**W3 V2 Individual Demand**

0:11  
In this video, we're going to introduce the concept of a demand curve.

0:13  
We're going to start with individual demand because again, microeconomics is about individual choices and markets are composed of individuals.

0:20  
So if we start with individuals, we can then eventually in the last video get to the market.

0:25  
OK, we're going to talk about calculating it in equations and representing it on a graph as well.

0:30  
But the most important thing for you guys, especially right now when you're getting this is to focus on the intuition, right, the relationship between demand and Marshall willingness to pay.

0:39  
In week one, we've built in this strong intuition, hopefully of Marshall willingness to pay.

0:44  
That is where all of our economic intuition is coming from.

0:47  
So if you build the link between demand and Marshall willingness to pay, you're golden in terms of thought experiments, in terms of any questions that you can answer.

0:55  
OK.

0:56  
So just a reminder that we are working still within a perfectly competitive market.

1:00  
So every individual just reacts to prices.

1:04  
There's no setting prices, There is no negotiating, no nothing in here.

1:08  
You look at a price, the flashing red sign, you react to it by choosing your quantity and you can buy as much as you want because you're so tiny relative to the market.

1:18  
OK, good.

1:19  
So people are making choices.

1:21  
We've already covered that in module one.

1:22  
How do we make choices?

1:23  
Well, they compare the benefits, the cost.

1:26  
We did a really useful trick in in module 1 where we said, look, if I'm talking about units, extra units, I don't want to have to keep calculating these things for every unit.

1:37  
Let me put all of the stuff that's hard to calculate on one side, call it marginal willingness to pay.

1:41  
Then I can just compare something intuitive, what you're willing to pay for the extra unit to what it costs for the extra unit in terms of a price, right.

1:48  
So just the price, the explicit part on one side, everything else on the other side.

1:53  
Which is why all of your intuition is going to come here.

1:55  
If you're still, you know, not so firm with this, go back to module one.

1:59  
Make sure you understand Marshall willingness to pay.

2:01  
This is where it's going to really pay off.

2:03  
OK, So every person looks at the extra unit and says extra willingness to pay extra price and then decides how many units they're going to buy at that given price, right?

2:15  
So they're facing the price flashing red sign how many units do I want to buy?

2:19  
Because that's my only choice variable as a consumer.

2:24  
There are some implicit assumptions in here in that we're able to kind of think about the marginal willingness to pay.

2:29  
We have all of the competence.

2:31  
We've clearly defined the next best alternative we have.

2:34  
We're able to put stuff like valuations into dollars.

2:38  
All of that from module one directly plugs in here, OK.

2:42  
One of the other things that we're going to use a lot, especially when we're drawing a demand curve, is this idea where we've got willingness to pay looking something like that marginal cost in this case is just going to be the price, OK?

3:00  
So I can effectively just stop at that Last unit with a marginal willingness to pay is exactly equal to the price, right?

3:08  
Every unit to this side, marginal willingness to pay is going to be higher.

3:11  
Every unit to the other side, marginal willingness to pay is going to be lower.

3:14  
So this is where marginal willingness to pay equals price.

3:18  
And this is also where I'm going to stop and choose my quantity.

3:23  
Notice what I missed?

3:24  
I didn't label my axis.

3:26  
OK, so please always pay attention to that.

3:29  
So implicitly in everything we do in following thing, unless explicitly stated otherwise, I'm working with a nicely behaved Marshall willingness to pay, which is downward sloping.

3:39  
OK, so pay attention to that.

3:41  
That is an important implicit assumption we're making.

3:44  
And also the assumption that when I'm indifferent, right, willingness to pay is exactly equal to price, I buy that particular unit.

3:52  
So I stop exactly at the last unit, which I buy with a Marshall willingness to pay is equal to price.

3:58  
That's going to be something useful for us when we're tracing through the demand curve to be able to relate demand to Marshall willingness to pay.

4:07  
OK.

4:07  
So when we're tracing out the demand curve, here's the third experiment we're doing.

4:11  
Pick a price, right?

4:12  
Whatever's flashing the thing, consumers have no choice over that.

4:15  
They're going to go back to their things that they have in control, which is how many units to buy.

4:20  
They're going to look at their marginal willingness to pay, and they're going to say all of those units for which the marginal willingness to pay is greater than the price I buy when it's exactly equal to the price with continuous data.

4:30  
I stop at that point.

4:32  
OK.

4:33  
Now I've identified one point in the demand curve change the price go up, go down.

4:38  
And when you follow the same process, you are going to trace through your individual demand curve for any price.

4:45  
I can tell you exactly how many units this person will demand when they're going through that marginal willingness to pay versus price calculation on their own.

4:54  
OK.

4:54  
So that's the economic intuition.

4:55  
That's where you come back when you're trying to understand what's changing and why.

5:00  
OK.

5:01  
We will represent that typically with data which will ask you to use to either draw a demand curve or work with a graph to answer some questions.

5:09  
Sometimes we'll give you data that's discreet and that's the example that we're going to start out with.

5:14  
But there's another subtlety in here where we'll give you data that has quantity on this axis and then we'll give you total willingness to pay.

5:21  
So this is total willingness to pay for three units, right?

5:25  
Which is $12.00 in here.

5:27  
Now we know from before that total willingness to pay tells me nothing about how people choose quantity, right?

5:35  
So the first step when you see this is to scan for what data you're given total willingness to pay and convert it into marginal willingness to pay.

5:44  
OK, sometimes you're lucky and you're just given marginal willingness to pay.

5:47  
Fantastic.

5:47  
Use that.

5:48  
If not, you have to go back to that calculation that we didn't week one and figure that out.

5:55  
Now that I have this information, I'm going to completely ignore this information here.

6:01  
I'm just going to use the quantity in the Marshall willingness to pay to figure out what the price is.

6:06  
So pick a price.

6:07  
For example, let me pick a price of three.

6:10  
Here's a price of $3 when the price is $3.

6:14  
That's a flashing red sign that you're going to take to the consumer.

6:16  
And you're going to ask this consumer, how many units do you want to buy when the price is 3?

6:20  
Well, they'll say, do I want to buy the first unit?

6:23  
Yes, because Marshall willingness to pays 5 second unit, yes, because it's 4/3 is exactly the same as price.

6:30  
Do I want to buy it?

6:31  
I'm indifferent.

6:32  
We assume you buy it, right.

6:33  
So the first unit, the when the price is 3, this person is going to buy a total of 3 units.

6:39  
That's one point on the demand curve.

6:42  
OK, Change the price, repeat it, do exactly the same thing.

6:46  
What happens when the price is, I don't know, 5 to $6, Let's do $6, $6.

6:52  
Do they want to buy anything 5432?

6:55  
Nope, I don't want to buy anything.

6:57  
That's right there.

6:59  
What about when it's $1.00, price is $1.00?

7:02  
I buy 12345 units.

7:07  
OK.

7:07  
Basically continuing this process, you're going to say I buy the first unit as long as the price is 5 or exactly 5 is when I switch from buying to not buying.

7:21  
I buy the second unit.

7:23  
I switch from the first to the second.

7:25  
I buy that extra unit only if the price drops to four.

7:30  
That's the first time I start buying the second unit because that is where my willingness to pay is exactly at 4.

7:39  
And that's when I'm willing to switch, even though I'm indifferent.

7:42  
Right.

7:42  
And you continue on with this process and you're basically going to get a nice demand curve that looks like that.

7:49  
Notice what I did here was called price.

7:51  
I said when the price is $1.00, how many units you want to buy.

7:59  
Well, this person said five When the price is $2.00, How many units you want to buy.

8:03  
This person said four when the price is 3/3 when the price is 4/2 when the price is 5/2.

8:11  
Notice what I've just done?

8:13  
I've basically replaced marginal willingness to pay with price because I've used the insight that you switch from buying.

8:25  
Sorry, not buying to buying, right?

8:35  
As price drops, when the marginal willingness to pay is exactly equal to the price, OK, that's when I switched.

8:46  
Until it's not equal to it, I'm not switching prices too high for me.

8:50  
And what we have here is a demand curve.

8:52  
Now I have no data in between, so I've got to basically trace it through this way, right?

8:58  
And it has economic intuition, right?

8:59  
Because of the price is too high.

9:01  
Six.

9:01  
I'm not buying anything.

9:02  
78910, nothing, right?

9:04  
Only when it drops to five do I switch from zero to 1.

9:09  
It's also intuitive because if I'm looking at this kind of area, right, what is this?

9:14  
This is the marginal willingness to pay for the first unit.

9:17  
OK, 5 \* 1, this I'm price can be 44.3.83.9.

9:24  
Keep dropping until it hits three, I'm not switching.

9:27  
When it hits three, I switch.

9:29  
Follow that intuition and what you have is a nice demand curve, OK?

9:34  
And area under the demand curve will be something we're going to use later on.

9:38  
OK, so this is how we calculated demand curve with discrete data.

9:41  
The key thing that I want you to remember is marginal willingness to pay is equal to price, cuz we're gonna use that intuition a lot.

9:48  
OK?

9:49  
Now one of the things people will talk about is this law of demand which basically says that as the price goes down, people wanna buy more.

9:58  
Is that always true?

9:59  
What does it depend on?

10:01  
Well, we are starting with our fundamental thought process that you are going to buy it as long as your willingness to pay is equal to your price, right.

10:08  
Anything higher?

10:08  
Nope.

10:09  
Anything lower?

10:09  
Sure, right, The price lower.

10:12  
So if we are going to say when the price goes down, you are willing to buy more.

10:20  
The implicit assumption I am making is the one we talked way back in a few slides this idea that my marginal willingness to pay is down with sloping, right?

10:32  
Every extra unit I buy, I'm willing to pay less for than the previous unit.

10:38  
That assumption or that thing is what the insight is what's behind the so-called law of demand.

10:45  
OK, so a lot of demand doesn't come out of nowhere.

10:48  
It comes from this assumption that we're making that marginal willingness to pay decreases the more I buy.

10:52  
Is it a reasonable assumption?

10:54  
Yes, right.

10:54  
The more you buy, less happiness that extra granola bar is going to give you.

10:58  
The more you buy, the more you're giving up in terms of what else you could purchase, right.

11:04  
So for all of those reasons, and if you think carefully about the competence of marginal willingness to pay, it makes sense that in general, right may not be true for everybody, but in general, your willingness to pay decreases the more you buy.

11:16  
OK, so here's what we've done for individual demand.

11:19  
It is a relationship between a price that's flashing, but we put it on the Y axis and the quantity that people buy.

11:26  
In a perfectly competitive market, people only have a choice over quantity.

11:30  
They react to prices because of this relationship between how people make choices, willingness to pay versus price.

11:37  
The demand curve and the marginal willingness to pay curve are interchangeable, which is really nice for intuition for us when we're thinking about how demand shifts.

11:44  
Because all we got to do is focus on how the willingness to pay our changes in a particular way.

11:50  
OK, now remember the third experiment as we're doing when we trace out a demand curve is we're just changing prices all else have fixed.

11:58  
I don't want to change the price of the other goods.

12:01  
My, my feelings.

12:02  
My preferences taste nothing.