The end result of both a traditional 401k or Roth 401k contribution will be the same if the tax rate now and when the money is later withdrawn is the same. This analysis assumes a constant 30% tax rate. $19,500 is contributed to both types of accounts and grows at 6% annually for 30 years. Note in the table below that the post tax outcome of both accounts is the same. The embedded tax liability within the traditional IRA grows proportionally with the investment growth rate.

The goal is to pay the tax when the tax rate is expected to be lower. For most, this will be in retirement. Thus, the traditional 401k is generally favored.

	Earned	Tax	Contribution	Value in 20 years	Tax	Post tax
Roth	$19,500	($5,850)	$ 13,650	$ 43,777	0	$ 43,777
Traditional	$19,500	0	$ 19,500	$ 62,539	($18,762)	$ 43,777

The above case assumes that only $19,500 is available to contribute to either account. However, things change if the tax bill is paid with outside dollars such that both accounts end up with a starting balance of $19,500.

To accurately compare the traditional 401k to the to the Roth, we have to start with that same pretax amounts. In order to contribute $19,500 to a Roth 401k, you'd have to start with $27,857 in pretax income as shown below. You'd then have $8,357 remaining after making the pretax traditional 401k contribution and be left with $5,850 after paying the tax on that remaining amount.

Roth	
Earnings	$27,857
30% tax	($8,357)
Contribution	$19,500
Traditional	
Earnings	$27,857
Contribution	$19,500
Remaining	$8,357
30% tax on remaining	($2,507)
Post tax remaining	$5,850

If the $5,850 were to grow at exactly 6% it would be equal to the tax bill of $18,762 due upon the withdrawal of that initial $19,500 contribution which, after 20 years, will have grown to $62,539. However, the $5,850 will grow slower than 6% if it is held in a taxable account due to the ongoing taxation of dividends. If we assume a 2% dividend yield which is taxed at the 15% dividend tax rate, the growth rate will be 5.7%. Plus, there will be another 15% capital gains tax on the growth when the amount is withdrawn. The post tax value of that $5,850, if withdrawn, after 20 years is $16,571. That's $2190 less than the tax bill due on the 401k.

How much lower must the tax bill be on the $62,539 traditional account to leave us with a total equal to that of the Roth? This is shown below.

Traditional	$62,539	
Break even tax	($16,571)	26.5%
Post tax traditional	$45,968	
Post tax taxable	$16,571	
Total post tax	$62,539	

The breakeven tax rate is 26.5%; not 30%. A future tax rate lower than this will result in more post tax dollars from the traditional 401k plus the post tax funds remaining in the taxable account.

Recall that the tax liability within the 401k grows propotionally to the investment growth rate. However, the $5850 remaining after making the contribution is growing slower than the investment growth rate. It is this slower growth rate that necessitates the lower breakeven tax rate. As shown in the table below, the longer the time horizon the lower the breakeven tax rate.

	A	B	C	D		
Years	Roth	Traditional	Taxable acct	Post tax value	Break even tax rate rate	Wealth gained (A-D)
0	$19,500	$19,500	$5,850			
5	$26,095	$26,095	$7,718	$25,803	28.9%	$292
10	$34,922	$34,922	$10,184	$34,207	28.0%	$715
20	$62,539	$62,539	$17,728	$60,349	26.5%	$2,190
30	$111,998	$111,998	$30,861	$106,824	25.4%	$5,174