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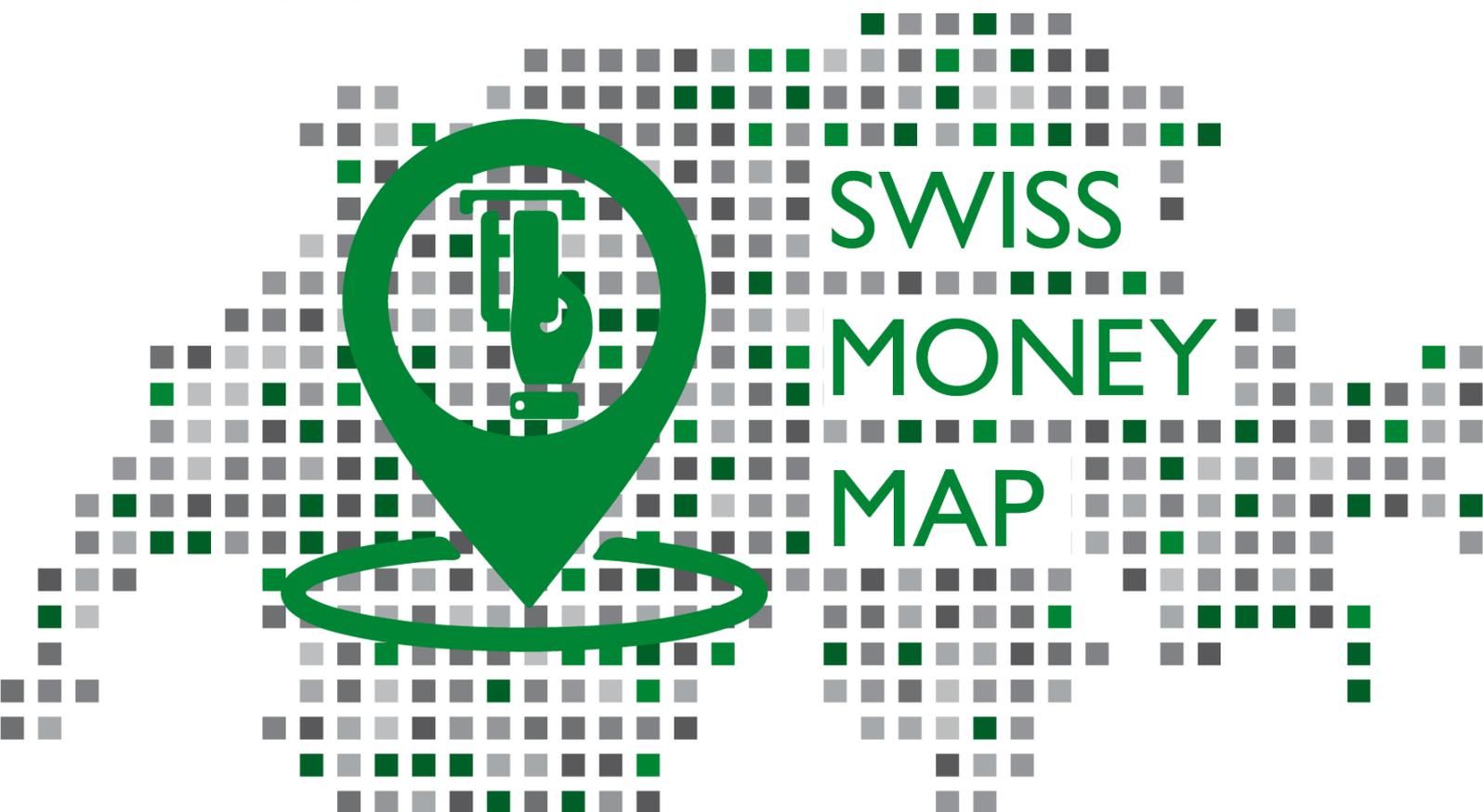
Swiss Money Map 2022

A spatial analysis of cash access points in Switzerland

www.moneymap.ch

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Summary

This study examines the spatial distribution of ATMs and bank branches in Switzerland. We estimate actual travel distances and times to the closest cash withdrawal point based on the Swiss road network. We find that Swiss residents overall have easy access to cash: They live within an average travel distance of 1.1 km to an ATM and of 1.6 km to a bank branch. Average travel time to the nearest ATM and bank branch is 3.6 and 4.1 minutes, respectively.

Travel distances and times decrease with the size of the municipality. Small, urban characterized cantons such as Basel-City and Geneva exhibit very short travel distances and times to the closest cash access point, whereas both these variables tend to increase in cantons with more rural attributes. Roughly two third and half of the population reside within a range of 1 km to the closest ATM and bank branch, with travel times less than 5 minutes to the closest ATM and bank branch for 82% and 74% of the population, respectively. Half of the people reach an ATM (bank branch) within 300 m (900 m) in municipalities with more than 50,000 inhabitants compared to 2.1 km (3 km) in communities with fewer than 2,000 residents.

Cash access is more restricted in some areas: Only 2.6% (around 225,000 residents) and 4.9% (around 420,000 residents) of the population need to travel more than 5 km to reach the closest ATM and bank branch. These shares gradually increase with decreasing municipality size. 61% (58%) of these residents live in municipalities with less than 2,000 inhabitants and 82% (80%) in municipalities with less than 5,000 inhabitants to the next ATM (bank branch).

The ATM and bank branch network appears to be relatively dense in many parts of the country. Only a small share of people in each municipality resides more than 5 km away from the nearest ATM and bank branch. More than 40% of the population in 236 and 368 municipalities have to travel more than 5 km to reach the next ATM and bank branch, respectively (i.e., 10.9% and 16.9% of all 2,172 municipalities). In these municipalities, the number of inhabitants is rather small, with an average (median) number of 579 (445) regarding ATMs and of 896 (631) regarding bank branches.

We find that 921 (42.4%) and 1,172 (54.0%) of the municipalities in Switzerland are not equipped with an ATM and bank branch, respectively. The share of municipalities with no ATM and bank branch is very high in the cantons Basel-Land, Vaud, Jura, and Geneva. The share of people with more than 5 km travel distance is around 15 and 18 percentage points higher in non-ATM and non-bank branch municipalities (non-ATM: 16.3%; non-bank branch: 19.9%) compared to municipalities with ATM and bank branch (non-ATM: 1.2%; non-bank branch: 1.7%). The average distance to the closest ATM (bank branch) is 3.4 km (3.7 km) in municipalities without an ATM (bank branch) compared to 0.9 km (1.1 km) in municipalities with ATM (bank branch).

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Abbreviations

API.....	Application Programming Interface
ATM.....	Automated Teller Machine
BdF.....	Banque de France
ECB.....	European Central Bank
FCA.....	Financial Conduct Authority
FSO.....	Federal Statistical Office
MCS.....	Monitoring Consumption Switzerland
POS.....	Pont-of-sale
SNB.....	Swiss National Bank
UK.....	United Kingdom

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1 Introduction

Cash use has been declining in Switzerland for some time (Trütsch, 2017). However, cash remains an important payment method and store of value (Graf et al., 2021; SNB, 2020). It is therefore of high order interest for many Swiss to have easy access to withdraw and deposit cash.

This study explores the spatial distribution of cash access points in Switzerland. We focus on the spatial analysis of ATMs and bank branches in Switzerland and provide empirical evidence on how far Swiss have to travel, and how much time it takes to access the closest ATM and bank branch.¹

Although the use of cash as a means of payment and storage of wealth is declining (Graf et al., 2021; SNB, 2020), our analysis is important for several reasons. First, cash is still a prominent payment instrument at the POS, especially at low transaction values (Graf et al., 2021). It is also used as a store of value and for precautionary reasons by many consumers and companies in Switzerland (SNB, 2020; SNB, 2022b). Easy access to cash is therefore a public need.

Second, the ATM is the most frequently used source of accessing cash in Switzerland. 87% of the population said they primarily use this channel to withdraw cash (SNB, 2020). A total of 8% usually withdraw cash at a bank or post office counter (SNB, 2020). The average amount of cash withdrawn is double the amount at bank branches compared to ATMs (380 Swiss Francs vs. 190 Swiss Francs). For consumers, the cost of using cash is strongly associated with the travel time to access the closest cash withdrawal place (so-called “shoe-leather cost”).

Third, by November 2020 a large majority of 92% of Swiss was of the view that there were sufficient ways to access cash in Switzerland (SNB, 2020). Three-quarters of respondents found that the selection of cash withdrawal methods had either increased or not changed in the last two years, whereas one-quarter had the impression that there were fewer options available (SNB, 2020). Particularly, the elderly felt there was a decrease. Indeed, the number of ATMs in Switzerland slightly increased until the end of 2020 following a sharp decline (see Figure 1). However,

¹ Note that we analyse the spatial distribution of cash access points in a positive way rather than normative. We leave normative judgements for further discussions.

these data reflect aggregated numbers across Switzerland and may therefore hide regional disparities, especially in rural areas.

Fourth, many Swiss retailers use bank infrastructure for the supply and return of cash (SNB, 2022b). Roughly one-third of the companies expect the local cash infrastructure to decline in the next years (SNB, 2022b). Such a decline would have a great effect on the companies' cash handling, which could result in lower cash acceptance by firms.

Fifth, one of the main responsibilities of central banks is to provide efficient payment services including cash payments (SNB, 2020). The SNB has the mandate to supply the Swiss economy with banknotes commensurate with demand for payment purposes. The supply and efficient distribution of cash among the public is therefore a key interest for the SNB. Additionally, a broad availability of sources of cash withdrawals allows consumers to freely choose their preferred choice of payment method.

This paper is inspired by the seminal work of Stix (2020a, 2020b), who examined the spatial distribution of ATMs and bank branches in Austria. As a novel approach, he computed actual road network distances and travel times compared to straight-line distances ("as the crow flies"). This allows for a fine-grained analysis of the "true" travel times and distances for small geographical areas and at the municipality level, which provides more accurate estimates particularly in less populated areas.

We contribute to the literature in several respects. This is the first paper that explores the spatial distribution of cash access points in Switzerland based on road network distances and travel times. We collected data on Swiss ATM and bank branch locations and constructed a new geolocation dataset as of September 2021. We then matched our dataset with household- and population-related data. Next, we computed actual road network distances and travel times for Swiss households and inhabitants to the closest ATM and bank branch. Finally, we programmed an interactive dashboard (<https://dashboard.moneymap.ch>) for the public, which provides customised results of household-average travel distances. It is important to note that this paper shows population-average results for international comparability, but household- and population-averages are very similar (see section 3.1.3). We aim to update our dataset and dashboard every year to provide a comprehensive understanding of cash access points over time.

Several recent studies examined the straight-line distance between the place of residence and the closest ATM, bank branch, post office branch, or any other common cash withdrawal source. For example, see Delaney et al. (2019), and Caddy and Zhang (2021) for Australia as well as FCA (2021) and Sonea et al. (2019) for the UK. Furthermore, Tischer et al. (2019) conducted a case study for Bristol, where they map in detail the provision of cash infrastructure. Other studies adopted a more aggregated perspective on the availability of cash access points (see e.g., Posada Restrepo, 2021, for Spain; BdF, 2019, for France). Conversely, SIX (2021) pursued a demand-sided approach and modelled the optimal distribution of ATMs in Switzerland.

Our main findings are as follows: Swiss residents overall have easy access to cash withdrawal points: They live within an average travel distance of 1.1 km to an ATM and of 1.6 km to a bank branch. Average travel time to the nearest ATM and bank branch is 3.6 and 4.1 minutes, respectively. 65% and 48% of the population reside within a range of 1 km to the closest ATM and bank branch, with travel times less than 5 minutes to the closest ATM and bank branch for 82% and 74% of the population, respectively.

Cash withdrawal points are closer and faster accessible in urban areas compared to rural areas. Half of the people reach an ATM (bank branch) within 300 m (900 m) in municipalities with more than 50,000 inhabitants compared to 2.1 km (3 km) in communities with fewer than 2,000 residents.

In only some areas cash access is more restricted: 2.6% (around 225,000 residents) and 4.9% (around 420,000 residents) of the population need to travel more than 5 km to reach the closest ATM and bank branch. 61% (58%) of these residents live in municipalities with less than 2,000 inhabitants and 82% (80%) in municipalities with less than 5,000 inhabitants to the next ATM (bank branch).

We find that 921 (42.4%) and 1,172 (54.0%) of the municipalities in Switzerland are not equipped with an ATM and bank branch, respectively. The share of municipalities with no ATM is very high in the cantons Basel-Land (67.4%), Vaud (66.2%), and Jura (58.5%). The share of communities with no bank branch is rather high in the cantons Vaud (74.7%), Basel-Land (74.4%), and Geneva (66.7%). The share of people with more than 5 km travel distance is around 15 and 18 percentage points higher in non-ATM and non-bank branch municipalities (non-ATM: 16.3%; non-bank branch: 19.9%) compared to municipalities with ATM and bank branch (ATM: 1.2%; bank branch: 1.7%). The average distance to the closest ATM (bank branch) is 3.4 km (3.7 km) in municipalities without an ATM (bank branch) compared to 0.9 km (1.1 km) in municipalities with ATM (bank branch).

The remainder of this study is as follows. Section 2 discusses the institutional background of Switzerland's ATM and bank branch network and puts the findings into an international perspective. Section 3 describes the data and outlines the methodology used to compute the travel distances and times to the closest ATM and bank branch. In section 4, we provide the key results of average travel distances and times separated by ATMs and bank branches across municipality size categories and cantons. We also discuss the results of a more disaggregated geographical perspective across Swiss municipalities. Section 5 concludes.

2 Institutional Background

2.1 ATM and Bank Branches in Switzerland

2.1.1 ATM Network

There are four ATM providers – so-called acquirers – in Switzerland, namely SIX, PostFinance, Travelex, and Euronet. The major acquirer is SIX, which itself currently owns only two ATMs in Switzerland, but manages the transactions of the majority of around 5,500 ATMs in its own network. These ATMs are owned by local banks and operated under their brand. The local banks are the initial providers of these ATMs.

The other three acquirers act as the local bank with their own brand. They are also the providers of the ATMs using their own settlement network. They have a dual role for their devices. PostFinance as the second most important acquirer operates around 800 ATMs in Switzerland. Travelex provides only a few machines at Zurich airport and at Basel train station. Euronet primarily runs ATMs at highly frequented places. Their official number is unknown, but we estimate its number at around 400.²

Swiss consumers generally have free-of-charge access with their debit cards to the ATMs operated by the same bank that issues the card. The debit card is the most important payment instrument to withdraw cash in Switzerland. However, limits to the number of free withdrawals may apply according to the scope of the bank account package. Conversely, withdrawals by debit cards at ATMs run by banks other than the consumer's own bank are usually charged. Cash withdrawals by credit cards always incur costs, regardless of the ATM provider or card issuer.

Figure 1 displays the total number of ATMs in Switzerland since 2005. We observe a clear upward trend from the year 2005 to February 2020. Since the onset of the coronavirus in Switzerland in February 2020, the number of ATMs has fallen by roughly 6.5% from 7,243 to 6,766 until January 2022.

² We were not able to access the ATM data from Euronet. They have machines installed at prominent places such as Dolder Hotel Zurich, Landesmuseum Zurich, or Connyland.

The operation and maintenance of ATMs are very costly.³ Since consumers have significantly reduced their cash withdrawals at ATMs during the pandemic – at times around 65% compared to the pre-crisis level (MCS, 2022) – it is no longer economical for banks to operate ATMs which have low frequency levels. Half of the ATMs operated by SIX, for instance, process fewer than 20,000 transactions per ATM and year (or around 55 transactions a day) (SIX, 2021). Each of the 1,000 ATMs even process only one withdrawal per hour (or 24 transactions a day).



Figure 1: Number of ATMs in Switzerland
Source: SNB (2022a), see <https://datawrapper.dwcdn.net/sveW1/3/>
Note: Double counting may have occurred in some cases until September 2020.

SIX (2021) estimated that 2,161 ATMs at 1,159 locations are ideally necessary to meet the demand for ATM cash withdrawals in Switzerland. They assumed that most of the population ought to reach the closest ATM within 20 minutes by foot or public transport and the potential number of withdrawals per ATM and year is 120,000.

2.1.2 Bank Offices and Branches

In Switzerland (and in many other countries as well), the number of bank offices and branches has steadily decreased throughout the last two decades (see Figure 2). The network included 2,721

³ SIX (2021) estimates average costs of an ATM in Switzerland in the amount of 30,000 Swiss Francs per year, of which 60% are fixed costs such as rent, depreciation, and insurance, amongst others.

offices and branches at the end of 2020, which represents a decline of roughly 23% since the year 2005. A total of 244 registered offices⁴ and 2,477 bank branches⁵ existed at the end of 2020.

Increased competition among banks – incurred by the market entry of so-called neobanks or digital only banks, amongst others –, compressed bank margins due to the low interest rate environment and digitalization in general, i.e., customers primarily have been using online banking, have urged the banks to downsize their branch network to save costs.

The largest network of bank branches in Switzerland belong to Raiffeisen banks (35%), followed by cantonal banks (24%), big banks (18%), regional and savings banks (11%), other banking institutions (8%), stock exchange banks (3%), branches of foreign banks (0.4%), foreign-controlled banks and private banks (0.3% each) (SNB, 2022a).

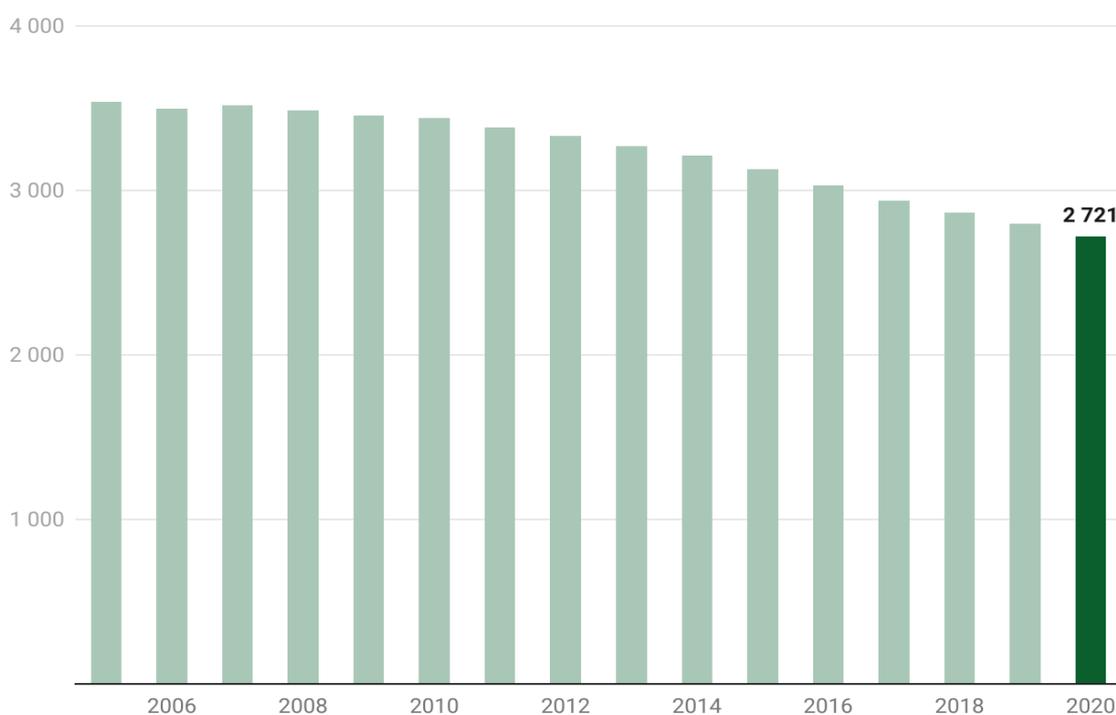


Figure 2: Number of bank offices and branches in Switzerland
Source: SNB (2022a), <https://datawrapper.dwcdn.net/0U0c7/3/>
Note: These data include all types of banks in Switzerland.

⁴ Excluding subsidiaries. No registered offices abroad are included under the parent company reporting entity (SNB, 2022a).

⁵ Branches are legally dependent offices such as branch offices, agencies, cash-receiving offices, sub-branches or representative offices (SNB, 2022a).

2.2 European Perspective

2.2.1 Number of ATMs

Compared to other European countries, Switzerland is among the countries with the highest number of ATMs per capita (see Figure 3). It had 802 ATMs per one million inhabitants at the end of 2020, which is within the top 30% of European countries. The Netherlands with similar surface but around double the number of inhabitants has approximately six times fewer ATMs available compared to Switzerland. This is because Dutch banks operate ATMs in co-operation rather than each bank provides its own ATM brand network.

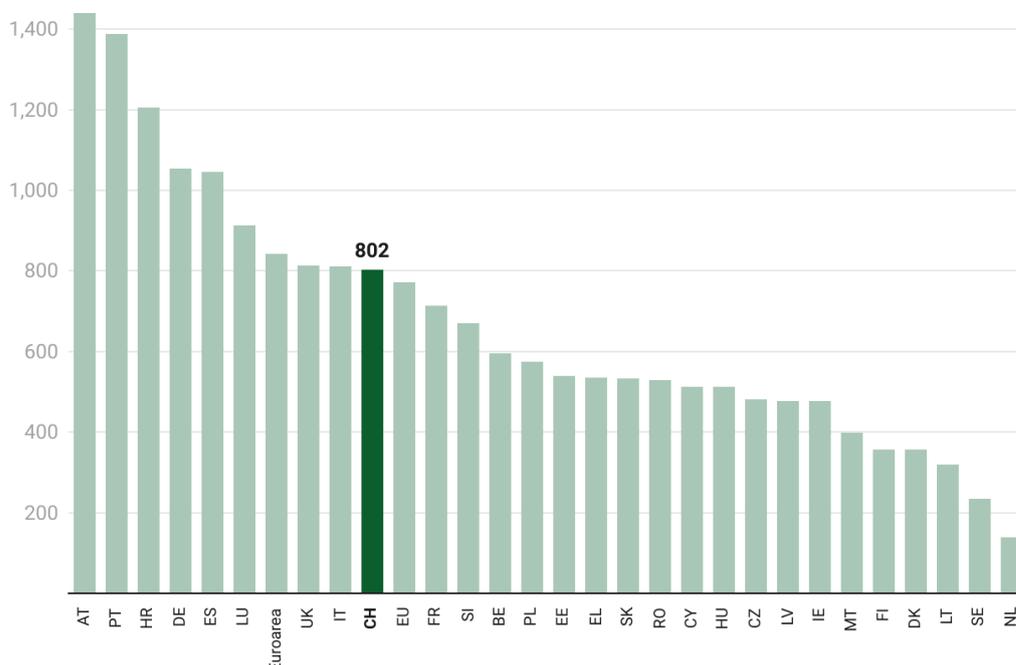


Figure 3: Number of ATMs by European country
Source: ECB Statistical Data Warehouse, SNB (2022a), see <https://datarwrapper.dwcdn.net/Ywcd/2/>
Note: Number of ATMs per 1 million inhabitants. Data refer to the year 2020.

2.2.2 Number of Bank Branches

Similar to the European ATM ranking in Figure 3, Switzerland is amongst the top 33% of European countries with the highest number of bank branches per capita (see Figure 4). At the end of the year 2020, 288 bank branches per one million residents were available. Mediterranean countries such as France, Spain, Italy, Portugal as well as Austria boast a very dense bank branch network.

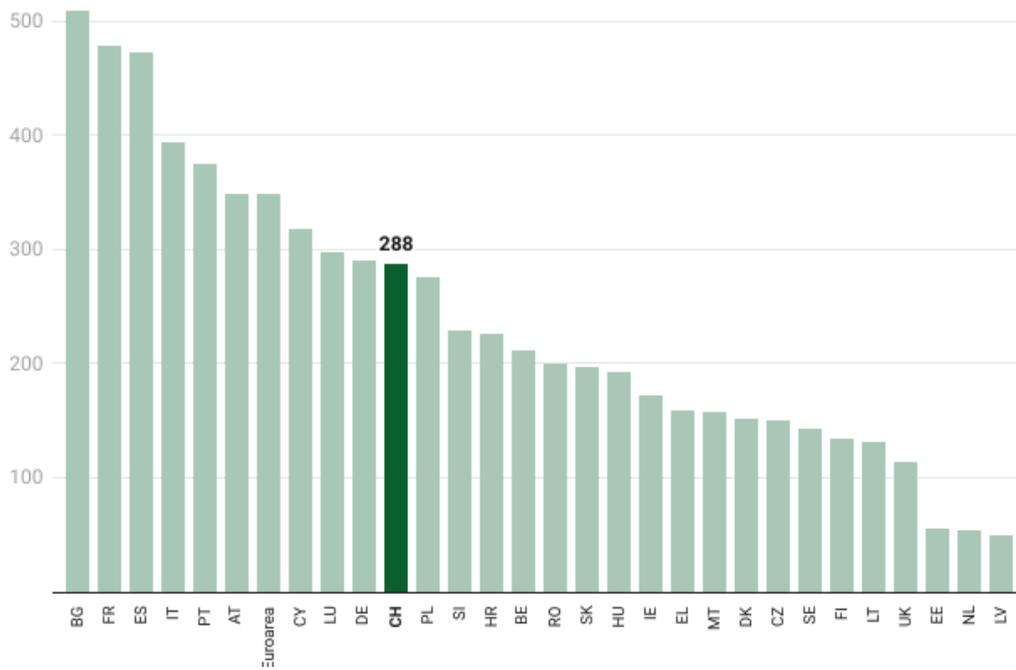


Figure 4: Number of bank branches by European country

Source: ECB Statistical Data Warehouse, SNB (2022a), see <https://datawrapper.dwcdn.net/mq2Ru/1/>

Note: Number of bank branches per 1 million inhabitants. Data refer to the year 2020.

3 Methodology

3.1 Data

3.1.1 ATMs

We use data of ATMs listed by SIX, PostFinance, and Travelex as of 1. September 2021, which represent the vast majority of machines in Switzerland. We draw a list of the exact postal addresses including geocoded parameters of all ATMs operated by SIX. We researched the postal addresses of the remaining ATMs run by PostFinance and Travelex, and georeferenced their locations (see the full list on <https://dashboard.moneymap.ch>). In total, we collected geocoded locations of 6,305 ATMs.⁶

3.1.2 Bank Branches

The list of Swiss bank branches contains all banks from Google Maps, local.ch and OpenStreetMap as of 1. September 2021, where we searched for the exact postal addresses. We further pulled branch locations directly from the financial institutions' websites in case of Credit Suisse, PostFinance, Raiffeisen, and UBS. We overlaid the different data sources, dropped entries that were not regular banks and investigated cases that only show up in a single source. Finally, we geocoded each bank branch location.

Our analysis exclusively focuses on retail banks. We therefore limit the bank branches to the following groups of banks: Cantonal banks, big banks, Raiffeisen banks, regional and savings banks, selected banks of the category "other banking institutions" that serve retail clients (see the full list on <https://dashboard.moneymap.ch>). In total, we collected exact locations of 2,369 bank branches.

⁶ We are aware that errors in georeferencing the ATM locations might have occurred in some cases, particularly when addresses were not clearly determined. We also rely on up-to-date and accurate data provided by SIX, which we were unable to check in detail.

3.1.3 Households and Population

We use data of Swiss households and population provided by the FSO in the STATPOP (2020) dataset. This data provides information on the number of households and persons residing within a specific hectare. The sum of the hectare values can slightly deviate from the total number of households in a municipality as a) not all households of a municipality can always be clearly assigned to a hectare and b) for data privacy reasons, the minimum displayed value for the number of households in a hectare is three.

These statistical properties of the data, however, should not have a strong impact on our overall results. It is important to note that we display population-average summary statistics in this study for international comparability.⁷ However, the results of household- and population-weighted statistics are nearly identical (see Table A1 in the appendix).

3.2 Calculation of Travel Distance and Time

The analysis of the travel distance and time is based on a 100x100 m geographical grid of Switzerland. As the starting point, the distances were calculated from the center of each populated hectare to the closest ATM or bank branch. For hectares within the radius of 500 m around the closest ATM or bank branch, we computed the Euclidean distance assuming that people walk to the cash access point (“as the crow flies”). For hectares outside of the 500 m radius, we used the “TomTom” travel API to calculate the car travel distance to the closest ATM or bank branch based on the actual road network.⁸

Based on the estimated travel distances, we computed the travel time. We assumed a walking speed of 5 km/h for distances below 500 m. For distances greater than 500 m, we obtained the travel time provided by “TomTom” maps based on the given speed limits. The time reflects the pure walking or driving time. We publish our constructed dataset at the municipality level for the public online (see www.moneymap.ch).

We run several smoothing algorithms to detect outliers that were not correctly processed by “TomTom’s” routing API. Overall, the methodology allows for a very detailed analysis of the results. We acknowledge that there might still be specific cases where the methodology is not fully able to capture the real circumstances and behaviour of households and inhabitants, respectively. For instance, the “TomTom” map accounts for speed limits, one-way streets and turning restrictions, but ignores driving bans such as pedestrian zones. Therefore, average travel distances and time are underestimated, particularly in urban areas. Furthermore, our analysis is based on

⁷ We show household-related statistics in our dashboard in Figure 7, Figure 11, Figure A1, and Figure A2 in this paper.

⁸ For travel distances that are at least twice as long as the Euclidean distance regardless of the hectares, we obtained the travel distance to the second closest ATM or bank branch.

strong assumptions about the preferred means of transportation depending on the 500 m threshold. However, the way of moving is influenced by many factors such as personal immobility, personal preferences, weather, car ownership, or having children, amongst others.

4 Results

4.1 ATMs

4.1.1 Travel Distances and Times

The ATM network in Switzerland is rather dense: For Swiss residents, the average distance to the closest ATM is 1.1 km. We computed population-weighted statistics of the travel distance and time to the nearest ATM in Table 1. Half of the residents (the median) travel less than 0.5 km and 90% less than 2.7 km. In terms of pure travel time, we find that it takes 3.6 minutes on average to access the closest ATM, which is almost similar to the median of 3.3 minutes (see Table 1). 90% of the population travel less than 5.6 minutes.

Table 1: Distance and travel time to the nearest ATM

	Mean	Min.	P25	Median	P75	P90	P99
Distance (in km)	1.1	0	0.3	0.5	1.4	2.7	7
Travel time (in min)	3.6	0	2.3	3.3	4.6	5.6	10.7

Source: Own source

Note: Total population 8,570,697. For instance, “P25” denotes the 25th percentile meaning that 25% of the population have to travel less far or less long than the value specified.

Travel distances and times decrease with the size of the municipality. Table 2 illustrates the statistics of the travel distance to the nearest ATM separated by categories of municipality size and cantons. We provide similar statistics of the travel time in Table A2 in the appendix. Substantial differences occur between the smallest municipality size (less than 2,000 inhabitants) and the remaining categories. For instance, 50% of the population in cities with more than 50,000 inhabitants reach an ATM within 300 m, whereas in communities with less than 2,000 residents half of the residents have to travel 2.1 km. Average travel time does not vary significantly between municipality categories with more than 2,000 inhabitants ranging from 3.3 to 3.7 minutes (see Table A2 in the appendix). For those with fewer than 2,000 residents, travel time surges to 4.7 minutes.

Table 2: Distance to the nearest ATM by municipality size and canton (in km)

	Mean	P25	Median	P75	P90	P99
by municipality size (nr. of inhabitants)						
>50,000	0.6	0.2	0.3	0.7	1.3	2.9
10,001–50,000	0.8	0.2	0.4	1.2	1.8	4.3
5,001–10,000	0.9	0.3	0.5	1.2	2	5.3
3,001–5,000	1.1	0.3	0.5	1.4	2.8	6.2
2,001–3,000	1.4	0.3	0.8	1.9	3.5	7.7
<2,000	2.6	0.6	2.1	3.6	5.5	10.8
by canton						
AG	1	0.3	0.5	1.3	2.2	4.5
AI	1.6	0.3	1	2.3	3.8	7.2
AR	1.3	0.3	0.8	1.9	3.1	5.7
BE	1.3	0.3	0.5	1.6	3.2	8.2
BL	1.2	0.3	0.5	1.4	3.1	7.3
BS	0.4	0.2	0.3	0.4	0.9	2.1
FR	1.4	0.3	0.8	2.1	3.5	6.7
GE	0.7	0.2	0.3	0.8	1.8	6.7
GL	1.2	0.2	0.4	1.7	2.9	7.6
GR	1.7	0.2	0.5	2	4.5	14.5
JU	2	0.3	0.7	2.2	5.7	12.6
LU	1	0.2	0.4	1.3	2.3	5.4
NE	1.2	0.3	0.5	1.5	2.7	8.3
NW	1.1	0.2	0.4	1.2	2.4	9
OW	1.6	0.3	0.6	1.9	4	11.8
SG	0.9	0.3	0.5	1.2	2.2	5.4
SH	1.3	0.3	0.8	1.7	3.2	8.2
SO	1.1	0.3	0.6	1.3	2.3	6.5
SZ	1	0.2	0.4	1.2	2.2	6.5
TG	1.1	0.3	0.8	1.6	2.7	5
TI	1.3	0.2	0.5	1.5	3.1	9.2
UR	1.1	0.2	0.4	1	2	10
VD	1.4	0.3	0.8	1.8	3.5	7.4
VS	1.3	0.2	0.4	1.4	3.4	9.9
ZG	1	0.3	0.5	1.4	2.2	5.6
ZH	0.9	0.3	0.5	1.3	2	4.1

Source: Own source

Note: Total population 8,570,697. For instance, “P25” denotes the 25th percentile meaning that 25% of the population have to travel less far than the value specified.

Small, urban characterized cantons such as Basel-City and Geneva exhibit very short travel distances and times to the closest ATM, whereas both these variables tend to increase in cantons with more rural attributes (see Table 2 and Table A2 in the annex). Overall, however, the median distances and times appear to be very modest in every canton. The cantons of Glarus and Grisons include some outliers, which means that 1% of the population have to travel more than 25.2 and 18.4 minutes, respectively, to reach the nearest ATM. These findings are highlighted when applying the classification system for urban and rural areas based on the FSO (see Figure A1 in the appendix).⁹

We further analyse which share of population lives within a specific travel distance and time from the closest ATM (see Table 3). Roughly two third of the population reside within a range of 1 km to the closest ATM, which is rather close. 24.1% of the people have to travel less than 250 m, 97.4% less than 5 km. 19.1% of the residents reach the ATM in less than 2 minutes, 98.7% in less than 10 minutes. We argue that the majority of Swiss have easy access to ATMs in respectable time.

Table 3: Distance and travel time to the nearest ATM by population share

	Distance							Time			
	<100m	<250m	<500m	<1km	<2km	<5km	<10km	<2min	<5min	<10min	<15min
Number of inhabitants	508,521	2,063,143	4,562,060	5,562,733	7,251,976	8,345,583	8,545,994	1,635,228	6,996,008	8,459,370	8,537,902
Cumulative share of population (in %)	5.9	24.1	53.2	64.9	84.6	97.4	99.7	19.1	81.6	98.7	99.6

Source: Own source

Note: Total population 8,570,697.

Figure 5 depicts how far which share of the population has to travel to access the closest ATM separated by municipality size categories. Overall, we provide two major findings: First, the share of people that lives within less than 500 m of an ATM steadily increases with municipality size categories. This is similar for ranges of 500-1000 m and 1-2 km around an ATM in municipalities up to 10,000 and 50,000 inhabitants, respectively. Second, the fraction of the population located more than 2 km of an ATM is the highest in communities with up to 2,000 inhabitants, with shares declining with municipality size.

⁹ The mean distances for households range from 0.6 km (core cities) to 1.9 km (rural areas without urban character).

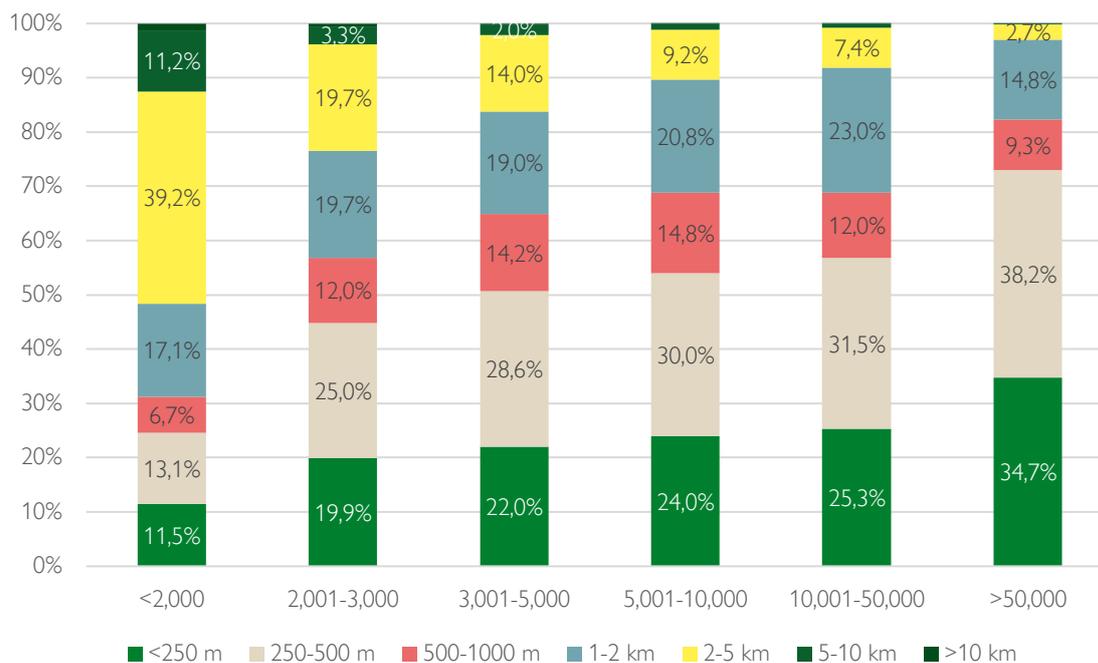


Figure 5: Travel distance to the nearest ATM by municipality size (cumulative share)

Source: Own source

Note: The figure exhibits how far which share of the population has to travel to access the closest ATM separated by municipality size categories.

With respect to travel time, Figure 6 shows how long which share of the population has to travel to access the closest ATM separated by municipality size categories. The vast majority of Swiss reach an ATM within 5 min, regardless the size of the municipality. However, the smaller the municipality in terms of inhabitants, the higher the share of people who have to travel longer to the closest ATM.

We conclude that the Swiss overall have easy access to ATMs. Similar to Stix (2020a), we define the threshold values in the amount of 5 km for the distance and of 10 min for the travel time in order to separate satisfactory from unsatisfactory cash withdrawal access at ATMs. We are aware that these values are somewhat arbitrary, though the personal assessment of having easy cash access is highly subjective and depends on many factors (e.g., personal preferences, mobility).

In Switzerland, only 2.6% of the population (225,078 inhabitants) have to travel more than 5 km to the closest ATM, and 1.3% (107,713) need more than 10 min travel time (see Table 4). These shares gradually increase with decreasing municipality size. 12.5% of the people living in municipalities with less than 2,000 inhabitants do not have access to an ATM within 5 km, which represent the share of 61% of all these residents. 5.3% of them travel more than 10 min (see Table 4). This share drops to 0.2% (distance) and 0.3% (time) in cities with more than 50,000 residents. Based on the classification of the FSO, 9.6% of the people living in rural areas without urban character travel more than 5 km to the next ATM (see Figure A1 in the appendix).

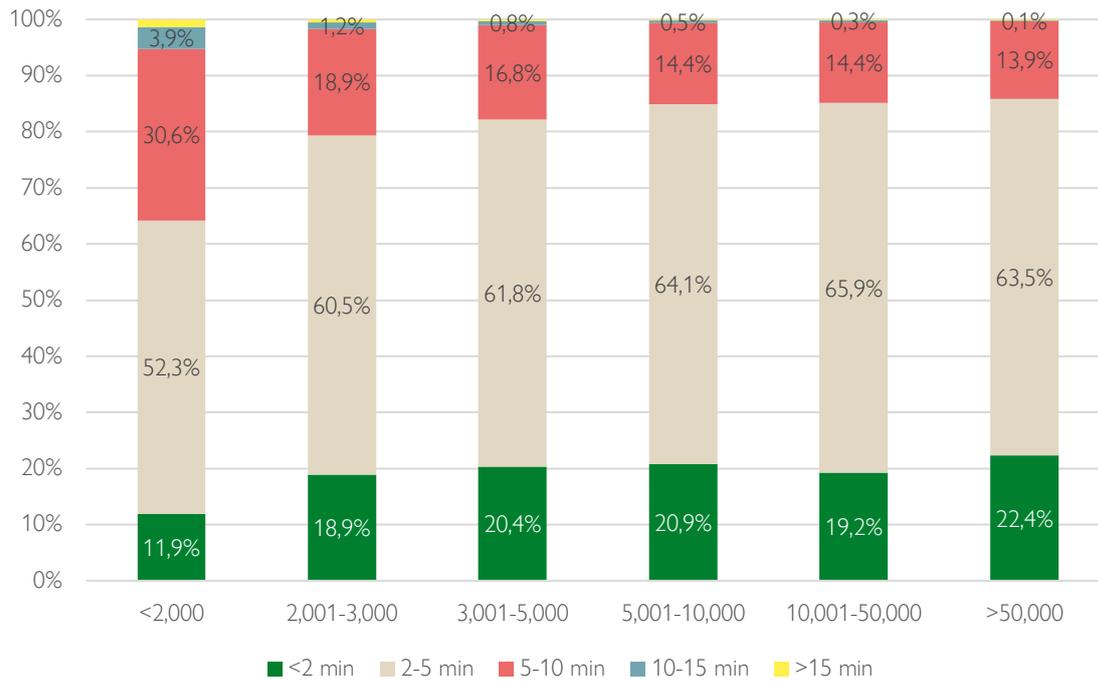


Figure 6: Travel time to the nearest ATM by municipality size (cumulative share)

Source: Own source

Note: The figure exhibits how long which share of the population has to travel to access the closest ATM separated by municipality size categories.

Table 4: Number of inhabitants traveling more than 5 km or 10 minutes to the nearest ATM by municipality size

	Inhabitants	Inhabitants travelling more than 5 km		Inhabitants travelling more than 10 min	
	Number	Number	In %	Number	In %
Switzerland	8,570,697	225,078	2.6	107,713	1.3
by municipality size (nr. of inhabitants)					
>50,000	1,442,337	3,321	0.2	4,083	0.3
10,001–50,000	2,683,904	19,563	0.7	13,193	0.5
5,001–10,000	1,631,417	18,665	1.1	11,031	0.7
3,001–5,000	1,109,204	23,856	2.2	11,198	1
2,001–3,000	613,246	23,230	3.8	10,669	1.7
<2,000	1,090,589	136,443	12.5	57,539	5.3

Source: Own source

Note: Total population 8,570,697.

4.1.2 Travel Distances by Municipality

So far, we have focused our analysis on travel distances and times separated by municipality size categories and cantons. The following section provides findings at the municipality level for each of the 2,172 Swiss municipalities.¹⁰

Figure 7 displays the average travel distance to the closest ATM on municipality level by households. The darker the green, the smaller the distance. Overall, we observe the following patterns: The distance to the nearest ATM tends to be smaller in municipalities with urban and sub-urban characters. Conversely, the travel distance is likely to increase in rural municipalities. However, we find a few interesting outliers in rural areas, where the distance is less than 500 m. These primarily include touristic municipalities such as Zermatt, Saas-Fee, Interlaken, Samedan, Celerina, and Andermatt, to name a few.

This could be due to two reasons: First, the number of people in touristic communities is usually higher than the number of inhabitants. Thus, the availability of cash access points is designed for the higher number of people on site. Second, it is financially attractive for banks to install ATMs in these places where transnational withdrawals are frequently made by international tourists. This is because ATM providers usually charge higher fees for transnational transactions.¹¹

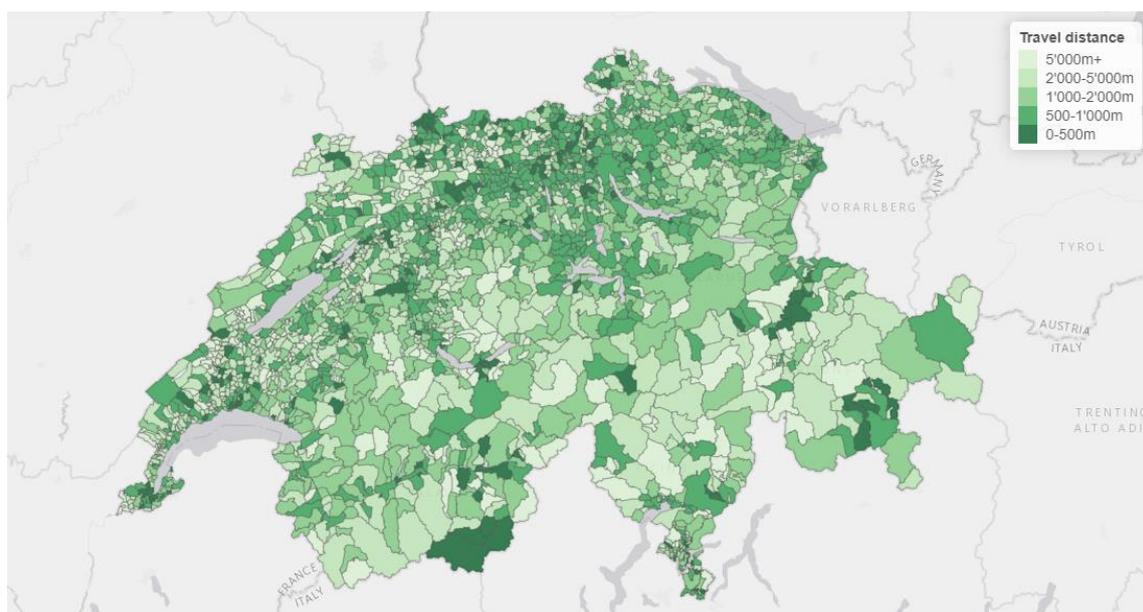


Figure 7: Average travel distance to nearest ATM on municipality level (in m)
Source: Own source, see <https://dashboard.moneymap.ch> for an interactive analysis
Note: Household-weighted statistics

¹⁰ Reference year is 2021.

¹¹ The withdrawals at local ATMs are made by payment cards with foreign card holder origin, i.e., issued by a foreign bank.

Figure 7 gives a good impression of the variation of travel distances across Switzerland. We provide the corresponding map for average travel times in Figure A3 in the appendix. The density of ATMs seems to be rather high, especially in the Swiss Mittelland region. However, there are also municipalities where ATM access is more restricted.

To this end, we calculated the share of the population in every municipality that has to travel more than 5 km to access the closest ATM (see Figure 8). Figure 8 exhibits a similar picture like Figure 7 (the darker the green, the smaller the share): The ATM network appears to be relatively dense in many parts of the country meaning that only a small share of people in each municipality resides more than 5 km away from the nearest ATM.

However, a high share of people in some municipalities in the rural areas of Switzerland has to travel rather far to reach an ATM. For instance, more than 60% of residents in 200 municipalities have to travel more than 5 km to access an ATM. In another 36 municipalities, this share ranges between 40% and 60% of residents. To put differently, more than 40% of the population in 236 municipalities have to travel more than 5 km to reach the next ATM (10.9% of all municipalities). In these municipalities, the number of inhabitants is rather small, with an average (median) number of 579 (445). As a result, the absolute number of residents that live beyond 5 km from the nearest ATM in a municipality is on average very low (e.g., 40% of 579).

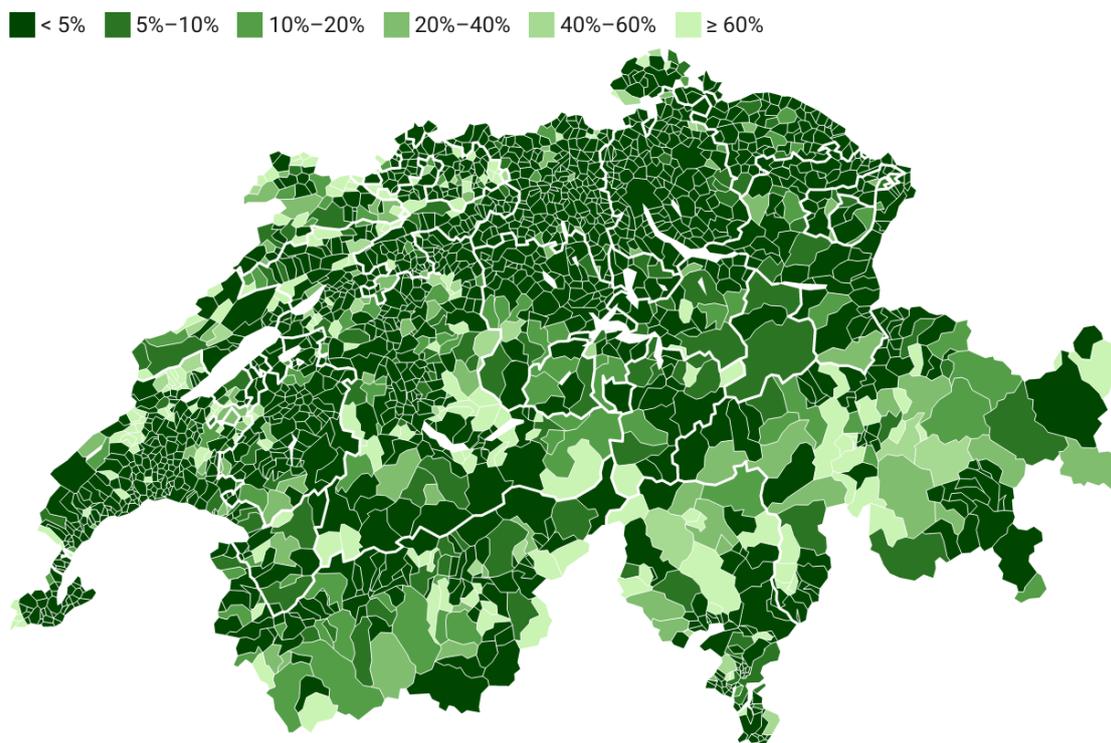


Figure 8: Share of population traveling more than 5 km to the closest ATM by municipality
Source: Own source, see <https://www.datawrapper.de/ /u088k/> for an interactive analysis

We are further interested whether ATM availability in each municipality affects average travel distances. We find that 921 (42.4%) of the municipalities in Switzerland (among a total of 2,172 municipalities) are not equipped with an ATM. The share of municipalities with no ATM is very high in the cantons Basel-Land (67.4%), Vaud (66.2%), and Jura (58.5%), whereas every community in the cantons Glarus, Obwalden, and Zug has at least one ATM available (see Table A3 in the appendix). However, this does not necessarily imply that people from these villages with no ATM have to travel extraordinarily far to reach an ATM since many municipalities are in close proximity to each other.

Table 5 reveals that the average distance to the closest ATM is 3.4 km in municipalities without an ATM compared to 0.9 km in municipalities with ATM. Median distances are 0.5 km lower meaning that half of the people have to travel 2.5 km more to the next ATM in municipalities without an ATM compared to municipalities with ATM. The share of people with more than 5 km travel distance is around 15 percentage points higher in non-ATM-municipalities (16.3%) compared to municipalities with ATM (1.2%) (see Table 5).¹²

Table 5: Distance to the nearest ATM by municipality with or without ATM access

	Municipality with ATM access	Municipality without ATM access
	(1)	(2)
(1) Average distance (in km)	0.9	3.4
(2) Median distance (in km)	0.4	2.9
(3) % of population traveling more than 5 km	1.2	16.3

Source: Own source

4.2 Bank Branches

4.2.1 Travel Distances and Times

Table 6 displays population-weighted statistics of the travel distance and time to the nearest bank branch. On average, the distance to the closest bank branch in Switzerland is 1.6 km, which is an increase of around 45% compared to ATMs. Half of the residents (the median) travel less than 1.1 km and 90% less than 3.7 km. The distribution of bank branch distances is more symmetric, i.e., has fewer outliers, compared to ATM distances.

Since the average travel distance to the nearest ATM and bank branch differ by around 500 m, it is likely that in many cases the closest ATM is not situated at the same location as the closest bank

¹² According to Stix (2020a), it is essential to account for other characteristics of municipalities such as population density when comparing travel distances in municipalities with or without an ATM to draw conclusions about cash access. By controlling for fixed effects (e.g., size of the province and municipality), he found similar results and hence no evidence for large selection biases.

branch. We find evidence in our data that the nearest bank branch and ATM are not the same in 67% of the hectares. We argue that many bank branches do not have an ATM and numerous ATMs are located in remote places.¹³ This contradicts to the situation in Austria, where many bank branches have an ATM and most of them are located inside or adjacent to bank branches (Stix, 2020a).¹⁴

The availability of bank branches in Switzerland is quite high, albeit less dense compared to ATMs. In terms of pure travel time, it takes 4.1 minutes on average to reach the closest bank branch (see Table 6). This is slightly (14%) more compared to ATMs. We find that 50% of the population travel less than 3.7 minutes, 90% less than 6.4 minutes.

Table 6: Distance and travel time to the nearest bank branch

	Mean	Min.	P25	Median	P75	P90	P99
Distance (in km)	1.6	0	0.4	1.1	2.1	3.7	8.4
Travel time (in min)	4.1	0	2.6	3.7	5.1	6.4	12.3

Source: Own source

Note: Total population 8,570,697. For instance, "P25" denotes the 25th percentile meaning that 25% of the population have to travel less far or less long than the value specified.

Travel distances and times decrease with the size of the municipality. We provide summary statistics of the travel distances to the closest bank branch broken down by categories of municipality size and cantons in Table 7. Corresponding travel times are reported in Table A4 in the appendix. We observe a threshold in average distances around the second smallest municipality size (between 2,000 and 3,000 inhabitants) at 2.1 km, albeit the distance in the smallest category further increases substantially to 3.4 km.

It is more likely that the location of ATMs and bank branches are identical in municipalities with just a few inhabitants. Compared to average ATM distances, bank branch distances increase by 30% in municipalities with fewer than 2,000 residents and by 83% in municipalities with more than 50,000 inhabitants (see Table 7). In the highest municipality category, half of the people face a three times higher travel distance (0.9 km) to the closest bank branch compared to ATMs (0.3 km).

¹³ Our data shows that 14% of the ATMs have the same position as the bank branch and 37% of the bank branches have the same position as the ATM, respectively.

¹⁴ In Austria, mean distances of ATMs and bank branches differ by about 30 m and median distances by some 14 m (Stix, 2020a).

Table 7: Distance to the nearest bank branch by municipality size and canton (in km)

	Mean	P25	Median	P75	P90	P99
by municipality size (nr. of inhabitants)						
>50,000	1.1	0.3	0.9	1.6	2.3	4.2
10,001–50,000	1.2	0.4	1	1.6	2.4	5.7
5,001–10,000	1.3	0.3	0.9	1.7	3.1	6.1
3,001–5,000	1.5	0.3	0.9	2.2	3.6	7.6
2,001–3,000	2.1	0.4	1.5	3.2	4.5	11.3
<2,000	3.4	1.4	3	4.7	6.7	12.1
by canton						
AG	1.4	0.4	1.1	2	3.3	6.3
AI	1.6	0.4	1.1	2.5	3.9	6.5
AR	2.1	0.7	1.6	3.1	4.8	8.1
BE	1.7	0.4	1.1	2.3	4.1	9
BL	1.6	0.4	1.2	2	3.6	8.3
BS	0.7	0.3	0.5	1.1	1.5	2.7
FR	1.8	0.4	1.2	2.8	4.4	7.6
GE	1.1	0.3	0.5	1.4	2.6	7.2
GL	1.3	0.3	0.9	1.6	2.7	7.5
GR	2.3	0.3	1	2.9	5.7	16.2
JU	1.9	0.3	0.8	2.6	5.1	11.7
LU	1.4	0.3	1	1.9	3.2	7.1
NE	1.7	0.4	1.2	2.1	3.7	10
NW	1.2	0.2	0.4	1.4	3	8.8
OW	1.6	0.3	0.8	2	4	11.7
SG	1.4	0.4	1	1.9	3.2	6.8
SH	1.8	0.4	1.3	2.4	4.2	7.9
SO	1.4	0.4	0.9	1.6	3.2	7.8
SZ	1.4	0.3	0.9	1.7	3.4	8.3
TG	1.5	0.4	1.1	2.2	3.3	5.9
TI	1.7	0.3	1	1.9	4.1	11.5
UR	2.3	0.4	1.1	2.9	6.1	14.9
VD	1.8	0.4	1.1	2.3	4.4	9.5
VS	1.6	0.3	0.8	1.8	3.7	10.5
ZG	1.2	0.3	0.9	1.7	2.6	5.6
ZH	1.7	0.5	1.4	2.4	3.6	6.7

Source: Own source

Note: Total population 8,570,697. For instance, “P25” denotes the 25th percentile meaning that 25% of the population have to travel less far than the value specified.

Average travel time to the closest bank branch is roughly 4 minutes in municipality categories with more than 2,000 inhabitants, whereas it increases to 5.6 minutes in the smallest municipality category (see Table A4 in the annex). Interestingly, average travel time (4 min) is greater in the category “>50,000” compared to the categories between “3,001-50,000” (less than 4 minutes). This could be due to the cumbersome car route network in cities, where one-way streets and low speed limits (less than 30 km/h) are common.

Urban characterized cantons such as Zug, Basel-City and Geneva exhibit short travel distances and times to the nearest bank branch (see Table 7 and Table A4 in the annex). Cantons with more rural characters such as Grisons, Uri and Appenzell Outer Rhodes experience longer distances and travel times. These findings are confirmed when applying the classification system for urban and rural areas based on the FSO (see Figure A2 in the appendix).¹⁵

Approximately half of the population (47.9%) reside within a range of 1 km to the closest bank branch (see Table 8). Table 8 summarizes which share of the population lives within a specific travel distance and time from the nearest bank branch. 14.6% of the Swiss need to travel less than 250 m, 95.1% less than 5 km. Compared to ATMs, a much smaller fraction of people lives close, i.e., within a range of 1 km, to bank branches.

Most of the inhabitants have easy access to banking services on site. Regarding travel time, 13.1% of Swiss residents reach the bank branch in less than 2 minutes, 73.8% in less than 5 minutes, and 97.9% in less than 10 minutes (see Table 8).

Table 8: Distance and travel time to the nearest bank branch by population share

	Distance							Time			
	<100m	<250m	<500m	<1km	<2km	<5km	<10km	<2min	<5min	<10min	<15min
Number of inhabitants	299,884	1,249,668	3,113,457	4,105,367	4,105,367	6,319,698	8,527,529	1,125,646	6,326,852	8,392,469	8,525,681
Cumulative share of population (in %)	3.5	14.6	36.3	47.9	73.7	95.1	99.5	13.1	73.8	97.9	99.5

Source: Own source

Note: Total population 8,570,697.

¹⁵ The mean distances for households range from 1.1 km (core cities) to 2.4 km (rural areas without urban character).

Figure 9 displays how far which share of the population has to travel to access the closest bank branch separated by municipality size categories. Interestingly, we find a slightly different picture compared to ATM distances (cf. Figure 5). The share of people that resides within less than 1 km of a bank branch is among the highest in municipality size categories between 3,000 and 10,000 inhabitants. However, we observe the biggest share of people of 27.3% in the largest cities that reside between 250 and 500 m from a bank branch. Similar to ATMs, the share of the population located more than 2 km from a bank branch is the highest in communities with up to 2,000 inhabitants, but the shares decrease with municipality size.



Figure 9: Travel distance to the nearest bank branch by municipality size (cumulative share)

Source: Own source

Note: The figure exhibits how far which share of the population has to travel to access the closest bank branch separated by municipality size categories.

Figure 10 shows the share of the population that lives within a specific travel time next to the closest bank branch, separated by municipality size categories. Overall, the distribution is very similar to the one of ATMs (cf. Figure 6). Regardless the size of the municipality, more than half of the population reach a bank branch within 5 min pure travel time. This share increases to 81% in cities with 10 to 50 thousand residents. The fraction of people who needs to travel more than 5 min to reach a bank branch increases the smaller the municipality size. For instance, roughly 9% of the people in villages up to 2,000 inhabitants travel more than 10 min to the closest bank branch.

Overall, we find that most Swiss live within a close distance to a bank branch. However, we observe some outliers. Similar to the analysis with respect to ATMs (see section 4.1.1), we define the

threshold values in the amount of 5 km for the distance and of 10 min for the travel time to separate satisfactory from unsatisfactory bank branch access. We find that 4.9% of the population (421,858 inhabitants) in Switzerland do not reach the closest bank branch within 5 km, and 2.0% (174,876) have to travel more than 10 min (see Table 9). This is almost double the number of people (1.9) in terms of distance and 1.6 times more in terms of time compared to the case of ATMs.

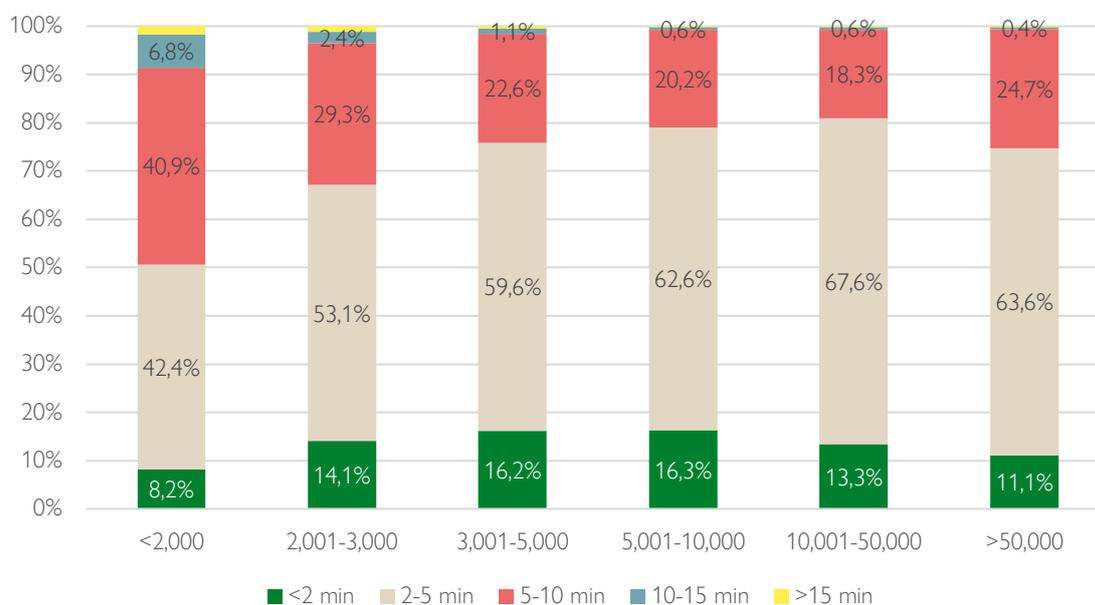


Figure 10: Travel time to the nearest bank branch by municipality size (cumulative share)

Source: Own source

Note: The figure exhibits how long which share of the population has to travel to access the closest bank branch separated by municipality size categories.

Similar to ATMs, these shares gradually increase with decreasing municipality size. A striking share of 22.4% of people that live in municipalities with less than 2,000 inhabitants do not have access to a bank branch within 5 km (see Table 9), which represent the share of 58% of all these people. 8.6% of them travel more than 10 min. These shares fall to both 0.6% with respect to distance and time in cities with more than 50,000 residents. Interestingly, the share of people that does not reach a bank branch within 5 km is three times higher in large cities (>50 thousand) compared to case of ATMs. Overall, 13.5% of the people living in rural areas travel more than 5 km to the next bank branch based on the classification of the FSO (see Figure A2 in the appendix).

Table 9: Number of inhabitants traveling more than 5 km or 10 minutes to the nearest bank branch by municipality size

	Inhabitants		Inhabitants travelling more than 5 km		Inhabitants travelling more than 10 min	
	Number	Number	In %	Number	In %	
Switzerland	8,570,697	421,858	4.9	174,876	2	
by municipality size (nr. of inhabitants)						
>50,000	1,442,337	8,568	0.6	8,098	0.6	
10,001–50,000	2,683,904	38,202	1.4	20,956	0.8	
5,001–10,000	1,631,417	38,072	2.3	13,236	0.8	
3,001–5,000	1,109,204	46,149	4.2	17,262	1.6	
2,001–3,000	613,246	46,311	7.6	21,868	3.6	
<2,000	1,090,589	244,556	22.4	93,456	8.6	

Source: Own source

Note: Total population 8,570,697.

4.2.2 Travel Distances by Municipality

We illustrate the average travel distance to the closest bank branch on municipality level by households in Figure 11. We provide the corresponding map for average travel times in Figure A4 in the appendix. The darker the green, the smaller the distance. Overall, we observe a similar picture as in the case of ATMs (see Figure 7), albeit distances appear to be greater (a brighter green colour) compared to ATM distances.

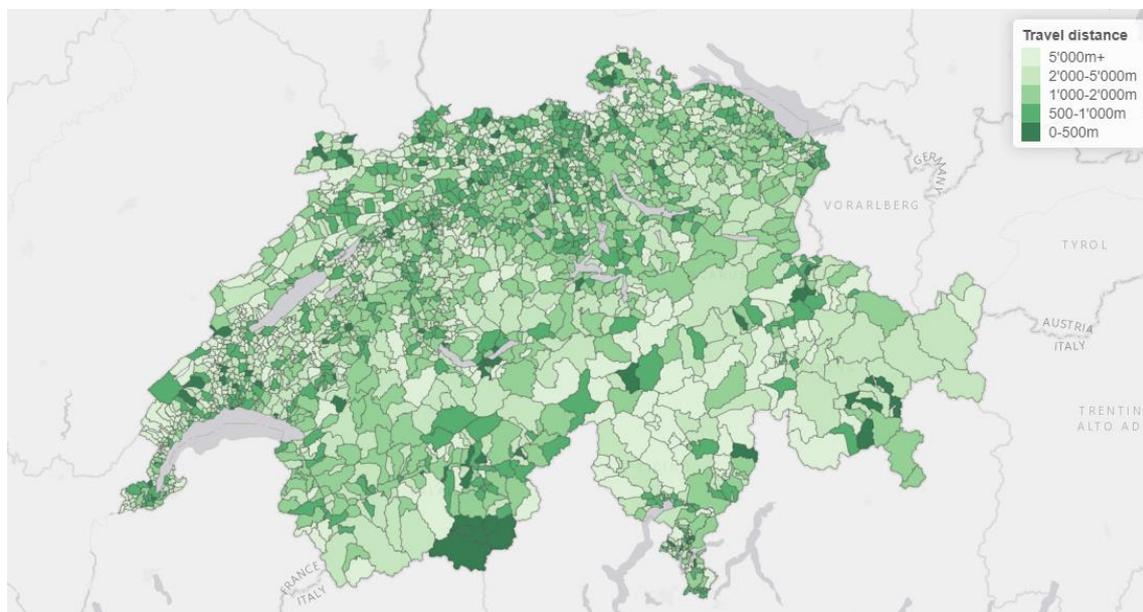


Figure 11: Average travel distance to nearest bank branch on municipality level (in m)

Source: Own source, see <https://dashboard.moneymap.ch> for an interactive analysis

Note: Household-weighted statistics

The distance to the nearest bank branch tends to be smaller in municipalities with urban and sub-urban characters, which is evident in the urbanized Swiss Mittelland. Conversely, travel distances seem to increase in rural municipalities. Again, there are some outliers in the Alps comprising of touristic hotspots, where the distance amounts less than 500 m. Overall, the availability of bank branches seems to be satisfactory. However, there are also municipalities where bank branch access is more restricted.

The bank branch network appears to be relatively dense in most parts of the country. We calculated the share of the population in every municipality that has to travel more than 5 km to access the closest bank branch (see Figure 12). Only a small share of people in each municipality resides more than 5 km away from the nearest bank branch. We observe a similar picture in Figure 11 and Figure 12 (the darker the green, the lower the share).

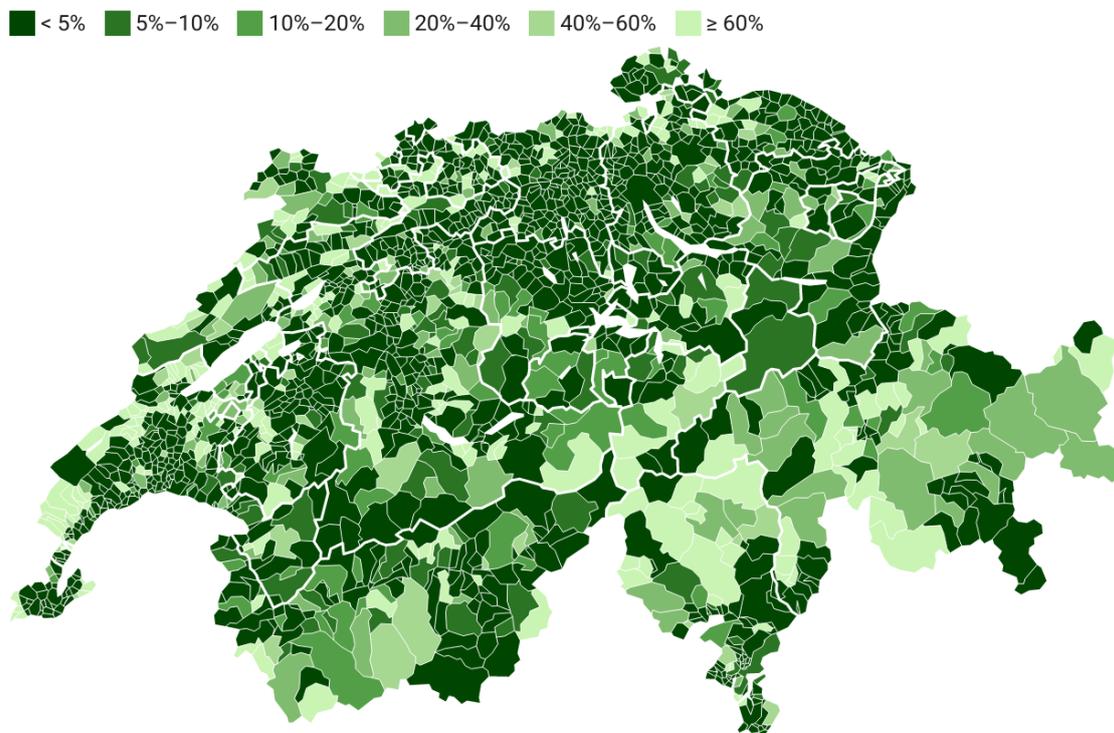


Figure 12: Share of population traveling more than 5 km to the closest bank branch by municipality
Source: Own source, see https://www.datawrapper.de/_Uj2U5/ for an interactive analysis

However, a high share of people in some municipalities in the rural areas of Switzerland has to travel rather far to reach a bank branch. For instance, more than 60% of residents in 309 municipalities have to travel more than 5 km to access a bank branch. In another 59 municipalities, this share ranges between 40% and 60% of residents.

To put differently, more than 40% of the population in 368 municipalities have to travel more than 5 km to reach the next bank branch (16.9% of all municipalities). In these municipalities, the number of inhabitants is small, with an average (median) number of 896 (631). As a result, the absolute number of residents that live beyond 5 km from the nearest bank branch in a municipality is on average very low (e.g., 40% of 896).

We further analyse whether bank branch availability in a municipality affects average travel distances. We find that 1,172 (54.0%) of the municipalities in Switzerland (among a total of 2,172 municipalities) do not host a bank branch. The share of municipalities with no bank branch is very high in the cantons Vaud (74.7%), Basel-Land (74.4%), and Geneva (66.7%), whereas every community in the cantons Glarus, Obwalden, and Zug is equipped with at least one bank branch (see Table A3 in the appendix). However, this does not necessarily imply that people from these municipalities have to travel extraordinarily far to reach a bank branch. In Switzerland, many municipalities are very close to each other.

Table 10 shows that the average distance to the closest bank branch is 3.7 km in municipalities without a bank branch compared to 1.1 km in municipalities with a bank branch. These distances are similar to the ones of ATMs (see Table 5). Median distances are somewhat lower meaning that half of the people have to travel 2.4 km more to the nearest bank branch in municipalities without a bank branch compared to municipalities with bank branch.

The share of people with more than 5 km travel distance is around 18 percentage points higher in municipalities without a bank branch (19.9%) compared to municipalities with bank branch (1.7%) (see Table 10). This share is only slightly higher (0.5 percentage points) compared to the case of ATMs, but it increases by 3.6 percentage points in municipalities without bank branch access (compared to the case of ATMs).

Table 10: Distance to the nearest bank branch by municipality with or without ATM access

	Municipality with bank branch access	Municipality without bank branch access
	(1)	(2)
(1) Average distance (in km)	1.1	3.7
(2) Median distance (in km)	0.8	3.2
(3) % of population traveling more than 5 km	1.7	19.9

Source: Own source

4.3 International Comparison

In order to classify our estimated results from above, we put them into an international perspective. Only a few studies from different countries computed travel distances to the nearest ATM and bank branch. Also, methodologies and the underlying data (e.g., the computation of straight-line distances, the definition of cash access points) differ from study to study. Therefore, the following figures have to be interpreted with caution except for Austria. We followed the same approach as the Austrian study (cf. Stix, 2020a), which makes our results highly comparable.

Table 11 compares the distances to the closest ATM in Australia, Austria, and Switzerland. The distances are very similar in Austria and Switzerland, albeit there is a higher number of people that travels very long distances to the next ATM in Switzerland compared to Austria (see the 99th percentile in Table 11). In Australia – not surprisingly given the extensive land surface with low population density –, 99% of the residents reach an ATM within 24.6 km compared to 6.5 km in Austria and 7 km in Switzerland. This implies that a bunch of people needs to travel very long distances to access cash at ATMs in Australia.

Table 11: International comparison of the distances to the nearest ATM

	Mean	P25	Median	P75	P90	P95	P99
Australia (June 2020)	n.a.	n.a.	n.a.	n.a.	n.a.	6.5	24.6
Austria (Q3 2020)	1.2	0.3	0.6	1.4	3.1	n.a.	6.5
Switzerland (Sept. 2021)	1.1	0.3	0.5	1.4	2.7	3.8	7.0

Source: Caddy and Zhang (2021), Stix (2020a)

Note: Comparing the data suffers from different methodologies. The underlying data for Australia refer to the shortest distance (Euclidean distance) between two points. Data for Austria and Switzerland refer to the pure travel distance. "P25" denotes the 25th percentile meaning that 25% of the population have to travel less far than the value specified.

We further found estimates of the share of people that lives within a 2 and 5 km range to the nearest ATM for Austria, Spain, and the UK (see Table 12). Again, ATM availability is very similar in Austria and Switzerland meaning that around 97% of the residents reach an ATM within 5 km. However, there are more people in Switzerland that reach an ATM within 2 km (84.6%) compared to Austria (82.4%).

In the UK, the availability of cash access points seems to be rather high: Around 96% of the people reside within 2 km of a cash access point, which not only includes ATMs but any bank, building society, or Post Office branch.¹⁶ 99.7% of the residents reach a cash withdrawal point within 5 km. This is similar to Spain, where 98% of the people live within 5 km to the closest cash access point (see Table 12).

¹⁶ Unfortunately, there is no information available about each type of cash access point.

Table 12: International comparison of the share of people living in a specific perimeter to the nearest ATM (in %)

	<2 km	<5 km
Austria (Q3 2020)	82.4	97.1
Spain (Dec. 2020)	n.a.	98
Switzerland (Sept. 2021)	84.6	97.4
UK (Q2 2021)	95.7	99.7

Source: Stix (2020a), Posada Restrepo (2021), FCA (2021)

Note: Numbers are in percent. Comparing the data suffers from different methodologies. First, the underlying data for Spain and the UK refer to the shortest distance (Euclidean distance) between two points. Data for Austria and Switzerland refer to the pure travel distance. Second, for Spain and the UK, the values reflect the share of people which has cash access to any bank, building society, Post Office branch, or any ATM.

With respect to the distances to the nearest bank branch, Austrian and Swiss residents have overall very similar travel distances (see Table 13). However, some individuals in Switzerland need to travel relatively long distances to reach a bank branch compared to Austria (see the 99th percentile in Table 13). Conversely, 99% of Australians reach a bank branch within roughly 30 km, which represents an extraordinarily high travel distance.

Table 13: International comparison of the average distances to the nearest bank branch

	Mean	Median	P90	P95	P99
Australia (June 2020)	n.a.	n.a.	n.a.	10.0	30.1
Austria (Q3 2020)	1.5	0.8	3.7	n.a.	7.7
Switzerland (Sept. 2021)	1.6	1.1	3.7	5.0	8.4

Source: Caddy and Zhang (2021), Stix (2020b)

Note: Comparing the data suffers from different methodologies. The underlying data for Australia refer to the shortest distance (Euclidean distance) between two points. Data for Austria and Switzerland refer to the pure travel distance. "P25" denotes the 25th percentile meaning that 25% of the population have to travel less far than the value specified.

The estimates of the share of people that live within a 2 and 5 km range to the nearest bank branch for Austria, Spain, and the UK show that access to bank branches is similar in Switzerland and Austria (see Table 14). However, there are more people in Austria that reach a bank branch within 2 km (76.9%) compared to Switzerland (73.7%). Contrarily, the availability of cash access points in the UK and in Spain appears to be rather high.

In sum, the share of people that lives close (within 2 km) to the nearest ATM is higher in Switzerland than in Austria, whereas more Austrians reside close (within 2 km) to a bank branch compared to the Swiss. Some Australians need to travel extraordinarily high distances to withdraw cash. The density of cash access points in the UK is rather high.

Table 14: International comparison of the share of people living in a specific perimeter to the nearest bank branch (in %)

	<2 km	<5 km
Austria (Q3 2020)	76.9	95.1
Spain (Dec. 2020)	n.a.	98
Switzerland (Sept. 2021)	73.7	95.1
UK (Q2 2021)	95.7	99.7

Source: Stix (2020b), Posada Restrepo (2021), FCA (2021)

Note: Numbers are in percent. Comparing the data suffers from different methodologies. First, the underlying data for Spain and the UK refer to the shortest distance (Euclidean distance) between two points. Data for Austria and Switzerland refer to the pure travel distance. Second, for Spain and the UK, the values reflect the share of people which has cash access to any bank, building society, Post Office branch, or any ATM.

5 Conclusion

This study has analysed the spatial distribution of ATMs and bank branches in Switzerland. It has provided empirical results of pure travel distances and times to the closest ATM and bank branch – not only across Switzerland but also on municipality level. The study is inspired by the work of Stix (2020a) for Austria and represents the first spatial assessment of cash access points in Switzerland. We have also published parts of our results in an interactive dashboard (see <https://dashboard.moneymap.ch>).

We draw the following main conclusions: First, Swiss residents have on average easy access to cash withdrawal points, both in terms of travel distance and time. Second, cash withdrawal points are closer and faster accessible in urban compared to rural areas and cantons, respectively. The greater the municipality size, the shorter the travel distances and times to the closest ATM and bank branch. Third, cash access is more restricted in some areas, particularly in small municipalities with up to 2,000 inhabitants. More than 40% of the population in 236 and 368 municipalities have to travel more than 5 km to reach the next ATM and bank branch, respectively. In these municipalities, the number of inhabitants is rather small, with an average number of 579 regarding ATMs and 896 regarding bank branches.

Fourth, 921 (42.4%) and 1,172 (54.0%) of the municipalities in Switzerland are not equipped with an ATM and bank branch, respectively. Fifth, the share of people with more than 5 km travel distance is around 15 to 18 percentage points higher in municipalities with no cash access points compared to municipalities with cash access points. Also, the average distance to the closest cash withdrawal point is much higher (3.4 km to 3.7 km) in municipalities without cash access compared to the ones with cash access.

Several caveats are worth mentioning. First, we are aware that new ways of withdrawing cash are emerging. We neither include innovative cash access points such as retail shops that offer cash-back nor post offices. However, 70% of the post offices are equipped with ATMs inside, or adjacent to, the post office, which we cover in our data.

Second, we ignore operating hours of bank branches and ATMs. However, we argue that only a minor number of ATMs has restricted operating hours in Switzerland, whereas bank branches are more prone to limited access.

Third, we do not include other interesting factors such as the sociodemographic and -economic composition of the population, its commuting and mobility behaviour, and the topological and structural characteristics of regions, to name a few, in our analysis. For instance, it would be interesting to see whether there are specific patterns in spatial cash access for elderly and financially excluded people. We leave these directions for further research. Also, information about the number, value, and time of cash withdrawals at each ATM would provide room for further studies.

References

- BdF, Banque de France (2019): État des lieux de l'accès du public aux espèces en France métropolitaine. [online] [https://www.banque-france.fr/sites/default/files/media/2019/07/23/rapport - acces au public aux especes en france metropolitaine - 23072019.pdf](https://www.banque-france.fr/sites/default/files/media/2019/07/23/rapport_-_acces_au_public_aux_especes_en_france_metropolitaine_-_23072019.pdf) [accessed 30.1.2022].
- Brown, M., Hentschel, N., Mettler, H., and Stix, H. (2020): The Causal Effect of Financial Innovation on Payment Choice and Cash Demand – Evidence from the Staggered Introduction of Contactless Debit Cards. In: OeNB Working Paper No. 230.
- Caddy, J. and Zhang Z. (2021): How far do Australians need to travel to access cash?, Bulletin June, Reserve Bank of Australia. [online] <https://www.rba.gov.au/publications/bulletin/2021/jun/how-far-do-australians-need-to-travel-to-access-cash.html> [accessed 30.11.2021].
- Delaney, L., O'Hara, A., and Finlay, R. (2019): Cash Withdrawal Symptoms, Bulletin June, Reserve Bank of Australia.
- FCA, Financial Conduct Authority (2021): Access to cash coverage in the UK 2021 Q2. [online] <https://www.fca.org.uk/data/access-cash-coverage-uk-2021-q2> [accessed 30.11.2021].
- Graf, S., Heim, N., Stadelmann, M. and Trütsch, T. (2021): Swiss Payment Monitor 2021 – How does Switzerland pay?, Issue 2/2021 – Survey May 2021, University of St. Gallen/ Zurich University of Applied Sciences. [online] www.swisspaymentmonitor.ch [accessed 30.12.2021].
- MCS, Monitoring Consumption Switzerland (2022): ATM-Transactions. [online] <https://monitoringconsumption.com> [accessed 30.12.2021].
- Posada Restrepo, D. (2021): Infraestructura del efectivo y vulnerabilidad en el acceso al efectivo en España, Boletín Económico, Banco de España.

- SIX (2021): Synergy potential in Swiss cash infrastructure. Market Insight #5. [online] <https://www.six-group.com/en/products-services/banking-services/cash/swiss-cash-infrastructure.html> [accessed 30.01.2022].
- SNB, Swiss National Bank (2020): Survey on Payment Methods 2020. Zurich/Bern.
- SNB, Swiss National Bank (2022a): SNB data portal. [online] <https://data.snb.ch> [accessed 30.1.2022].
- SNB, Swiss National Bank (2022b): Survey of Swiss Companies on Payment Methods 2021. Zurich/Bern.
- Sonea, A., Guo, W., and Jarvis, S. (2019): An exploratory spatial analysis of access to physical and digital retail banking channels in the UK. Technical report. [online] <https://www.thinkforwardinitiative.com/research/exploratory-spatial-analysis-of-access-to-physical-and-digital-retail-banking-channels-in-the-uk> [accessed 30.12.2021].
- STATPOP (2020): Statistics about population and households. Geodata 2020. [online] <https://www.bfs.admin.ch/bfs/en/home/services/geostat/swiss-federal-statistics-geo-data/population-buildings-dwellings-persons/population-housholds-from-2010.html> [accessed 30.1.2022].
- Stix, H. (2020a): A spatial analysis of access to cash in Austria, In: Monetary Policy and the Economy Q3/20, OeNB, p. 39–59.
- Stix, H. (2020b): The Austrian bank branch network from 2000 to 2019 from a spatial perspective, In: Financial Stability Report 40, OeNB, p. 87–101.
- Tischer, D., Evans J., and Davies, S. (2019): Mapping the availability of cash – A case study of Bristol’s financial infrastructure, In: Personal Finance Research Center, University of Bristol.
- Trütsch, T. (2017): Bankkarten verdrängen Bargeld. Die Volkswirtschaft, 8-9, p. 10–13.

Appendix

Table A1: Comparison of the distance and travel time to the nearest ATM by inhabitant and household

	Mean	Min.	P25	Median	P75	P90	P99
by inhabitants							
Distance (in km)	1.1	0	0.3	0.5	1.4	2.7	7
Travel time (in min)	3.6	0	2.3	3.3	4.6	5.6	10.7
by households							
Distance (in km)	1.1	0	0.3	0.5	1.4	2.8	7.5
Travel time (in min)	3.6	0	2.2	3.3	4.6	5.7	11.6

Source: Own source

Note: Total population 8,570,697, total number of households 3,989,566. For instance, "P25" denotes the 25th percentile meaning that 25% of the population have to travel less far or less long than the value specified.

Table A2: Travel time to the nearest ATM by municipality size and canton (in min)

	Mean	P25	Median	P75	P90	P99
by municipality size (nr. of inhabitants)						
>50,000	3.3	2.1	3.2	4.4	5.3	6.6
10,001–50,000	3.4	2.3	3.2	4.4	5.3	7.7
5,001–10,000	3.4	2.2	3.1	4.3	5.4	8.7
3,001–5,000	3.5	2.2	3.2	4.5	5.6	10
2,001–3,000	3.7	2.3	3.4	4.7	5.9	12
<2,000	4.7	2.8	4.2	5.8	8.1	16.1
by canton						
AG	3.4	2.3	3.2	4.4	5.4	7.9
AI	3.9	2.4	3.5	4.9	6.5	11.1
AR	3.7	2.3	3.4	4.8	5.9	9.6
BE	3.7	2.2	3.4	4.7	5.8	12.5
BL	3.7	2.5	3.5	4.8	5.8	10.9
BS	3.1	2	3	4.1	5	5.9
FR	3.6	2.4	3.4	4.7	5.7	9.5
GE	3.3	2	3.1	4.3	5.3	9.8
GL	3.9	2.4	3.3	4.4	5.5	25.2
GR	4.2	2.2	3.4	5	7.1	18.4
JU	4	2.2	3.5	5.1	7.1	14.5
LU	3.4	2.2	3.2	4.4	5.4	9.1
NE	3.8	2.4	3.6	4.8	5.8	10.7
NW	3.7	2.1	3.1	4.4	5.9	17.6
OW	4	2.3	3.4	4.8	7.2	16.5
SG	3.3	2.1	3.1	4.4	5.4	8.9
SH	3.8	2.3	3.6	4.8	5.9	10.8
SO	3.5	2.2	3.2	4.5	5.7	9.9
SZ	3.4	2	3	4.4	5.6	10.4
TG	3.3	2.2	3.1	4.3	5.2	7.2
TI	4	2.3	3.4	4.8	6.1	16.9
UR	3.7	2	3	4.6	5.7	16.5
VD	3.9	2.6	3.7	4.9	6	10.5
VS	3.9	2.2	3.3	4.7	6	16
ZG	3.5	2.3	3.3	4.5	5.4	9.5
ZH	3.4	2.3	3.3	4.4	5.4	6.9

Source: Own source

Note: Total population 8,570,697. For instance, “P25” denotes the 25th percentile meaning that 25% of the population have to travel less long than the value specified.

Table A3: Share of municipalities with no ATM and bank branch per canton

	Nr. of municipalities without ATM access	Nr. of municipalities without bank branch access	Total nr. of municipalities	Share of municipalities without ATM access (in %)	Share of municipalities without bank branch access (in %)
BL	58	64	86	67.4	74.4
VD	204	230	308	66.2	74.7
JU	31	28	53	58.5	52.8
SH	14	12	26	53.8	46.2
BE	180	206	339	53.1	60.8
GE	23	30	45	51.1	66.7
FR	59	78	128	46.1	60.9
SO	44	59	107	41.1	55.1
GR	41	49	101	40.6	48.5
TI	43	55	111	38.7	49.5
AG	78	115	210	37.1	54.8
NE	10	14	27	37	51.9
BS	1	1	3	33.3	33.3
VS	37	33	122	30.3	27
ZH	46	91	162	28.4	56.2
AR	5	13	20	25	65
TG	20	37	80	25	46.2
NW	2	2	11	18.2	18.2
LU	14	26	80	17.5	32.5
AI	1	1	6	16.7	16.7
UR	3	9	19	15.8	47.4
SZ	4	7	30	13.3	23.3
SG	3	12	77	3.9	15.6
GL	0	0	3	0	0
OW	0	0	7	0	0
ZG	0	0	11	0	0

Source: Own source

Note: Total number of municipalities 2,172. Sorted by column 5.

Table A4: Travel time to the nearest bank branch by municipality size and canton (in min)

	Mean	P25	Median	P75	P90	P99
by municipality size (nr. of inhabitants)						
>50,000	4	2.8	3.9	5	5.9	8.9
10,001–50,000	3.7	2.5	3.5	4.6	5.6	9.5
5,001–10,000	3.7	2.4	3.4	4.7	5.8	9.8
3,001–5,000	3.9	2.4	3.5	4.9	6.2	11.5
2,001–3,000	4.4	2.6	4	5.5	7.3	15.5
<2,000	5.6	3.4	5	7	9.5	17
by canton						
AG	3.9	2.6	3.6	4.9	6	9.9
AI	3.9	2.4	3.5	5	6.7	11.4
AR	4.4	2.6	3.8	5.6	7.7	13
BE	4.1	2.6	3.7	5.1	6.6	14.1
BL	4.1	2.7	3.8	5.1	6.3	12
BS	3.5	2.6	3.4	4.5	5.4	6
FR	4.1	2.6	3.9	5.3	6.6	11.1
GE	4	2.7	3.8	5	6	11.1
GL	3.6	2.4	3.2	4.3	5.5	17.4
GR	4.7	2.5	3.8	5.6	8.7	21.4
JU	4.1	2.3	3.6	5.2	7	16.7
LU	3.8	2.5	3.6	4.8	5.8	11.4
NE	4.1	2.7	3.9	5	6.5	13.7
NW	3.8	2.1	3.1	4.5	5.8	18.7
OW	4	2.3	3.4	4.9	6.8	16.3
SG	3.7	2.4	3.5	4.7	5.9	11.3
SH	4.3	2.8	4	5.3	7	10.8
SO	3.7	2.4	3.4	4.7	5.8	11.8
SZ	3.7	2.3	3.3	4.6	5.9	13.1
TG	3.6	2.4	3.4	4.5	5.6	8.7
TI	4.4	2.5	3.6	5.2	7.4	19.3
UR	4.8	2.5	3.6	5.8	8.7	22.1
VD	4.3	2.7	3.9	5.3	7	14.3
VS	4.2	2.4	3.5	4.9	6.7	18
ZG	3.7	2.5	3.5	4.8	5.7	9.4
ZH	4.3	2.9	4	5.3	6.6	9.8

Source: Own source

Note: Total population 8,570,697. For instance, “P25” denotes the 25th percentile meaning that 25% of the population have to travel less long than the value specified.

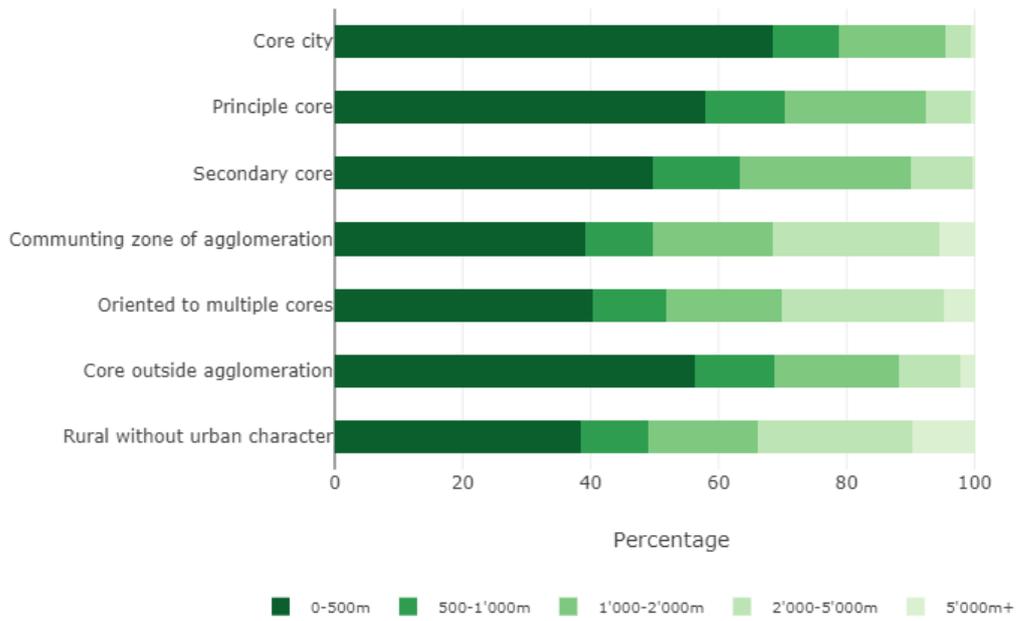


Figure A1: Travel distance to the nearest ATM by municipality type
Source: Own source, see <https://dashboard.moneymap.ch> for an interactive analysis
Note: The figure exhibits how far which share of households has to travel to access the closest ATM separated by municipality types. Household-weighted statistics

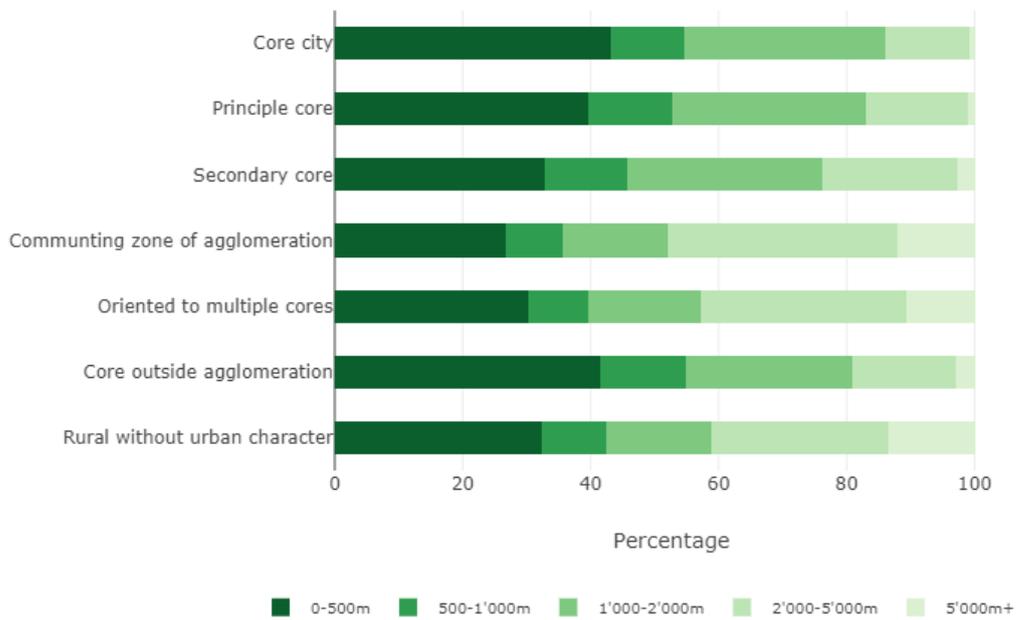


Figure A2: Travel distance to the nearest bank branch by municipality type
Source: Own source, see <https://dashboard.moneymap.ch> for an interactive analysis
Note: The figure exhibits how far which share of households has to travel to access the closest bank branch separated by municipality types. Household-weighted statistics

in Minutes



Figure A3: Average travel time to the nearest ATM on municipality level (in min)

Source: Own source, see https://www.datawrapper.de/_p5ION/ for an interactive analysis

Note: Household-weighted statistics

in Minutes



Figure A4: Average travel time to the nearest bank branch on municipality level (in min)
Source: Own source, see https://www.datawrapper.de/_2jFcl/ for an interactive analysis
Note: Household-weighted statistics