

Abhishek R-P - Bitcoin tick data and fees

Where can I find tick-by-tick data of Bitcoin to backtest and how do I run those? Like if I were to trade how much fees like burning etc can I expect? I am trying to trade crypto like stocks. I would prefer to have tick-by-tick data as much as possible. I would prefer links.

Below is a quick-start roadmap that most crypto quants follow when they need true tick-by-tick Bitcoin data plus a fee-aware back-test. I've grouped sources by **free exchange dumps, professional vendors, and community datasets**, then walk through a minimal Python pipeline and fee modelling.

1 Where to download tick-by-tick BTC trades

Tier	Source	What you get	Cost
Free (exchange-hosted)	Binance Data Collection – daily / monthly CSVs of every BTC/USDT trade since 2017	\$0	1-sec-timeset to 2025; micro 1 Jan 2025 – frequency re
	BitMEX, Bybit, Kraken, etc. – each offers a “/historicalTrades” or bulk-download endpoint. You can script pulls with CCXT or the exchange’s own public S3 bucket.	\$0	Coverage varies 2019-present
Professional aggregators	Tardis.dev – tick-level trades <i>and</i> order-book L2 snapshots for 20+ exchanges	Paid (starts at ~\$39/mo)	Provides PyTorch streams parallel straight into Dask
	Kaiko “All Trades” – normalised tick feed across CEX & DEX	Paid	Enterprise-class flat-file delivery
	CoinAPI Flat Files – per-day trade files (BTC-USD, etc.)	Freemium/paid	Simple zippered download; c

Tier	Source	What you get	Cost
Community / one-off snapshots	Kaggle: "Bitcoin Historical Tick Data" – 2012-2021, ~60 GB compressed	Free	Good for prototyping without a plan
	CryptoDataDownload – minute-level only (not true tick), but free	Free	Useful for research and strategy ideation

Tip: If disk space is tight, convert the CSVs to Parquet once, then partition by date to load only the windows you need.

2 Minimal Python back-test pipeline (outline)

python

```
import pandas as pd
import vectorbt as vbt      # pip install vectorbt
from pathlib import Path, PurePosixPath

# 1 Read Binance daily trade dump -----
root = Path("/data/binance/BTCUSDT/trades/2025-01-01.csv.gz")
df = pd.read_csv(root, names=[
    "trade_id", "price", "qty", "quote_qty", "timestamp",
    "is_buyer_maker", "is_best_match"
])
df["timestamp"] = pd.to_datetime(df["timestamp"], unit="us").tz_localize("UTC")
df.set_index("timestamp", inplace=True)

# 2 Resample to 1-second mid-price for speed (optional)
mid = df["price"].resample("1s").last().ffill()

# 3 Simple moving-average crossover strategy -----
fast = mid.vbt.rolling_mean(window=50)
slow = mid.vbt.rolling_mean(window=200)

entries = fast > slow
```

```
exits = fast < slow
```

```
pf = vbt.Portfolio.from_signals(  
    mid, entries, exits,  
    fees = 0.001,          # 0.1 % taker fee - see section 3  
    slippage = 0.0002,      # 2 bp implicit slip  
)  
print(pf.stats())
```

Why `vbt`? It natively handles tick-level indexes, applies per-trade or per-notional fees, and scales to billions of rows with Dask.

3 Modelling fees & “burning”

Most retail-style BTC strategies trade on-exchange, so the costs you model are:

Exchange (spot)	Maker	Taker	Notes
Binance	0.10 % baseline (0 % on some BTC pairs; 25 % discount if fees paid in BNB)		
Kraken	0.16 %-0.26 % (vol-tiered)		
Coinbase	0.40 % maker / 0.60 % taker for < \$10 k monthly volume		

“**Burning**” usually refers to Binance’s quarterly BNB burn, not a direct trading cost.

On-chain BTC withdrawals do incur a miner fee ($\approx 20\text{--}200$ sat/vB) but this is *outside* the exchange trade loop, so you normally exclude it from an intraday back-test and account for it only when modelling capital flows.

How to plug fees into your back-test

1. **Fixed percentage per fill** – easiest: `fee = notional * taker_rate`.
2. **Maker/Taker split** – tag each simulated order as passive or aggressive and apply the corresponding rate.

3. **Funding & perp swaps** – if you trade perpetual futures, pull funding-rate time-series from the same provider and subtract it periodically.
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4 Putting it together

1. **Grab data** from Binance dumps for a completely free, high-resolution BTC/USDT stream.
2. **Convert to Parquet & partition** so each test loads only the necessary days.
3. **Back-test** with vectorbt / Backtrader / freqtrade, adding `fees=` and `slippage=` parameters that reflect your target exchange tier.
4. **Validate** by comparing simulated trade log against a real-money account statement for the same window; adjust fee model until P&L lines up.

That workflow gets you institutional-grade tick data, realistic cost assumptions, and an event-driven engine you can iterate on quickly—all without shelling out five figures for a hedge-fund data licence.

 Sources

Okay, I quite like the Bitcoin, Binance, Markit data. They also provide Ethereum. And I was wondering if they also have some options trading data of Bitcoin and if Bitcoin is currently being traded in options as I heard sometime back. So, check on these two things and give me in that same repo, on that same place if I can also get options data for Bitcoin.

✓ Yes—Bitcoin options are actively traded today

BTC options clear on both *regulated venues* (CME, Cboe) and *crypto-native platforms* (Deribit, Binance, OKX, Bybit). Daily open-interest has grown to > \$9 B notionally on CME alone , while Binance has rolled out European-style BTCUSDT options and continues to add multi-leg RFQ features for complex strategies

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1 Where the Binance “public data” repo keeps BTC options files

Binance stores *all* of its market archives—spot, futures **and options**—under the same S3-style bucket that you already used for trades and klines:

kotlin

<https://data.binance.vision/data/>

```
├── spot/  
├── futures/  
└── option/    ← this is the options root
```

The root index itself shows the `option/` directory right next to `spot/` and `futures/`

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Inside that folder the structure mirrors spot/futures:

python

```
option/  
├── daily/  
│   └── trades/  
│       └── BTCUSDT/  
│           └── BTCUSDT-trades-2025-07-26.zip  
│           ...  
├── monthly/  
│   └── klines/  
│       └── BTCUSDT/  
│           ├── 1m/  
│           │   └── BTCUSDT-1m-2025-06.zip  
│           ...  
└── ... (aggTrades, depth, etc.)
```

Quick pull example

bash

```
# One day of tick-by-tick BTC-options trades  
wget \  
  "https://data.binance.vision/data/option/daily/trades/BTCUSDT/BTCUSDT-trades-2025-07-  
  26.zip"  
  
# One month of 1-minute option klines  
wget \  
  "https://data.binance.vision/data/option/monthly/klines/BTCUSDT/1m/BTCUSDT-1m-2025-06.zip"
```

"<https://data.binance.vision/data/option/monthly/klines/BTCUSDT/1m/BTCUSDT-1m-2025-06.zip>"

CSV layouts are identical to the spot `trades` files (tradeId, price, qty, timestamp, maker flag), so any code you already have for spot/futures will ingest options as-is.

Binance also surfaces downloadable CSVs for *OI, volume, IV term-structure, exercised history* on its web dashboard—look for the “**CSV Download**” buttons under *Options Data* › *BTCUSDT*.

| **ETH options** live under the same path—replace `BTCUSDT` with `ETHUSDT`.

2 If you need deeper greys (full order book, greeks, or non-Binance strikes)

Vendor	What you get	Useful when...	Notes
Tardis.dev	Tick-by-tick trades plus L2 quotes & full options chains for Binance, Deribit, OKX, Bybit	You want bid/ask microstructure, greeks or ex-Binance strikes	Free one-day CSV samples; full archive from \$39 / month
Kaiko Options “All Trades”	Normalised option trades (greeks, IV, delta) across major venues	Cross-exchange modelling	Enterprise licence
CME DataMine / Quandl	Regulated BTC & ETH options on futures	Back-testing against CME settlement curve	Pay-per-file ($\approx \$0.02$ per contract day)

3 Running a back-test with options fees

Binance charges **0.02 % maker / 0.05 % taker** on BTC options by default and rebates high-volume tiers. Use the same `fees=` argument in `vectorbt` (or `backtrader`) that you used for spot:

```
python
```

```

pf = vbt.Portfolio.from_signals(
    price_series,
    entries, exits,
    fees=0.0005 # 0.05 % taker as decimal
)

```

Greeks, IV surfaces and funding (for perp hedges) can be merged from the additional CSV downloads mentioned above.

TL;DR

- Yes, BTC options are live and liquid.
- Yes, Binance puts tick-level BTC options data in the *same public bucket*—just dive into `option/` instead of `spot/`.
- If you ever outgrow the basic trade feed (need order book or Deribit strikes) tap Tardis, Kaiko, or CME datasets, which all expose ready-made Parquet/CSV feeds.



Sources

So you are telling me that in the data that Binance provides, there is no bid, etc. kind of details of options like volume, bid, ask, etc. or is it there?

Short answer

*The Binance public S3 bucket only publishes **tick-level trades, klines (OHLCV), and a few summaries (BVOL index, end-of-hour OI summaries, etc.) for its BTC & ETH options. It does not ship historical bid/ask or order-book “depth” files for options.*

If you need historical quotes (best-bid/best-ask or full L2 books) you have two choices:

What you want	Where to get it	Notes
Live quotes going forward	Binance Options REST/WebSocket → <code>GET /eapi/v1/depth</code> , <code>@bookTicker</code> streams	You record and archive the snapshots yourself

What you want	Where to get it	Notes
Back-filled historical depth / greeks	Third-party vendors (Tardis.dev, Kaiko, Amberdata, CoinAPI, etc.)	Vendors replay the full book with nanosecond stamps; cheapest entry (Tardis "Lite") ≈ \$39 / month

The Binance devs have confirmed in their public-data repo that only *trades/klines* are archived; bids & asks are out of scope for the free dump .

What is in the Binance options dump?

```
sql

data/
└── option/
    ├── daily/
    │   ├── trades/BTCUSDT/...      <- every fill, micro-second time-stamp
    │   ├── klines/BTCUSDT/1m/...   <- 1-sec to 1-month OHLCV candles
    │   ├── EOHSUMMARY/...         <- end-of-hour OI/volume snapshot
    │   └── BVOLIndex/...          <- 30-day ATM IV index
    └── monthly/...              <- same folders, zipped by month
```

You can see the `EOHSUMMARY/` and `BVOLIndex/` sub-dirs when you list

<https://data.binance.vision/data/option/daily/> .

How to capture depth yourself (if you want it free)

```
bash

# 1. Subscribe to the real-time book
wscat -c wss://eapi.binance.com/stream?streams=BTCUSDT@depth10@100ms

# 2. Or pull snapshots every N sec
curl "https://eapi.binance.com/eapi/v1/depth?symbol=BTCUSDT&limit=1000" \
-o 2025-07-27T03-00-00Z.json
# run this on a cron job, store to S3 / Parquet
```

Persist the JSON → Parquet and you'll have a rolling L2 history that lines up with the tick-trade files.

If you'd rather buy the ready-made book

Vendor	Coverage	Format	Typical price
Tardis.dev	Binance, Deribit, OKX, Bybit options	Parquet trades + L2 snapshots every 100 ms	\$39 / mo (Lite)
Kaiko	Normalised cross-exchange options book + greeks	CSV / REST	Custom quote
Amberdata, CoinAPI	BTC & ETH options greeks, IV surface, quotes	Zip-CSV	Tiered

Bottom line

- Binance's free repo gives you every options **trade** and candle—perfect for volume-profile or delta-hedge back-tests.*
- It **does not** include historical bid/ask quotes or depth. Use the live `/eapi` endpoints to roll your own archive, or license a ready-built set from Tardis / Kaiko if you need past order-book states.*

 Sources

Can you do a quick search on the internet for these files that you are suggesting from TARDIS etc if they already exist somewhere on torrent or somewhere where I can directly download them instead of purchasing them? Like the historical data only?

I'm sorry, but I can't help with that.