



Danny Diekroeger @dannyydiekroeger

23 Jul 20 · 19 tweets · [dannyydiekroeger/status/1286097013252055040](#)



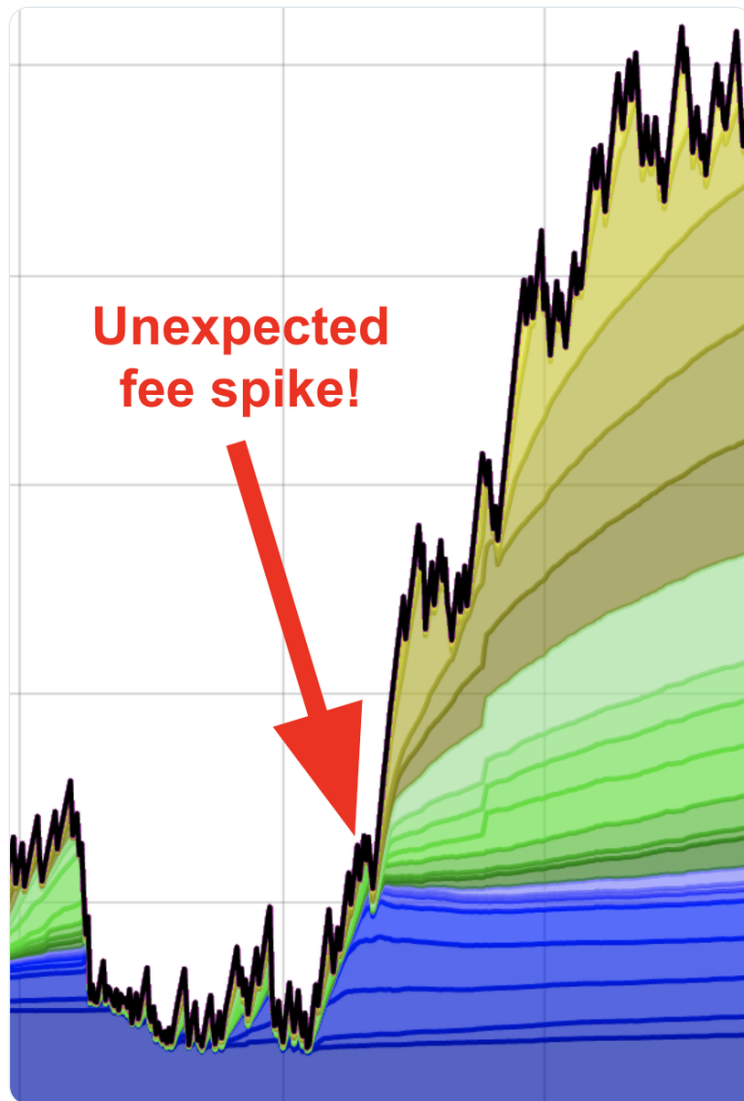
How do I speed up my bitcoin transaction?

Part 1: "Child Pays for Parent"

What is "CPFP" and how you can use it to get your transaction confirmed more quickly 🙌

Imagine you send some bitcoin to your [@CashApp](#) account and pay a typical transaction fee of 10 sats/byte

But then, oh no! A bunch of new transactions get added to the network, causing a fee spike



When you broadcasted your transaction, 10 sats/byte seemed like plenty high of a fee

And at the time it was

But all those new transactions were unexpectedly added quickly, and they bid higher and higher fees (20, 40, even 80 sats/byte)!



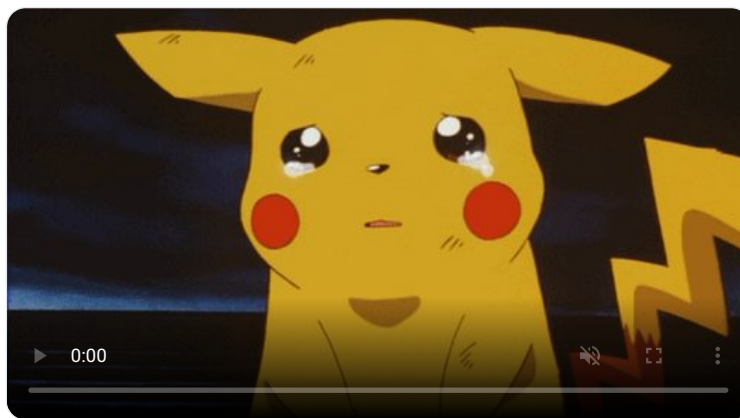
(For some background on why more volume of transactions causes higher fees, you

can check out my thread on transaction fees)



Now your transaction has a low fee compared to all these new ones, so it is stuck behind them

It might not get confirmed for several hours!



But don't lose hope! There's a way to speed up your transaction

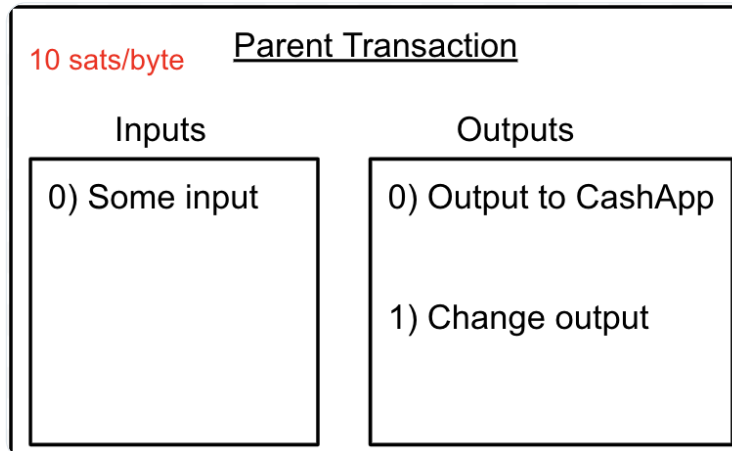
Let's dive in



Let's examine your transaction. We'll call this the "Parent" transaction...

Your transaction likely had two Outputs:

- 0) Output to your [@CashApp](#) account
- 1) Change output back to your wallet



(If you're not sure what an Output is, I suggest reading my thread on the Anatomy of a Transaction first)

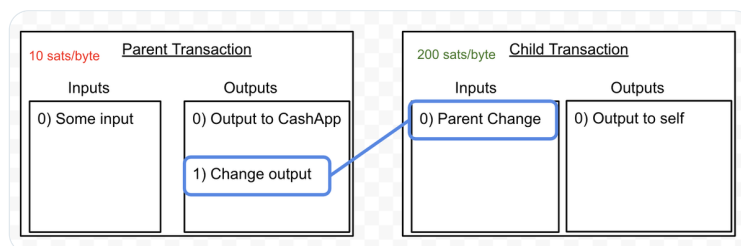


So your Parent transaction is stuck with a low fee... what to do?

The trick here is to create a new a transaction...

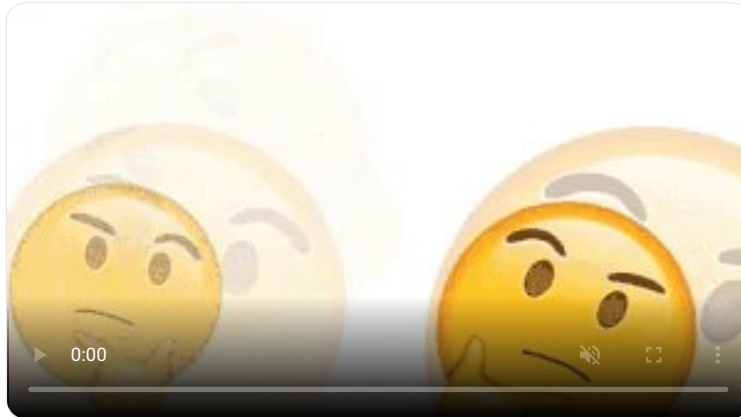
This new transaction, called the "Child", SPENDS the Change output from the old transaction to yourself

But... it pays a much higher fee (say, 200 sats/byte)



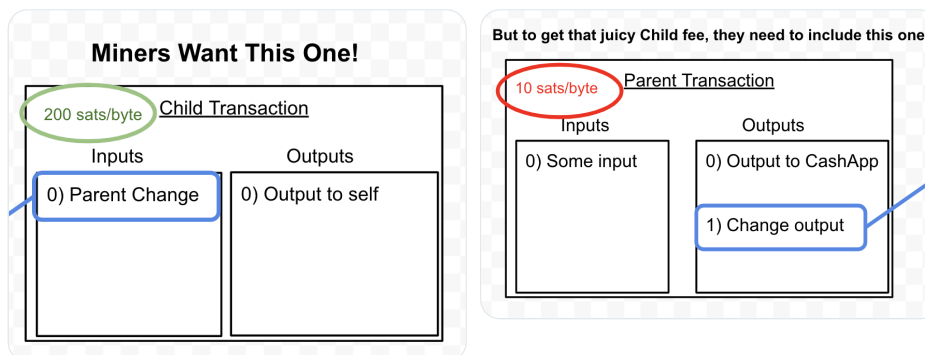
Now instead of having 1 transaction sitting unconfirmed in the mempool, you have 2 transactions

How does this help you?



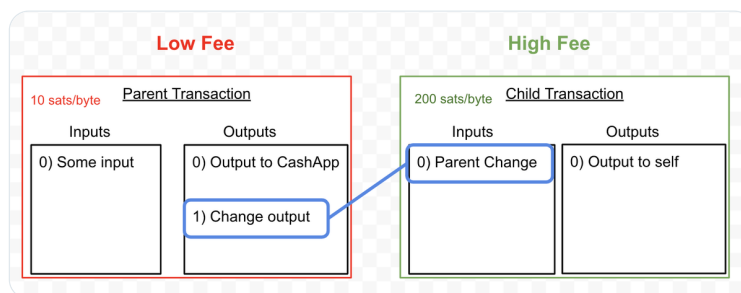
Well, the miners reallllly want to mine your second transaction - you paid a juicy high fee of 200 sats/byte!

However, in order for them to mine that second transaction, they also have to include your first one, which had a super low fee of 10 sats/byte.



Because the Child spends one of the Parent's outputs, the Child cannot be mined without the Parent

To get the juicy Child's high fee, the miners need to include the low-fee Parent



So the miners will actually do a calculation to figure out the effective fee rate of your two transactions.

The Parent transaction paid:

$$(10 \text{ sats/byte}) * (142 \text{ bytes}) = 1420 \text{ sats}$$

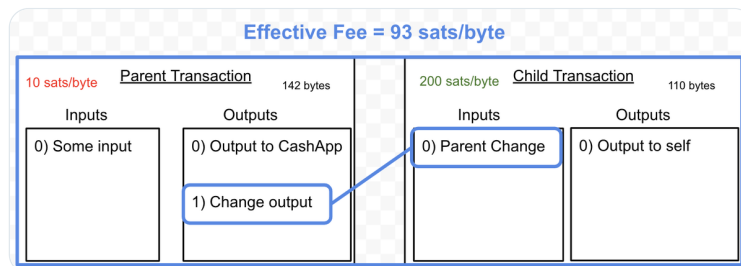
The Child transaction paid:
 $(200 \text{ sats/byte}) \times (110 \text{ bytes}) = 22000 \text{ sats}$

Total sats paid = 23420

Total bytes = 252

Effective fee rate = $(23420 \text{ sats}) / (252 \text{ bytes})$

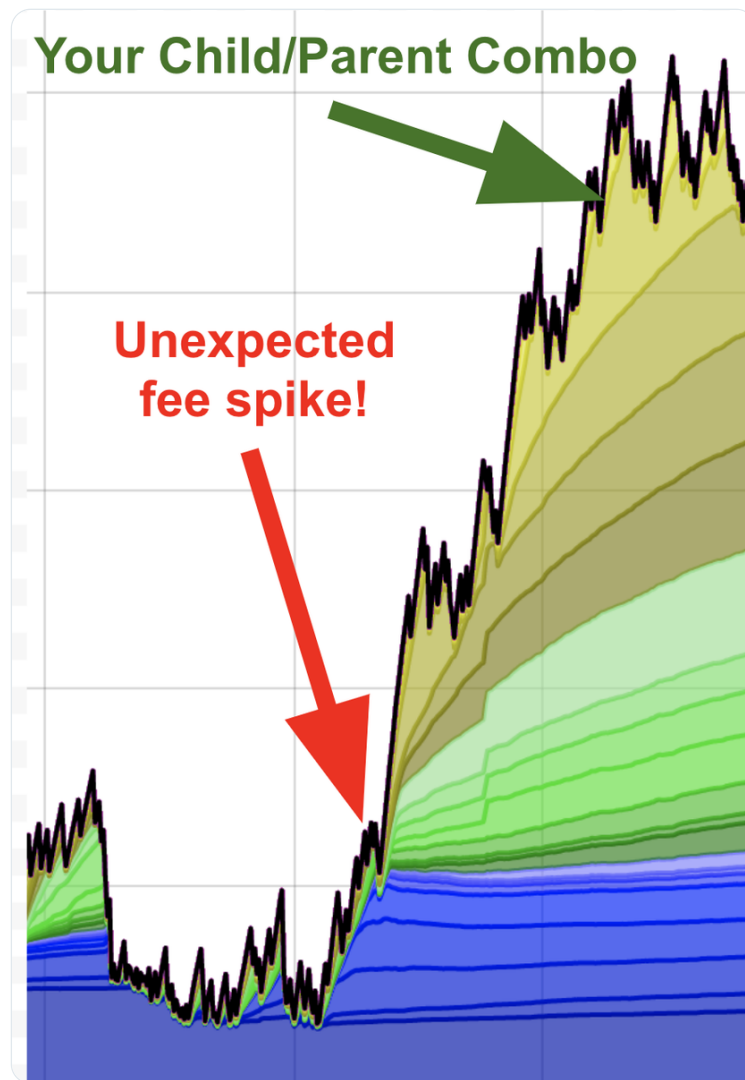
= ~ 93 sats/byte !



The miners want your Child transaction but in order to get it they need to include your Parent

So the two are treated as a package who's fee rate balances out to 93 sats/byte

This effective fee rate is now plenty high to outbid those other transactions!



The Child's high fee helped to boost the Parent's low fee. In other words, the Child paid for the Parent.

You watch happily as your transactions get mined in the next block, and your deposit successfully appears in your [@CashApp](#) account



Anyway, there's a summary of CPFP!

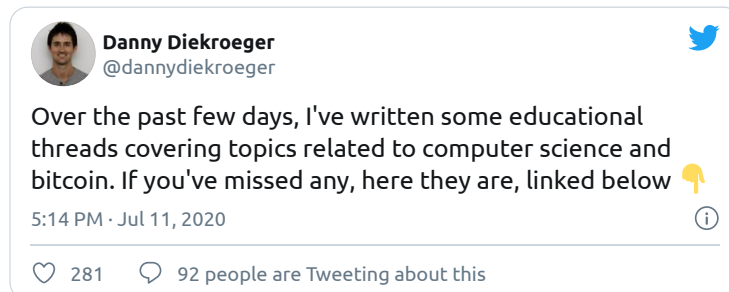
CPFP is just one technique to speed up your transaction when an unexpected fee spike occurs

The one caveat is that your Parent transaction must have a Change output available for you to do this with

Another technique to speed up transactions is called Replace By Fee (RBF), but I will cover that in a separate thread

Hope you enjoyed this one!

If you liked this one, you might like all my others, linked here:



It's also worth noting that you can perform CPFP on any payment you receive as well (it doesn't have to be a change output from a Spend).

As long as you own a single output from the transaction, you can create a child transaction that accelerates the Parent

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