

11<sup>th</sup> IMF Statistical Forum  
**MEASURING MONEY IN THE  
DIGITAL AGE**

November 15-16, 2023 | Washington, DC

#StatsForum



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STATISTICS

# The economic nature of bitcoin: money, new gold or speculative asset?

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# **Is bitcoin money?**

**1. Medium of exchange**

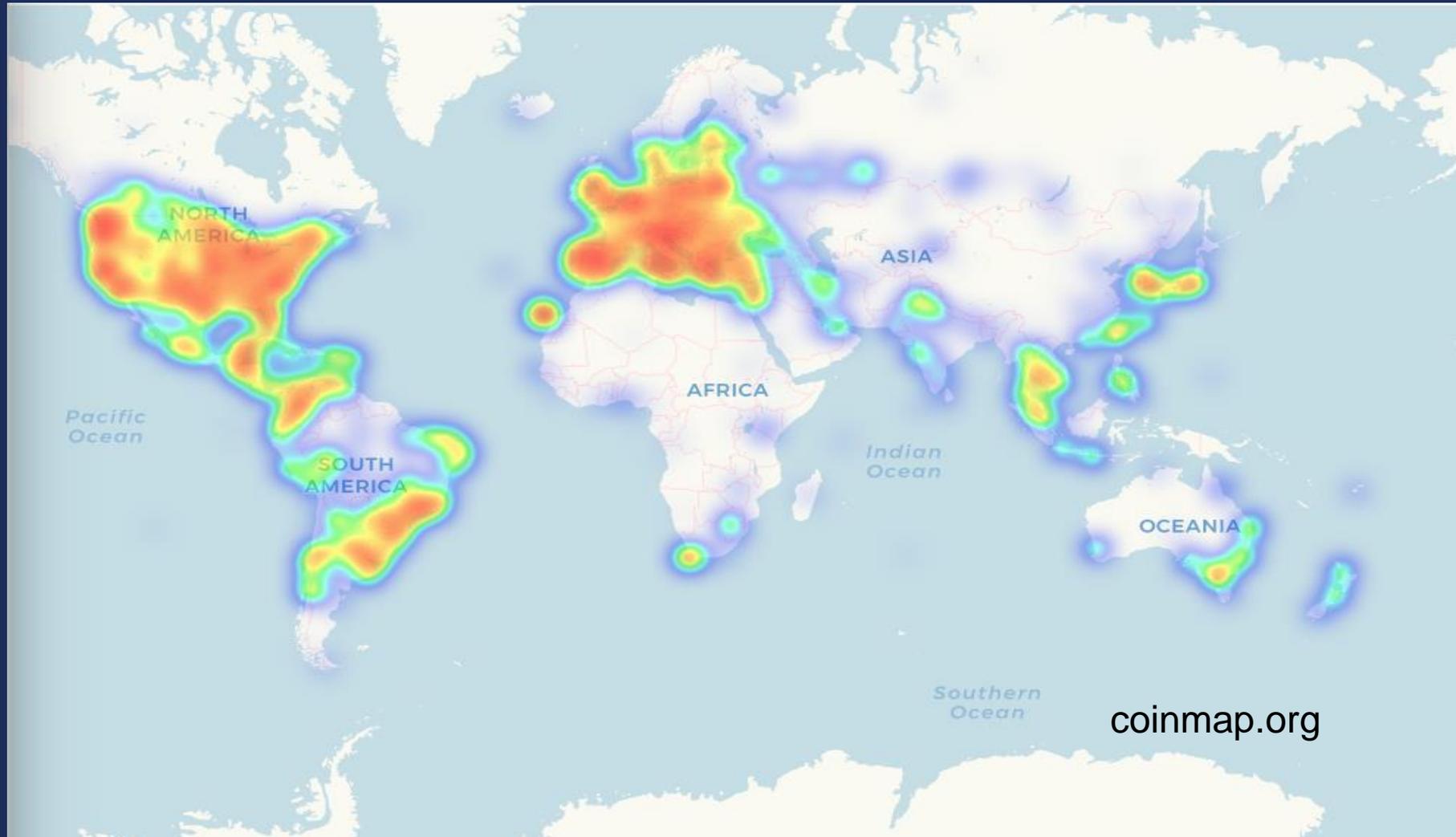
**2. Store of value**

**3. Unit of account**

# Is bitcoin money?

**Medium of exchange: use,  
acceptability and limited supply**

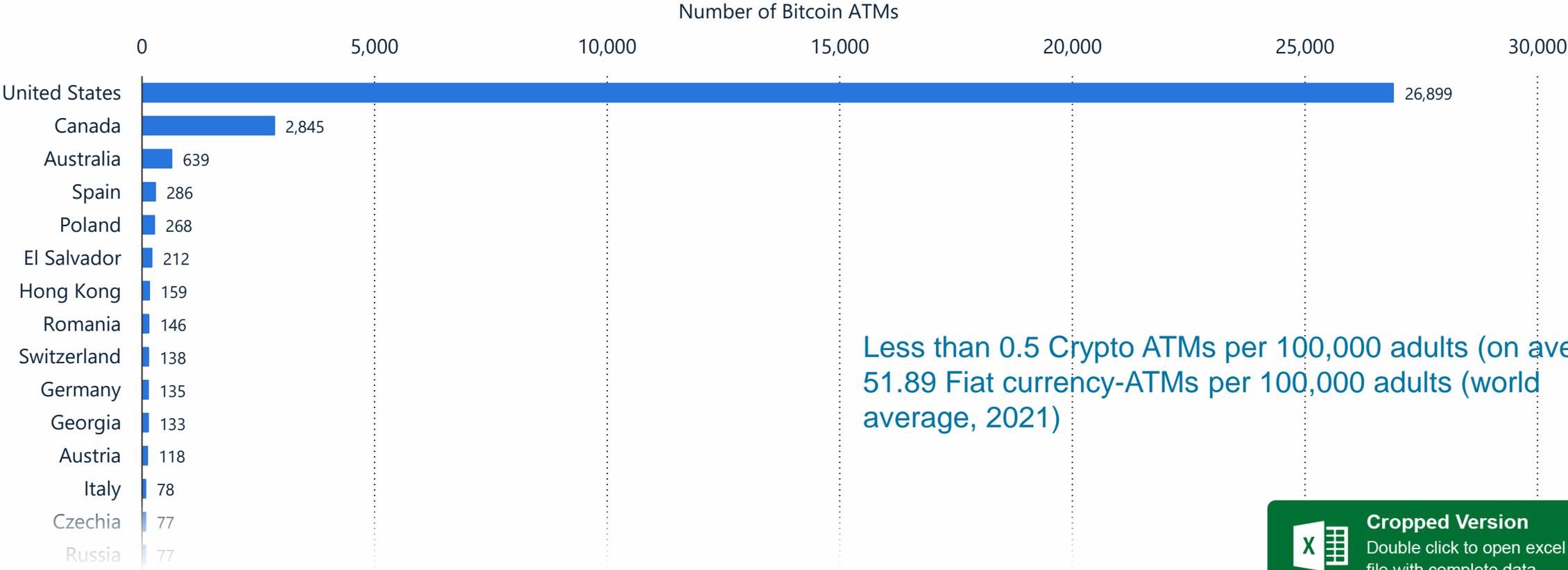
# Venues accepting bitcoin, October 18<sup>th</sup> 2023



- 15,174 businesses worldwide accept bitcoin
- 1,000,000+ POS in Germany alone in 2018

# Number of Bitcoin ATMs in 84 countries and territories worldwide as of September 15, 2023

Bitcoin ATMs in 84 countries worldwide as of September 15, 2023



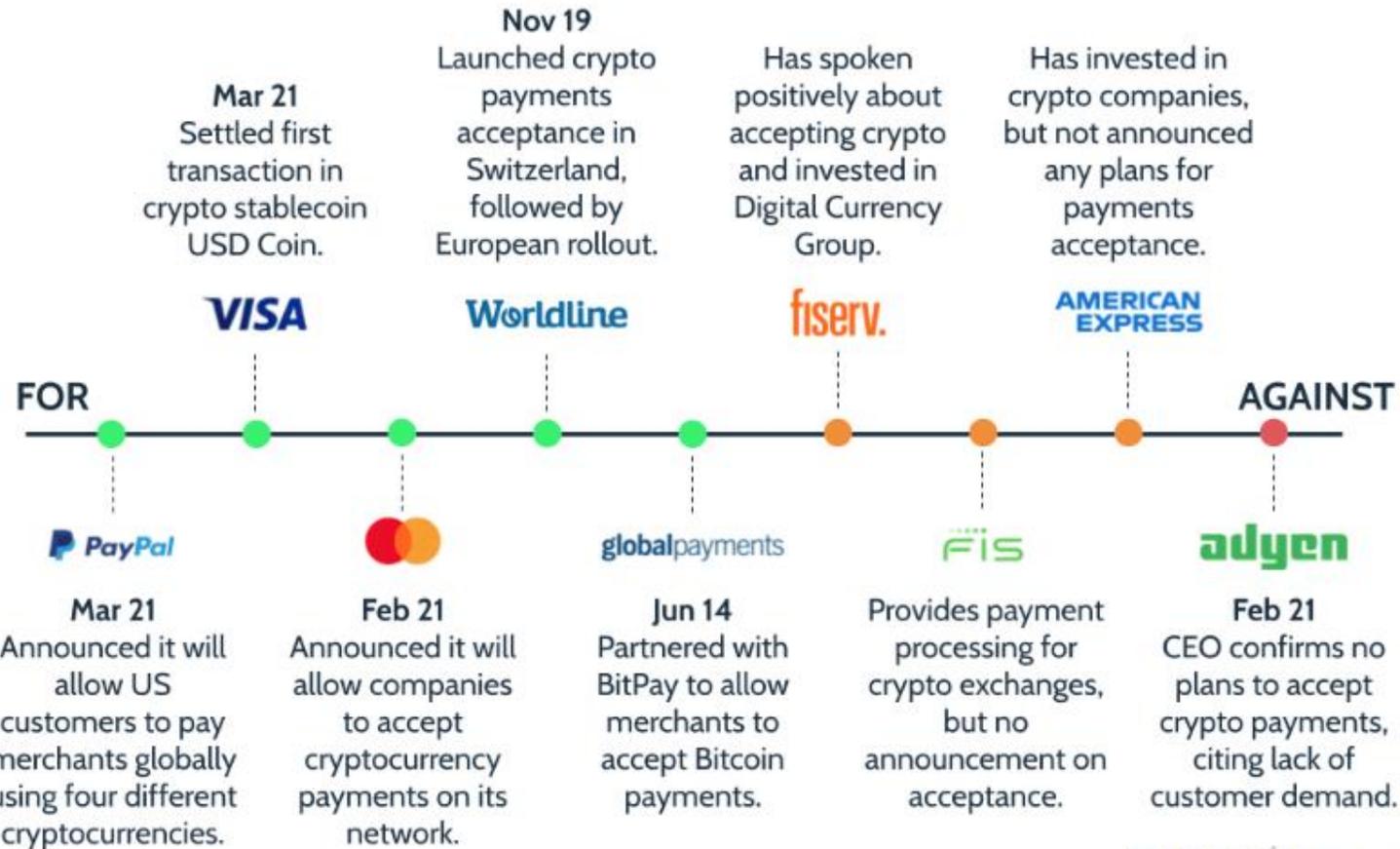
Less than 0.5 Crypto ATMs per 100,000 adults (on average)  
 51.89 Fiat currency-ATMs per 100,000 adults (world average, 2021)

**Cropped Version**  
 Double click to open excel file with complete data

31 **Description:** The highest number of Bitcoin ATMs was recorded in the United States in 2023, with significant more machines found here than elsewhere in the world. Canada, the United Kingdom and Austria followed. There are two main types of Bitcoin ATMs: the basic ones, allowing the users only to purchase Bitcoins, and more complex ones, enabling the users both to buy and sell the virtual money. In case of complex ATMs, only the members of a particular ATM producer can use the ATM. General [...] [Read more](#)  
**Note(s):** Worldwide  
**Source(s):** Coin ATM Radar

# Paying in cryptocurrency: The positions of key companies

The current stances of leading payment processors and card networks



Source: FXC Intelligence analysis.

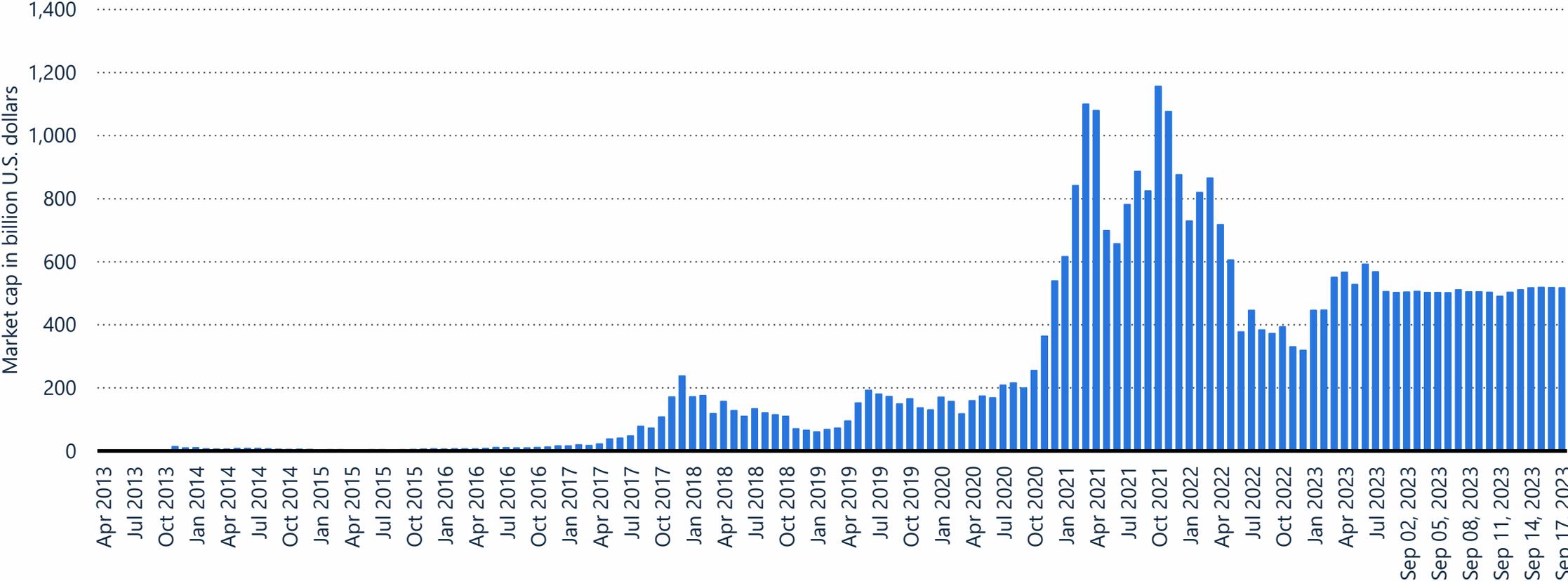
FXCintelligence

# TPS: number of transactions a blockchain can process per second

Blockchain	Bitcoin	Bitcoin SV	Bitcoin Cash	Ethereum	Litecoin	Dash	VISA	Paypal
Average TPS	1.5018857	1.22660375	0.80071792	4.82773346	0.16280953	0.13120847	2320.09978	285.3881279
Maximum TPS	5.67875	51.1717361	24.3506829	15.6237269	2.62136574	34.981331	4385.46423	393.2014206

# Market capitalization of Bitcoin (BTC) from April 2013 to September 17, 2023 (in billion U.S. dollars)

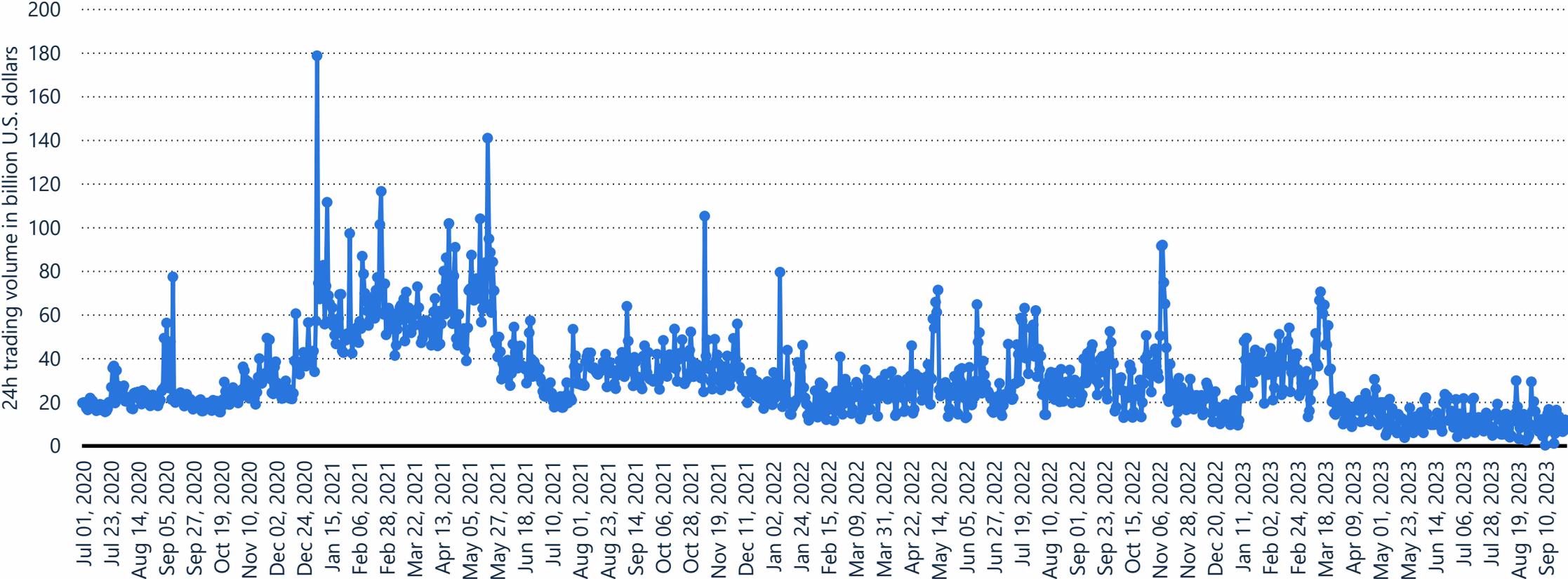
Daily Bitcoin (BTC) market cap history up until September 17, 2023



**Description:** In April 2021, the Bitcoin market cap reached an all-time high and had grown by over 1,000 billion USD when compared to the summer months. The market capitalization decline since that moment, reaching roughly 600 billion U.S. dollars in June 2021. Market capitalization is calculated by multiplying the total number of Bitcoins in circulation by the Bitcoin price. The Bitcoin market capitalization increased from approximately one billion U.S. dollars in 2013 to several times this amount since [...] [Read more](#)  
**Note(s):** Worldwide; April 2013 to September 17, 2023; Monthly figures are as of the end of that particular month  
**Source(s):** CoinMarketCap

# Bitcoin (BTC) 24 hour trade volume from July 1, 2020 to September 27, 2023 (in billion U.S. dollars)

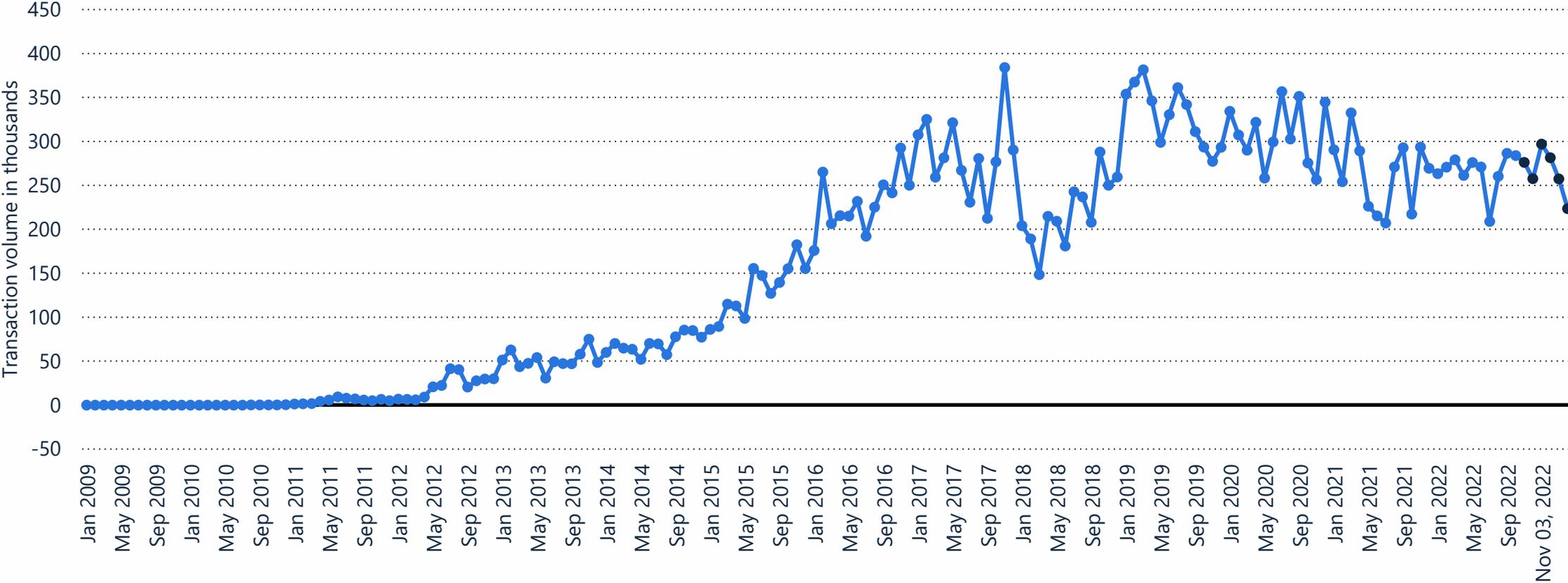
Daily Bitcoin (BTC) 24h volume history up until September 27, 2023



**Description:** Bitcoin trading volume peaked in late February 2021 to a level much higher in the rest of the year, marking a significant month in the coin's history. Whilst there is no clear explanation why the trade volume went up so much on February 26, Bitcoin's price development suggests the cryptocurrency's value around that time declined somewhat after weeks of growth and continued media attention. That morning, Bitcoin went down by around 11 percent - potentially sparking a buying frenzy for [...] [Read more](#)  
**Note(s):** Worldwide; July 1, 2020 to September 27, 2023  
**Source(s):** CoinGecko

# Number of Bitcoin (BTC) transactions per day on the blockchain from January 2009 to November 6, 2022 (in 1,000s)

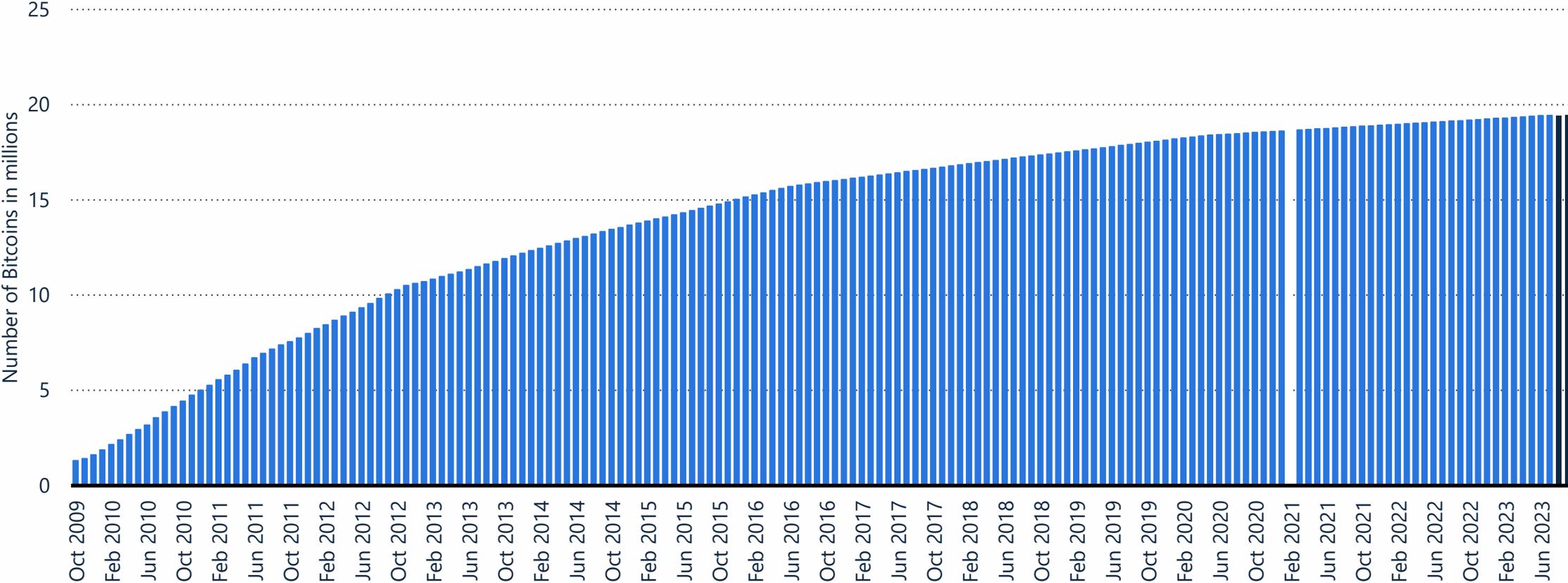
Bitcoin (BTC) daily transaction volume up until November 6, 2022



**Description:** Bitcoin would be processed on the blockchain roughly 200,000 times per day in November 2022, a figure that stayed relatively stable in 2022. Compared to other cryptocurrencies such as Ethereum, this transaction volume was significantly bigger. This might explain the high market capitalization of several cryptocurrencies. [Read more](#)  
**Note(s):** Worldwide; January 2009 to November 6, 2022; Monthly figures are as of the end of that particular month; The numbers provided concern network transactions, not the trading volume of each coin  
**Source(s):** BitInfoCharts

# Number of Bitcoin tokens in circulation from October 2009 to August 2, 2023 (in millions)

Bitcoin (BTC) circulating supply history up until August 2, 2023



**Description:** How many Bitcoins are in circulation? Since its inception in late 2009, figures for this cryptocurrency kept on increasing gradually. At first glance, the number of Bitcoins currently in existence have not been dramatically influenced by price surges in 2017 and 2020.  
**Note(s):** Worldwide; October 2009 to August 2, 2023; Bitcoin (BTC) has a maximum supply of 21 million coins  
**Source(s):** Blockchain; Messari

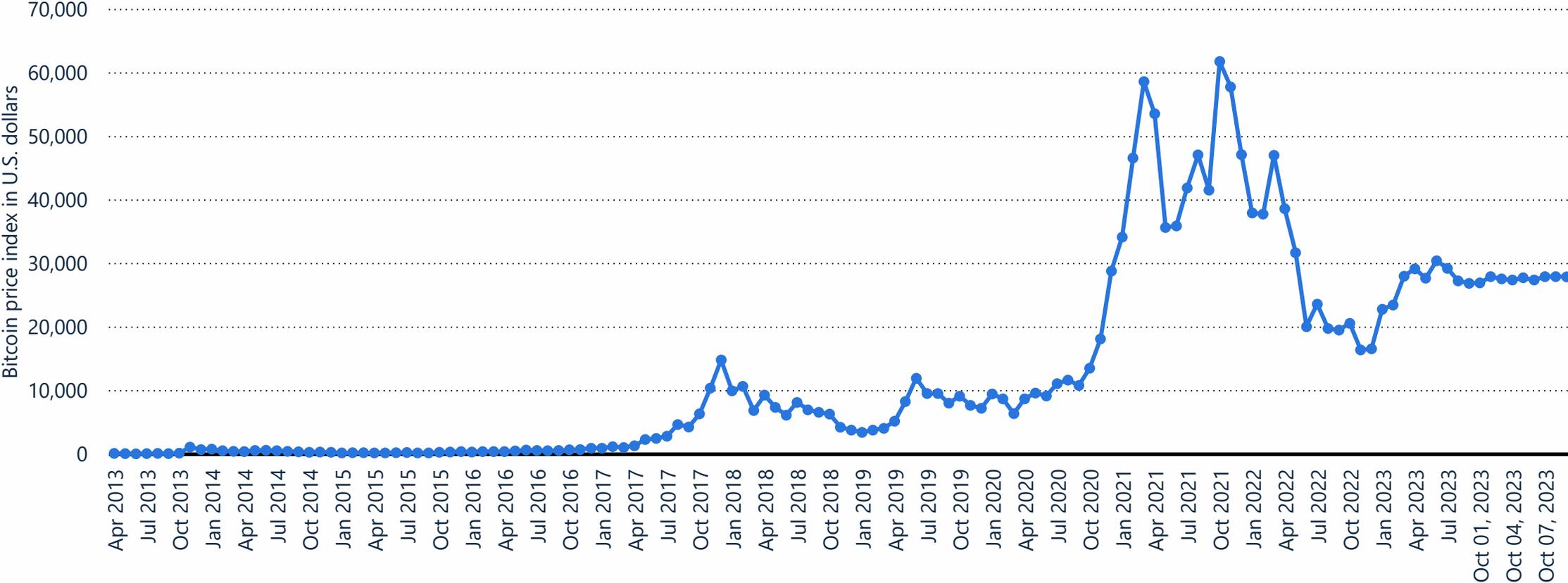
# Is bitcoin money?

**Store of value:**

**Price volatility and deflationary effects**

# Bitcoin (BTC) price per day from Apr 2013 - Oct 09, 2023 (in U.S. dollars)

Bitcoin BTC/USD price history up until Oct 09, 2023

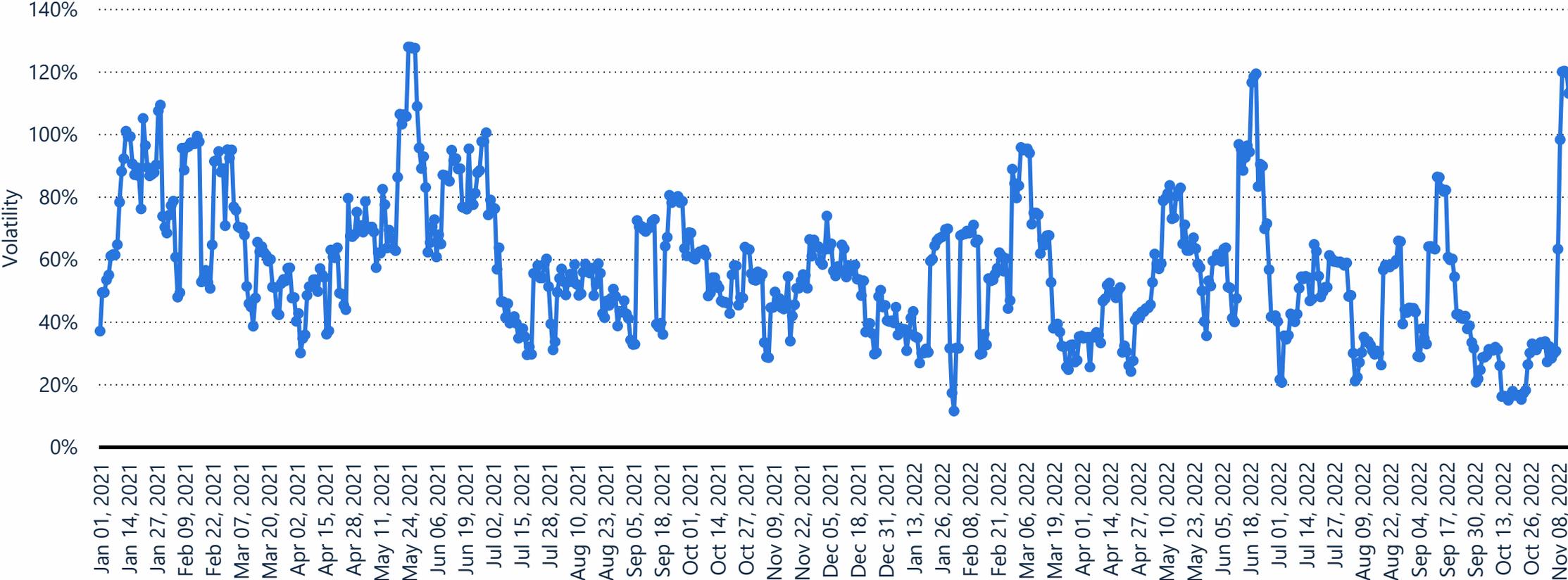


**3** **Description:** Bitcoin (BTC) price again reached an all-time high in 2021, as values exceeded over 65,000 USD in November 2021. That particular price hike was connected to the launch of a Bitcoin ETF in the United States, whilst others in 2021 were due to events involving Tesla and Coinbase, respectively. Tesla's announcement in March 2021 that it had acquired 1.5 billion U.S. dollars' worth of the digital coin, for example, as well as the IPO of the U.S.' biggest crypto exchange fueled mass interest. The [...] [Read more](#)  
**Note(s):** Worldwide; Apr 2013 - Oct 09, 2023; Monthly figures are as of the end of that particular month; Opening price  
**Source(s):** CoinGecko



# Volatility - the price fluctuation - of Bitcoin (BTC) from January 1, 2021 to November 14, 2022

10-day Bitcoin BTC/USD realized volatility until November 14, 2022



5 **Description:** Price swings of Bitcoin increased substantially in November 2022, recording a 10-day volatility of more than 100 percent. Measured in a metric called volatility, the percentage shown here reflect how much the price of BTC in U.S. dollars changed historically over a preceding 10-day window. Changes can be either up or down, with a higher volatility reflecting that an asset is more risky, as price movements are less easy to predict and can swing in any direction. The volatility metric referred [...] [Read more](#)  
**Note(s):** Worldwide; January 1, 2021 to November 14, 2022; Rolling 10-day realized volatility, benchmarked against the S&P 500  
**Source(s):** Website (Portfolioslab.com)



## Bitcoin price Log Scale

# Is bitcoin money?

**Unit of account:**

**Price volatility and deflationary effects**

# Big Mac Prices in El Salvador and Switzerland



- Big Mac price at McDonald's El Salvador: \$3.60 (0.00018 BTC)
- Big Mac menu price at McDonald's El Salvador: \$5.80 (0.00029 BTC)
- Big Mac price at McDonald's Switzerland: \$7.51 (0.00038 BTC)
- Big Mac menu price at McDonald's Switzerland: \$14.11 (0.00070 BTC)

# Mining, hedge and safe haven



Image from Creative Commons



Image from Creative Commons

# Is bitcoin a speculative asset?



**YES!!!**

**It is owned for future benefits**

**Keynesian beauty context**

**Bitcoin bubble price behaviour**

# Conclusions

- Bitcoin does not absolve the three key economic functions of money. Hence, BITCOIN IS NOT MONEY
- Bitcoin can not be classified as a safe haven. Hence, BITCOIN IS NOT THE NEW GOLD
- Bitcoin fundamental value is related to investors' beliefs and its price trend is characterized by price bubbles. Hence, BITCOIN IS A SPECULATIVE ASSET
- FURTHER LINES OF RESEARCH