is structured as follows: Section 2 describes data and methodology, Section 3 reports the results, while the conclusion appears in Section 4.

2. DATA AND METHODOLOGY

The location data used in our study are retrieved from ESRI's ArcGIS Business Analyst (2016) for the U.S.. According to ESRI, the original sources of the data are the following:

- Business (e.g. ATMs) locations – *Infogroup*
- Demographics and socioeconomic status – U.S. Census Bureau and *American Community Survey*

To determine the ownership of over 470,000 ATM machines in the U.S., the research team conducted a detailed review of every reported name and location of businesses (ATMs) to determine whether each ATM is owned by a bank or a financial institution (bank-owned ATM). In the case an ATM is not owned by a bank or a financial institution, it is considered independently owned (independent ATM). Among the 470,135 ATMs across the nation, we identified 278,394 independent ATMs, accounting for 59.2 percent of all ATMs.

The main objective of the study is to determine whether independent ATMs tend to be located in areas that significantly differ from bank-owned ATMs in terms of demographics and socioeconomic status of their locations at the census block level. The demographic and socioeconomic characteristics we selected include:

- a. total population
- b. population density

- c. labor force participation rate²
- d. median age
- e. unemployment rate
- f. number of people with bachelor's degrees
- g. proportion of population with bachelor's degrees
- h. median and average household income
- i. median and average disposable income
- j. median and average home values.

We compare bank-owned and independent ATM locations based upon the differences in the values of socioeconomic status (“Independent” – “bank-owned”). As uncontrolled state-level differences can distort or sometimes reverse the estimates, we have implemented a control for baseline differences in the socioeconomic status between states by using multiple regression analysis when analyzing the national data.

3. RESULTS

First, we compare the means of the socioeconomic characteristic between locations of bank-owned ATM and independent ATMs locations in the US. As shown in Table 1 column (1)-(4), the locations of independent ATMs, compared to those of bank-owned ATMs, tend to have less population, lower population density, lower labor force participation rate, less college-educated population, higher unemployment rate, lower median and average income (household and disposable), and lower home values. All mean differences (column (5)), are statistically significant at the 1% level (column (6)) based on t-tests that account for sampling error in bivariate analysis.

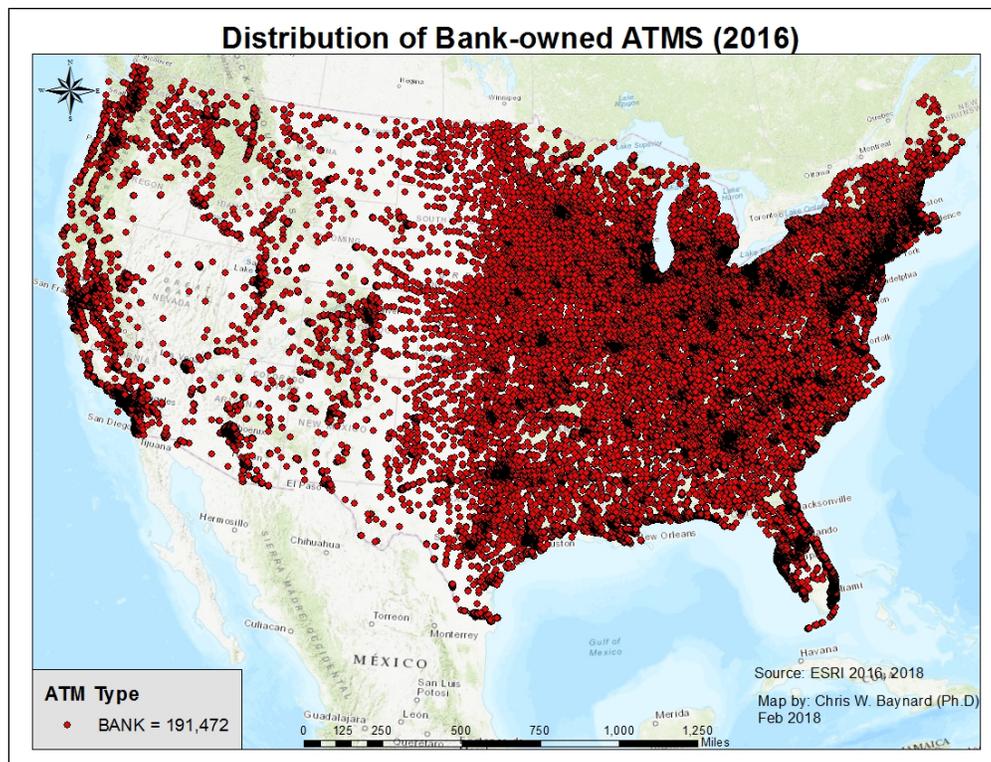
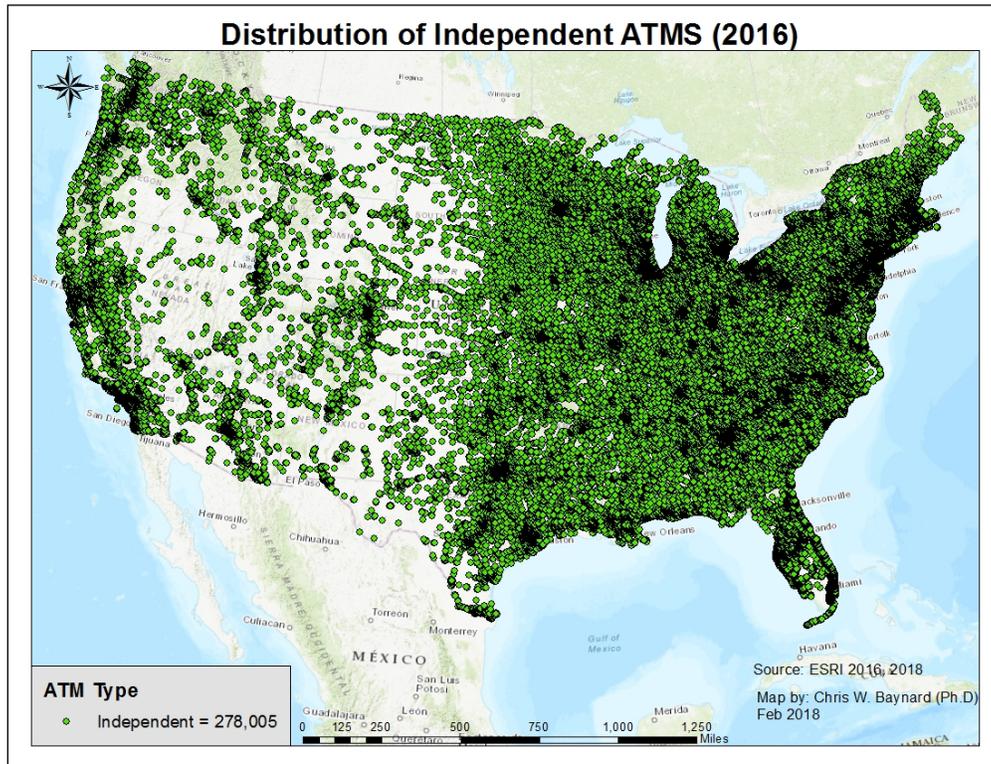
² Researcher self-created variable. It is calculated as the sum of employment and unemployment populations divided by total population.

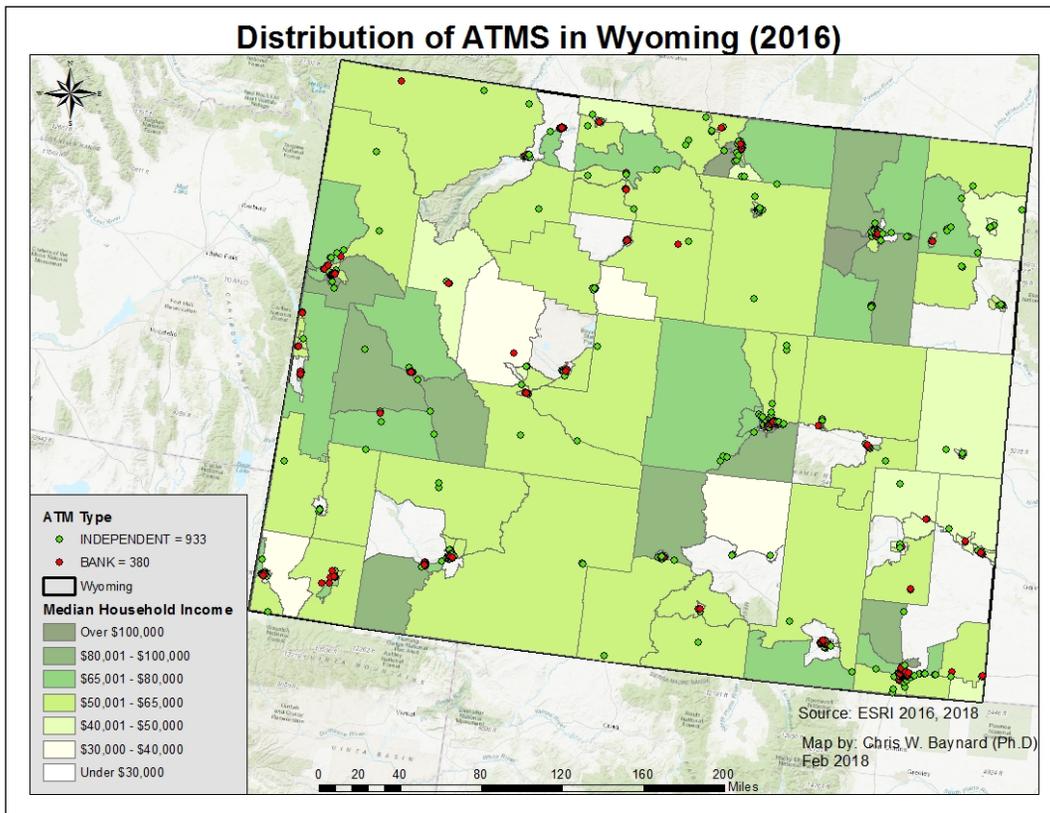
Table 1: Comparison of Socioeconomic Status and Demographics between Locations of Bank-Owned ATMs and Independent ATMs

Variable	<u>Bank-Owned</u>		<u>Independent</u>		<u>Independent - Bank-Owned (w/o control of state- level differences)</u>		<u>Independent - Bank-Owned (w/ control of state- level differences)</u>	
	(1) Mean	(2) Std. Dev.	(3) Mean	(4) Std. Dev.	(5) Difference	(6) P-value	(7) Difference	(8) P-value*
Total Population	1,755.58	1,432.10	1,674.36	1,275.05	-81.22	< 0.01	-61.25	< 0.01
Population Density	4,980.15	11,824.92	4,426.26	11,631.53	-553.89	< 0.01	-328.60	< 0.01
LF Participation Rate	0.51	0.12	0.50	0.11	-0.01	< 0.01	-0.01	< 0.01
Median Age	40.00	8.63	39.52	8.30	-0.48	< 0.01	-0.51	< 0.01
Unemployment Rate	5.98	5.32	6.57	5.80	0.59	< 0.01	0.65	< 0.01
Bachelor's Degree	264.87	324.84	209.63	268.88	-55.23	< 0.01	-50.55	< 0.01
Density of Bachelor's Degree	0.14	0.09	0.12	0.08	-0.03	< 0.01	-0.02	< 0.01
Median Household Income	57,497.25	30,754.36	51,353.56	25,925.02	-6,143.69	< 0.01	-5,093.60	< 0.01
Average Household Income	75,641.47	40,727.35	66,853.44	33,352.96	-8,788.03	< 0.01	-7,451.80	< 0.01
Median Disposable Income	45,683.84	21,305.18	41,378.74	18,123.01	-4,305.10	< 0.01	-3,553.40	< 0.01
Average Disposable Income	56,941.66	25,276.42	51,428.38	21,291.45	-5,513.28	< 0.01	-4,627.50	< 0.01
Median Home Value	250,485.90	201,280.90	206,912.60	169,875.50	-43,573.30	< 0.01	-32,679.20	< 0.01
Average Home Value	279,421.90	211,748.80	235,254.40	178,975.40	-44,167.50	< 0.01	-33,060.30	< 0.01
Number of Observations	191,741		278,394					

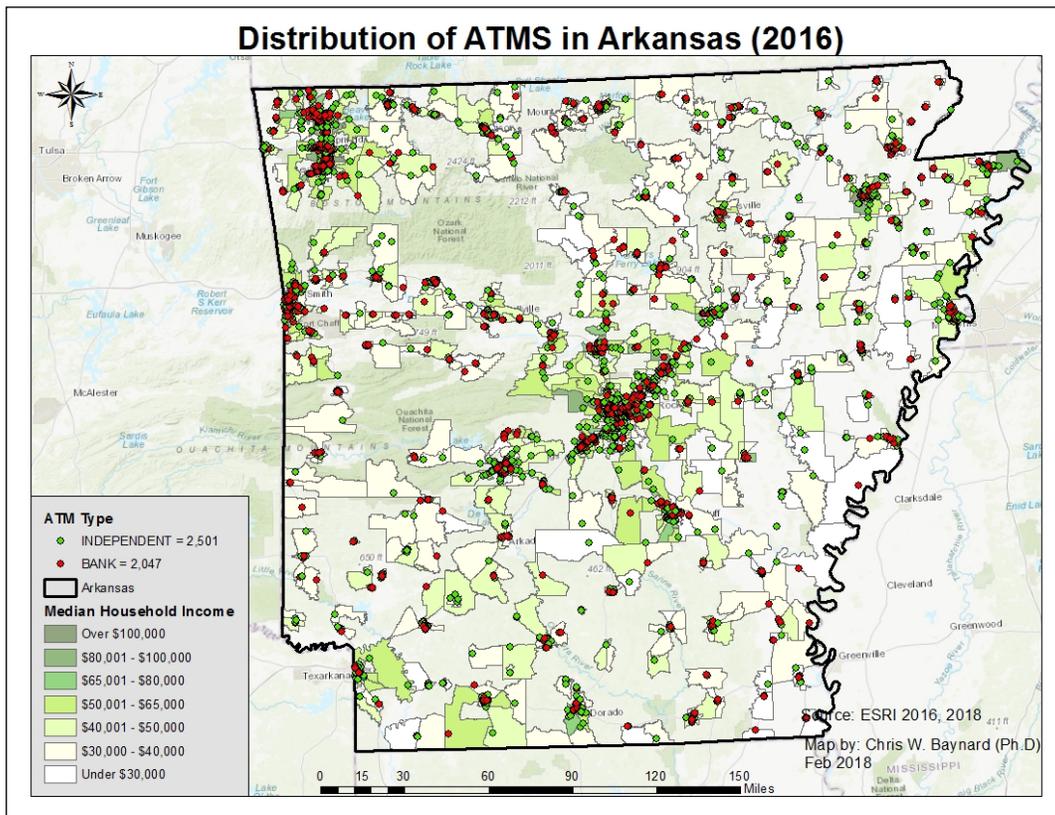
* p-value based on robust standard error with correction for zip code level covariance.

Due to concerns that baseline differences in socioeconomic status between states can bias the results of comparison that is based on raw means calculated across all states, we implement additional controls in our comparison. As shown in column (7), the differences in socioeconomic status between locations of independent and bank-owned ATMs are noticeably reduced when the state-level baseline differences are controlled. But these differences remain sizeable and statistically significant at 1% level (column (8)).

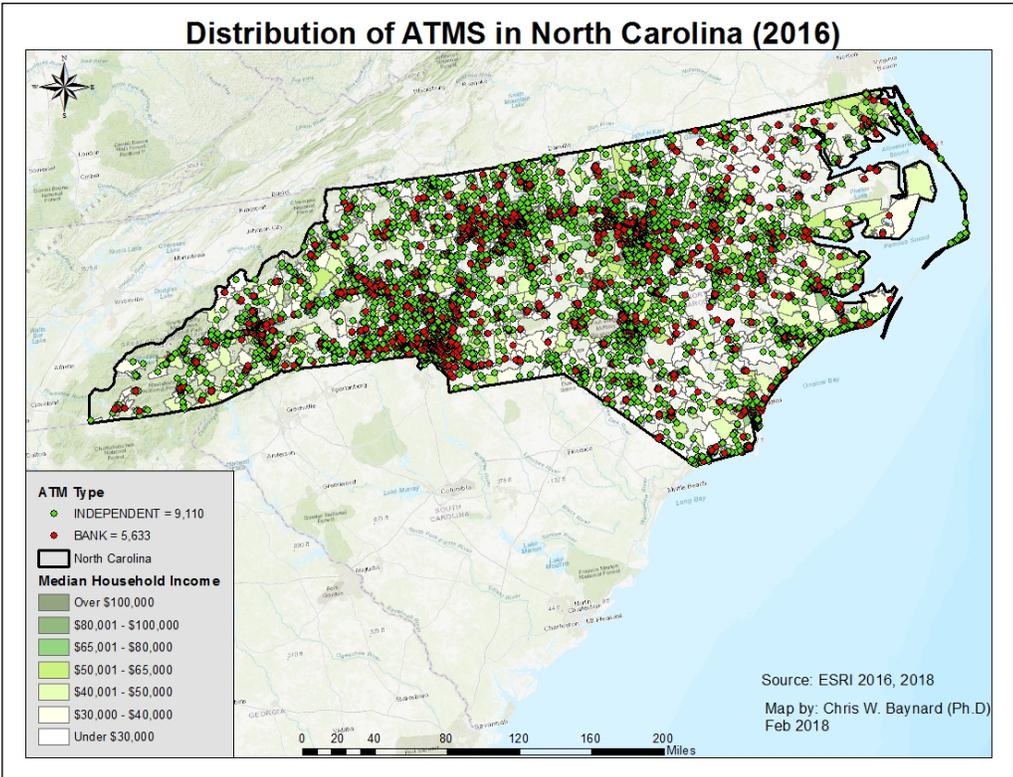




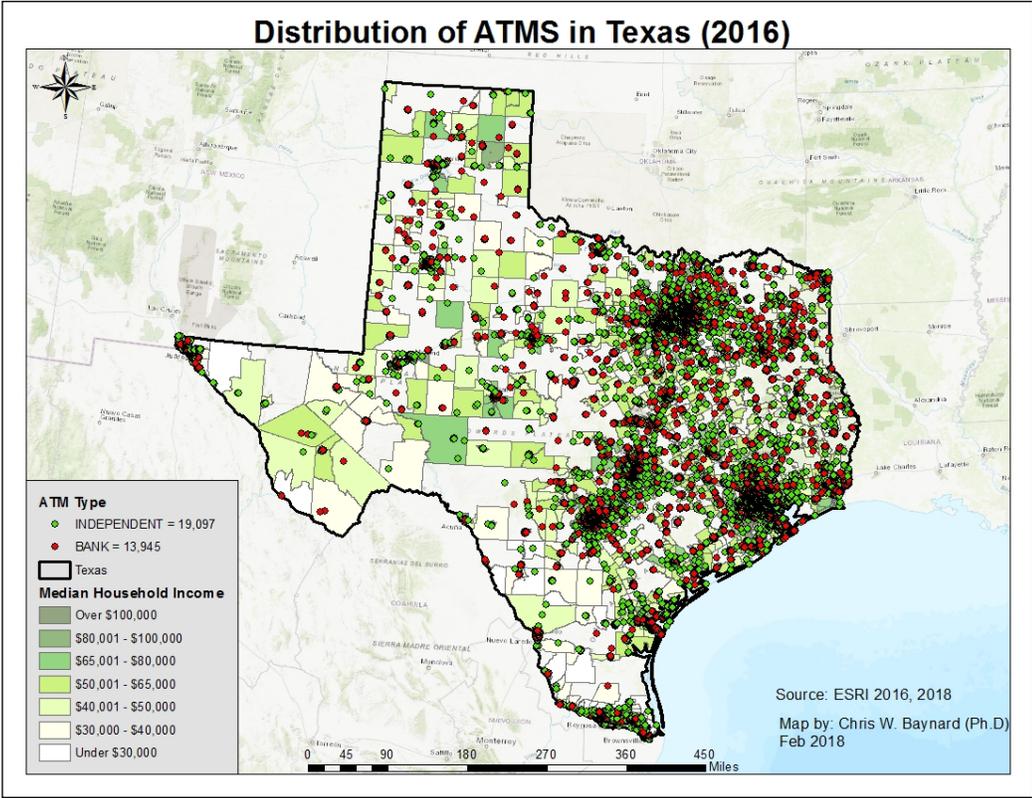
NOTE: only census block groups containing ATMs (Independent or Bank-owned) are shown.



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4. CONCLUSION

It is important to mention that the relative number and percentage of independent ATM terminals may have been underreported due to the growing industry trend of “bank branding.” Under “bank branding,” ATMs are branded as certain bank-owned machines, but are in fact terminals owned by independent ATM providers. However, given the fact that bank branded ATMs would be an insignificant percentage of bank-owned ATMs, we believe there would be no major change in the results.

In this study we find clear statistical evidence that independent ATMs in the U.S. tend to be located in areas that are disadvantaged in demographic and socioeconomic status, when compared to bank-owned ATMs. The locations of independent ATMs tend to have less population, lower population density, lower labor force participation rate, less college-educated population, higher unemployment rate, lower median and average income (household and disposable), and lower home values.

Based on our findings, it is expected that independent ATMs serve areas with higher concentrations of unbanked/underbanked citizens who rely on cash and therefore have a greater need for convenient access to cash. According to a recent report by the Wall Street Journal³, banks have closed branches as they leave less profitable regions, where fewer customers use tellers for routine transactions. According to the report, between July 2016 and June 2017 more than 1,700 branches have closed. The closing decisions are taken examining deposit levels at each branch and commute time to the nearest location. While the strategy has helped banks to reach profit records, it has put their rural customers in trouble, forcing some to travel long distances to have access to cash. Although banks are opening new offices, their major expansions are into big cities or affluent areas where they previously didn’t have branches. In this context independent ATMs play an important role in giving certain sections of the population (i.e. rural, inner city) access to financial services that could have been otherwise limited.

According to Wenzel (2014), the entry of Independent Service Operators into ATM markets increases the size of the total ATM network. Although, it is often argued that the surcharge fees by the independent ATMs decrease consumer surplus, this has been proven incorrect by several researchers. For example, Donze and Dubec (2009) have proposed that surcharges improve ATM deployment and make consumers better off if travel costs to reach cash are high. It can also be argued that given the fact that most independent ATMs are located in lower median and average income (household and disposable) neighborhoods, they serve areas with higher populations of Electronic Benefit Transfer (EBT) cardholders, and are required by state laws to provide discounted or no ATM surcharges for these transactions.

It is also expected that independent ATMs serve areas that tend to be associated with higher rates of crime. Although we are unable to address this relation in our current research due to data

³ Details available at <https://www.wsj.com/articles/banks-double-down-on-branch-cutbacks-1517826601>.

limitations, based on the report of Bureau of Justice Statistics for the period of 2008 and 2012, persons in poor households at or below the Federal Poverty Level had more than double the rate of violent victimization as compared to persons in high-income households.⁴ Given the relation of independent ATMs and relatively low average-income neighborhoods, we can therefore expect that independent ATMs are also serving these high crime localities.

In short, key findings of our analysis support the notion that independent ATMs serve a majority of the disadvantaged and rural populations in the U.S., based on their socio-economic characteristics. In other words, in the absence of independent ATMs, the minority population would be underserved by the banks and other financial institutions, and they would face much more limited access to cash or money withdrawal stations.

References:

Donze, Jocelyn, and Isabelle Dubec. "Paying for ATM usage: good for consumers, bad for banks?" *The Journal of Industrial Economics* 57, no. 3 (2009): 583-612.

Wenzel, Tobias. "Independent service operators in ATM markets." *Scottish Journal of Political Economy* 61, no. 1 (2014): 26-47

⁴ Please visit <https://www.bjs.gov/index.cfm?ty=pbdetail&iid=5137> for details.