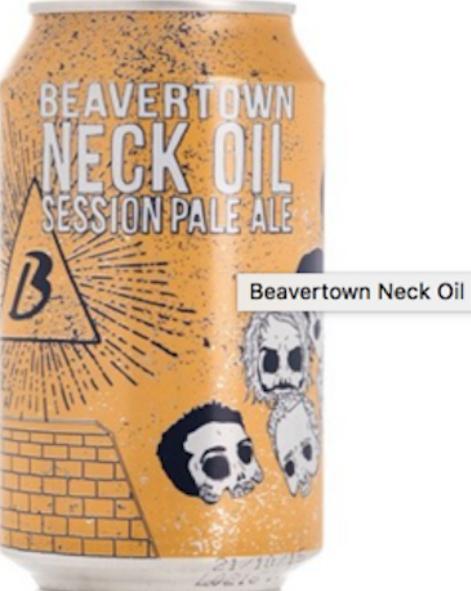


# Market Basket Analysis

(Beerhawk, google data studio)

# Example: Beavertown Neck Oil



Beavertown Neck Oil

## Beavertown Neck Oil

★★★★★ 35 Review(s)

Full-flavoured, low ABV 'session' beers are becoming increasingly widespread and are great for those long Sunday afternoons.

Crisp, clean and easy drinking, Neck Oil's floral hop aroma, flavours of grapefruit, pine and freshly cut grass combined with a light body and lingering, bitter finish make it a highly quaffable session pale ale.

Availability: In stock

£2.49      Qty:       ADD TO CART

£2.20

FREE DELIVERY available on orders over £50. Our standard UK delivery charge is just £4.99 and there's no limit on the number of bottles.  
For more detailed delivery information, please [click here](#).

Beer Info    Reviews    Delivery

Frequently bought together

# Frequently bought together

Glass\_sale\_Interdrinks Collaborative Filtering at Spotify Careers Center - DATA SCIENT... Beavertown Neck Oil Beerhawk basket analy

The image shows a screenshot of a web page. At the top, there is a navigation bar with several tabs: 'Glass\_sale\_Interdrinks', 'Collaborative Filtering at Spotify', 'Careers Center - DATA SCIENT...', 'Beavertown Neck Oil', and 'Beerhawk basket analy'. Below the navigation bar, there is a product image of a yellow mug with a skull and brick pattern. To the right of the image, the price is listed as £2.49 and £2.20, with a quantity selector set to 1 and a large orange 'ADD TO CART' button. Below the product image, there is a promotional message about free delivery: 'FREE DELIVERY available on orders over £50. Our standard UK delivery charge is just £4.99 and there's no limit on the number of bottles. For more detailed delivery information, please [click here](#)'. Underneath this, there is a section titled 'Frequently bought together' which lists three items: 'Alcohol Free Mixed Case (15 bottles)', 'Stewart Black IPA', and 'BrewDog Elvis Juice'. Each item has an image, a price, and an 'ADD TO CART' button. A red circle highlights the 'Frequently bought together' section, and a question mark icon is placed inside the circle.

£2.49  
£2.20

Qty: 1 ADD TO CART

FREE DELIVERY available on orders over £50. Our standard UK delivery charge is just £4.99 and there's no limit on the number of bottles. For more detailed delivery information, please [click here](#).

Beer Info Reviews Delivery

Style	Pale Ale
Country	British Beers
ABV	4.3%
Serving Temp	6 to 8 °C
Bottle Size	330ml
At a glance	No

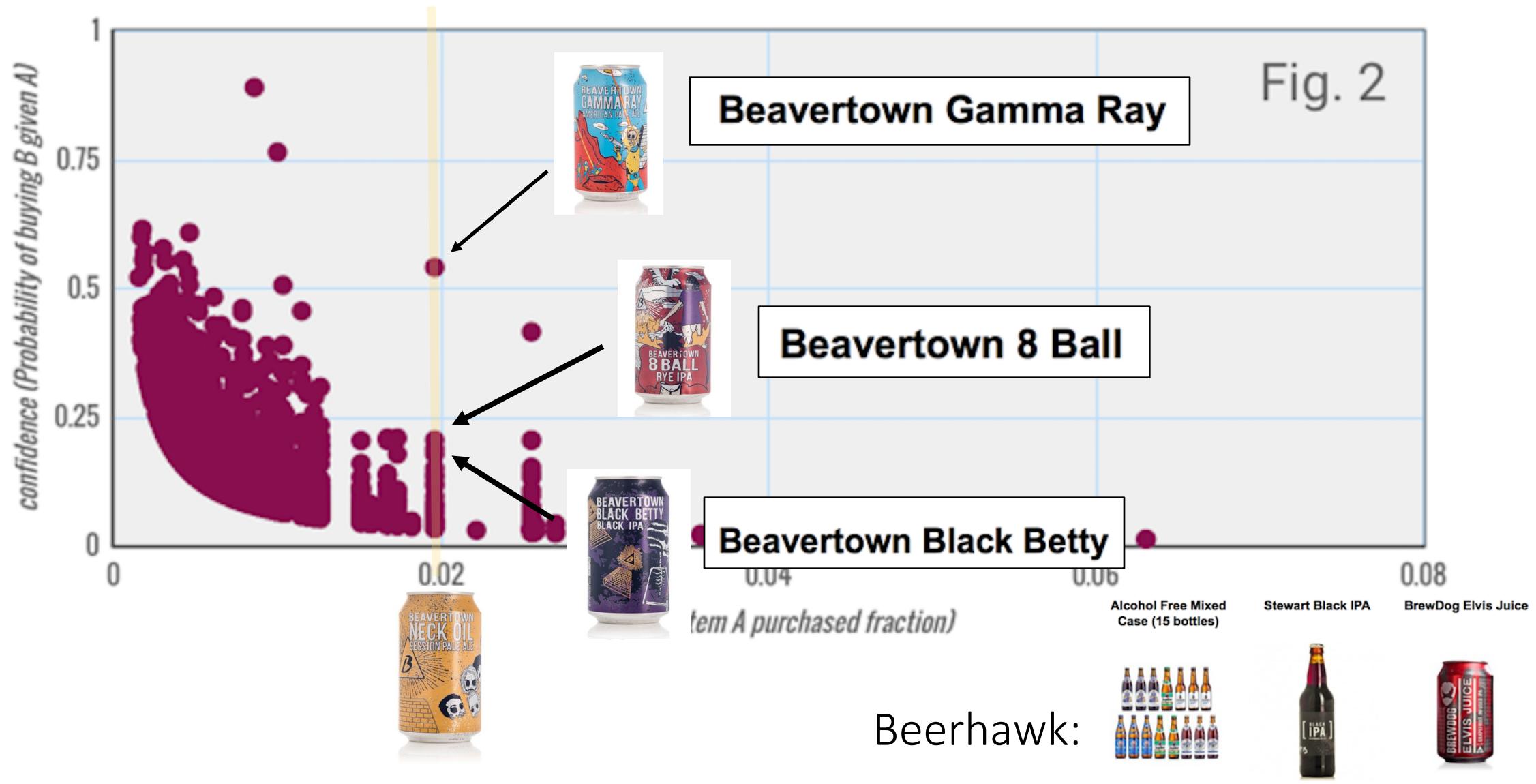
**Frequently bought together**

Alcohol Free Mixed Case (15 bottles)    Stewart Black IPA    BrewDog Elvis Juice

£21.00    £2.79    £2.39

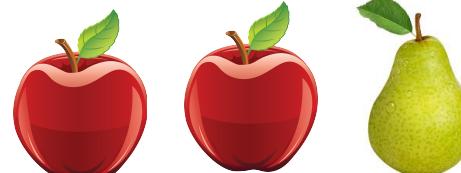
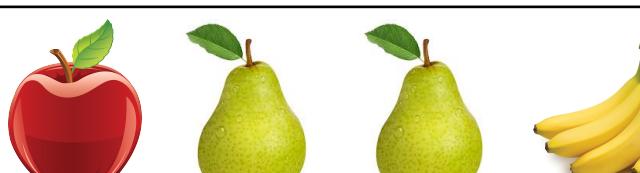
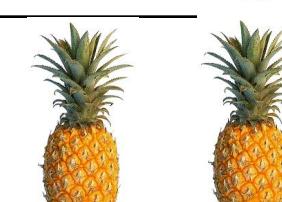
ADD TO CART    ADD TO CART    ADD TO CART

# My analysis shows other recommendations



# Terminology: support

$\text{support}(A)$ : fraction of orders product A sold over all orders

order 1:		
order 2:		
order 3:		
order 4:		

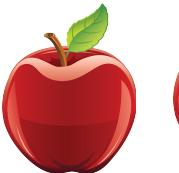
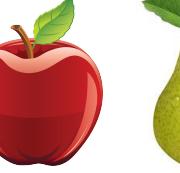
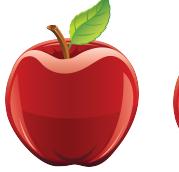
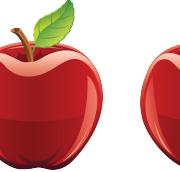
$$\text{support}(\text{apple}) = \frac{3}{4}$$

$$\text{support}(\text{banana}) = \frac{1}{4}$$

$$\text{support}(\text{pineapple}) = \frac{2}{4}$$

# Terminology: basket (itemset) support

Basket support(A,B): fraction of products A & B over all orders

order 1:				
order 2:				
order 3:				
order 4:				

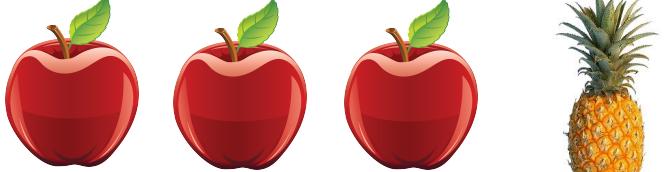
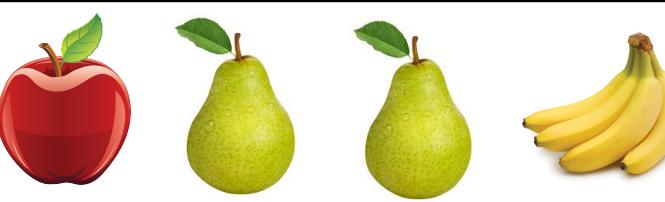
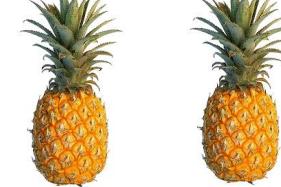
$$\text{support}(\text{apple}, \text{pear}) = \frac{2}{4}$$

$$\text{support}(\text{apple}, \text{banana}) = \frac{1}{4}$$

$$\text{support}(\text{pear}, \text{pineapple}) = 0$$

# Terminology: confidence

Confidence ( $A \rightarrow B$ ): probability of buying  $B$  given  $A$

order 1:		
order 2:		
order 3:		
order 4:		

$$\text{confidence}(\text{apple} \rightarrow \text{pear}) = \frac{2}{3}$$

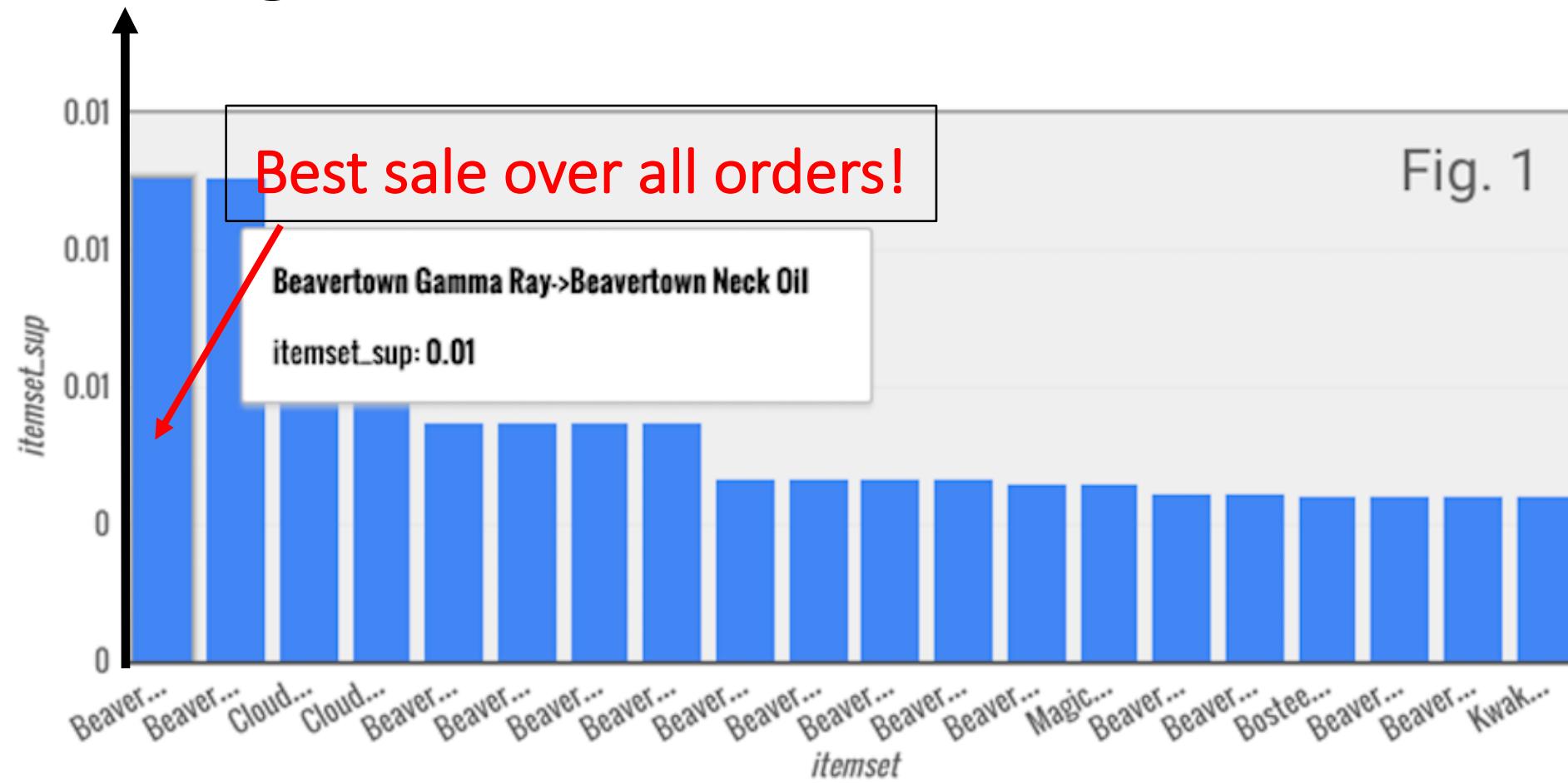
$$\text{confidence}(\text{apple} \rightarrow \text{banana}) = \frac{1}{3}$$

$$\text{confidence}(\text{banana} \rightarrow \text{apple}) = 1$$

# Charts Explanations

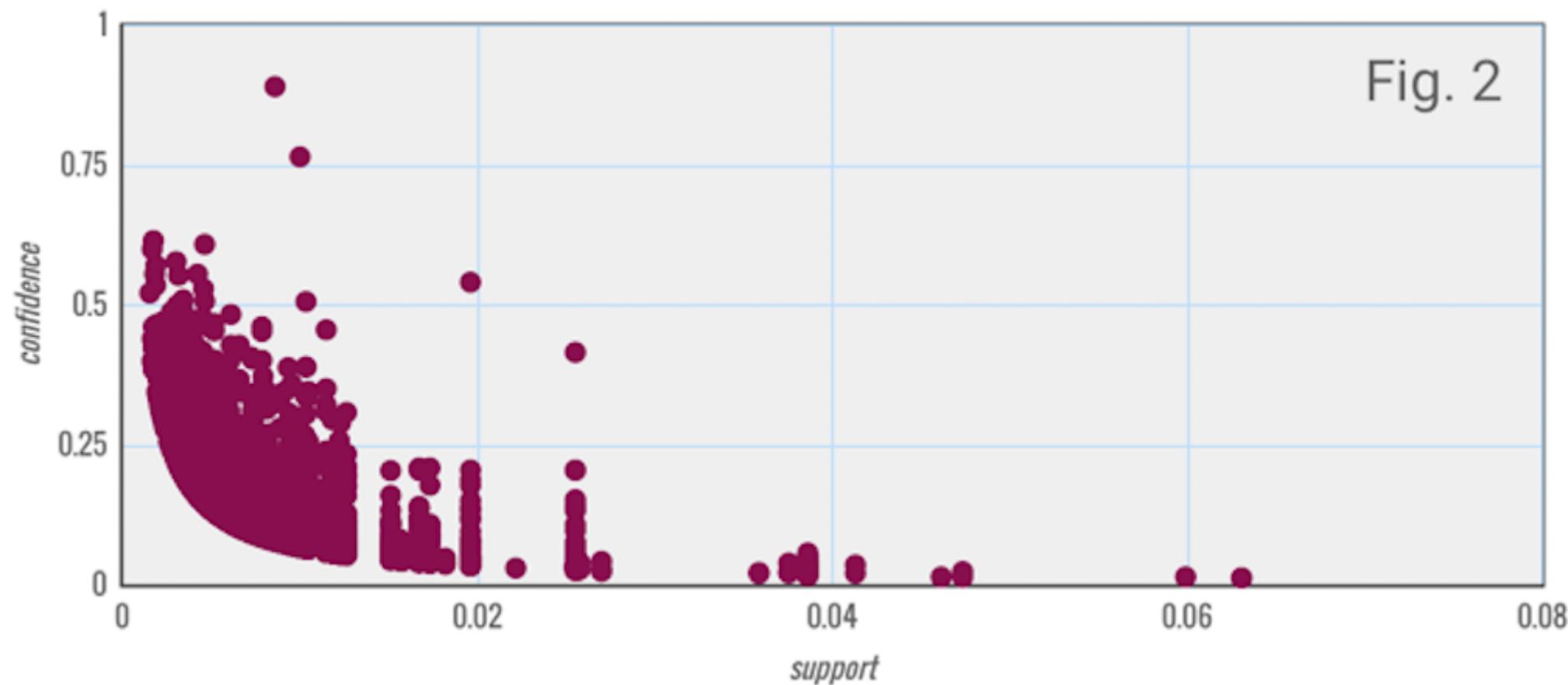
(In google data studio)

# Fig. 1 shows best sold baskets (itemsets)

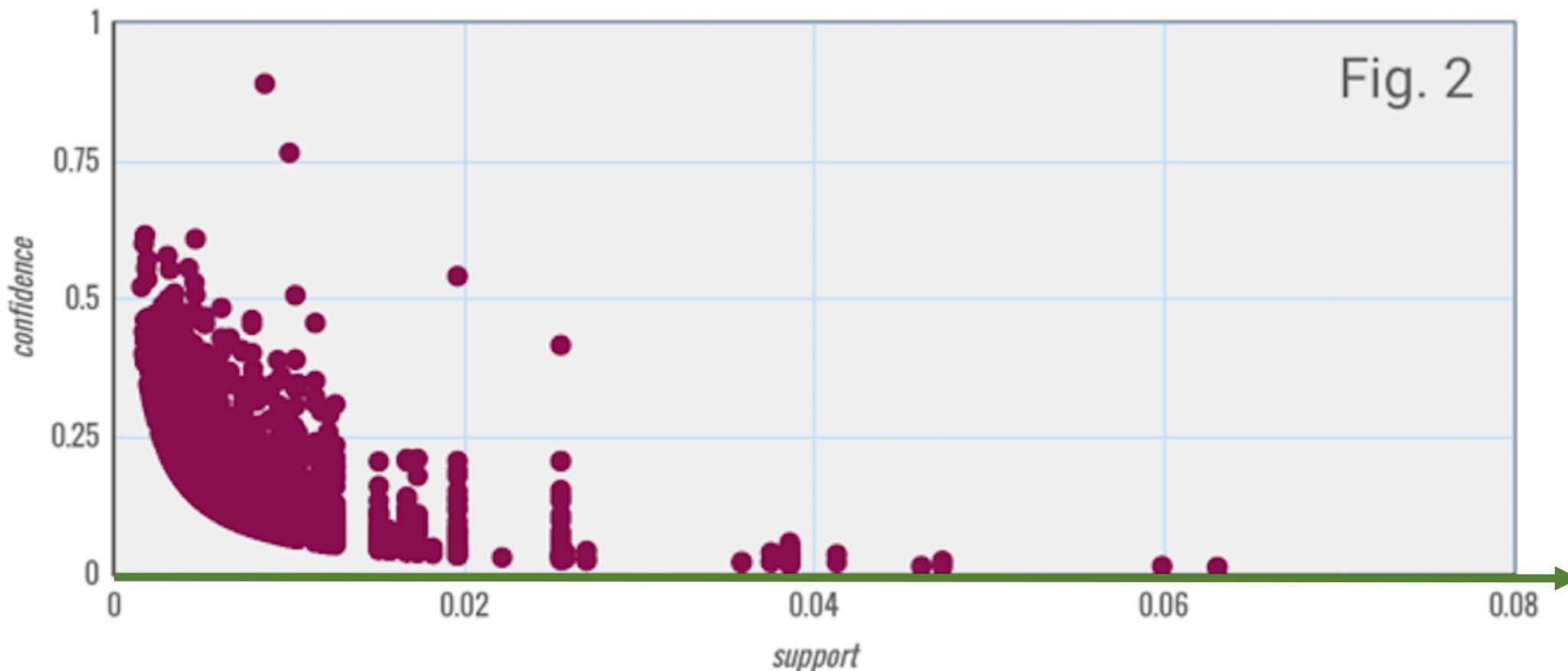


The basket (Beavertown Gamma Ray + Neck Oil)  
have 1% of all orders.

# Fig.2: Single product support vs confidence

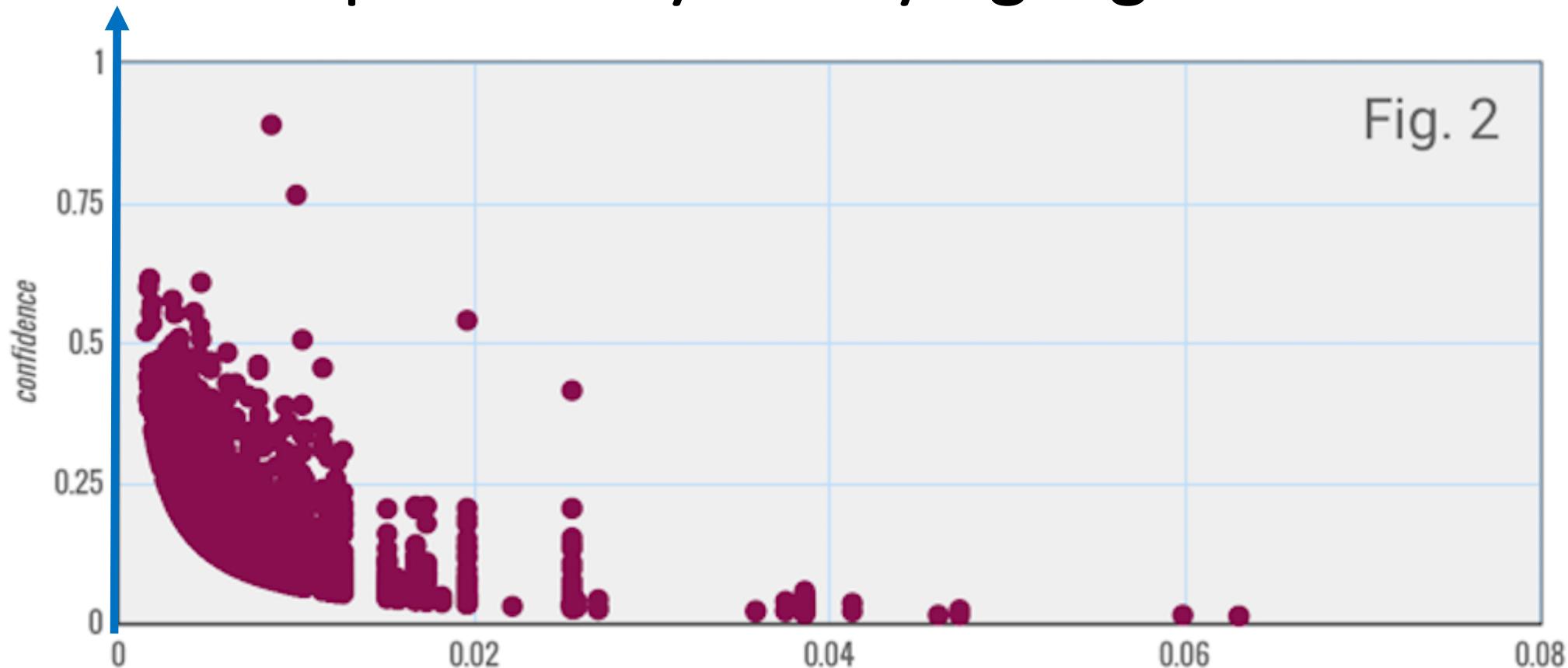


# X: single product support



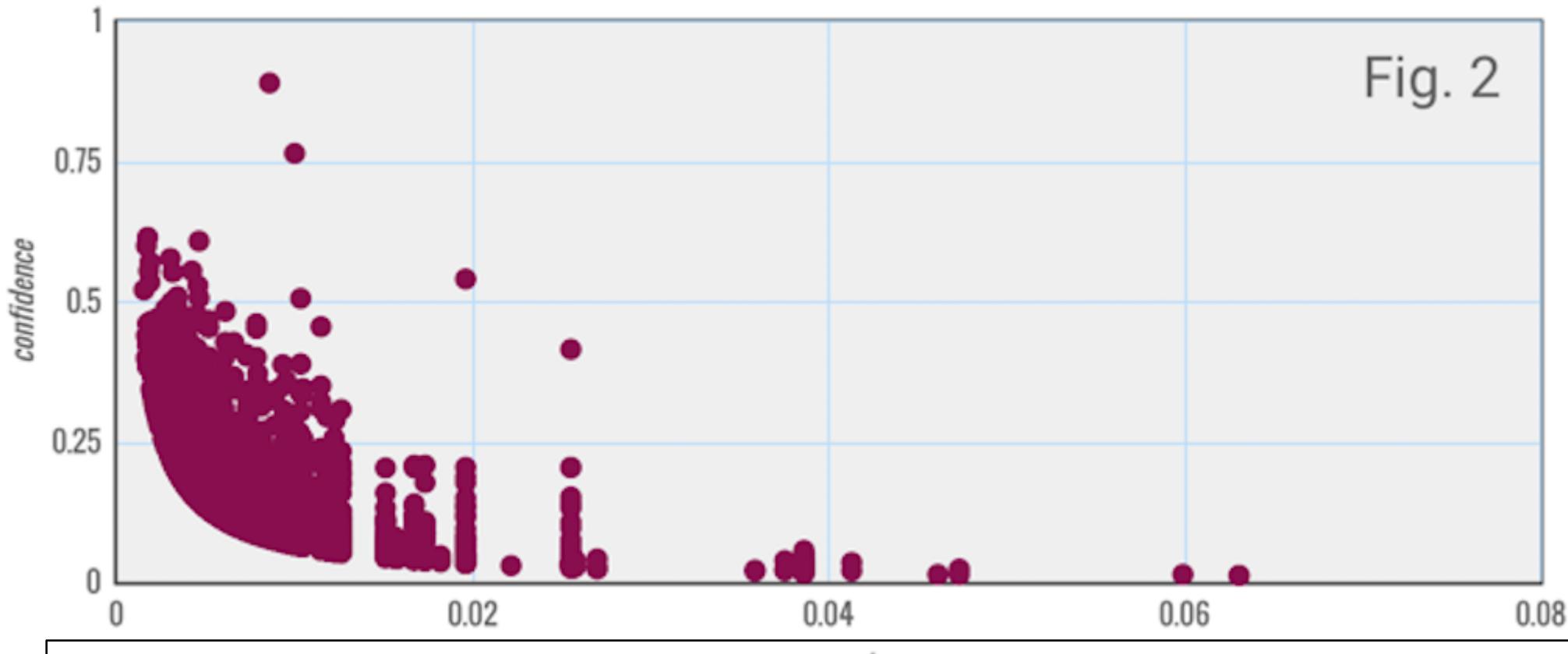
X: support of A in basket ( $A \rightarrow B$ )

Y: probability of buying B given A

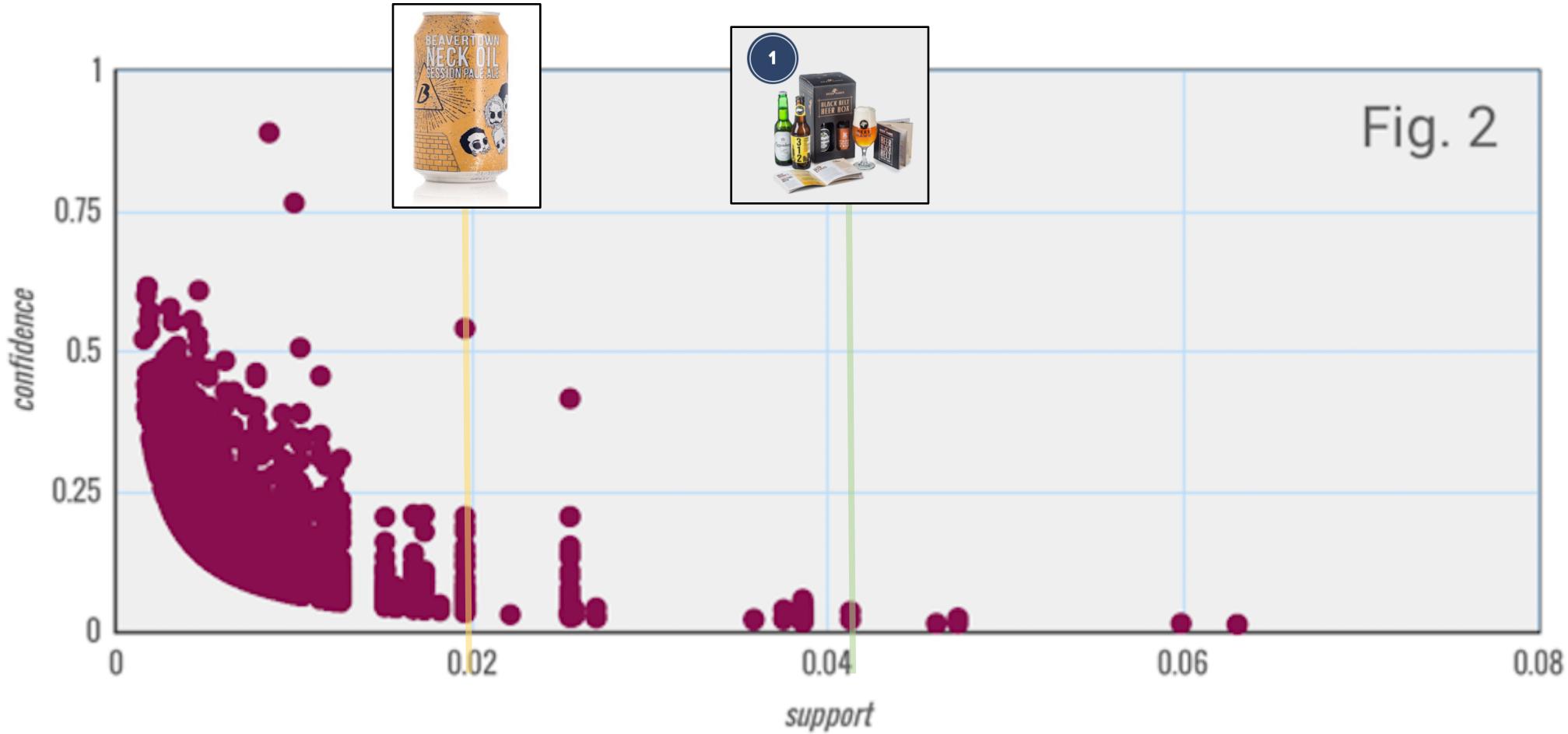


Y: confidence, probability of buying B if A is bought in basket ( $A \rightarrow B$ )

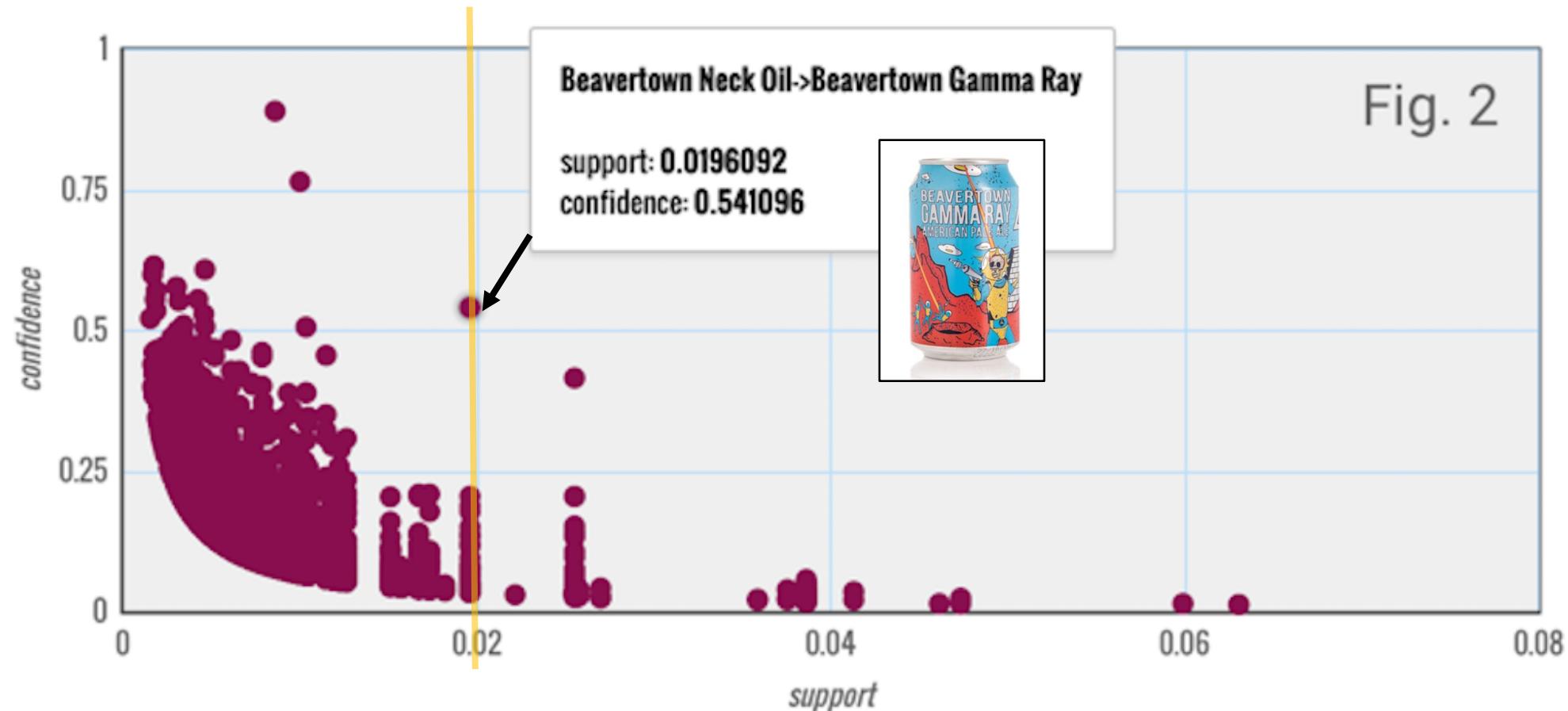
# Each point is a basket



Each data point denotes a basket ( $A \rightarrow B$ ), each vertical line denotes a product A

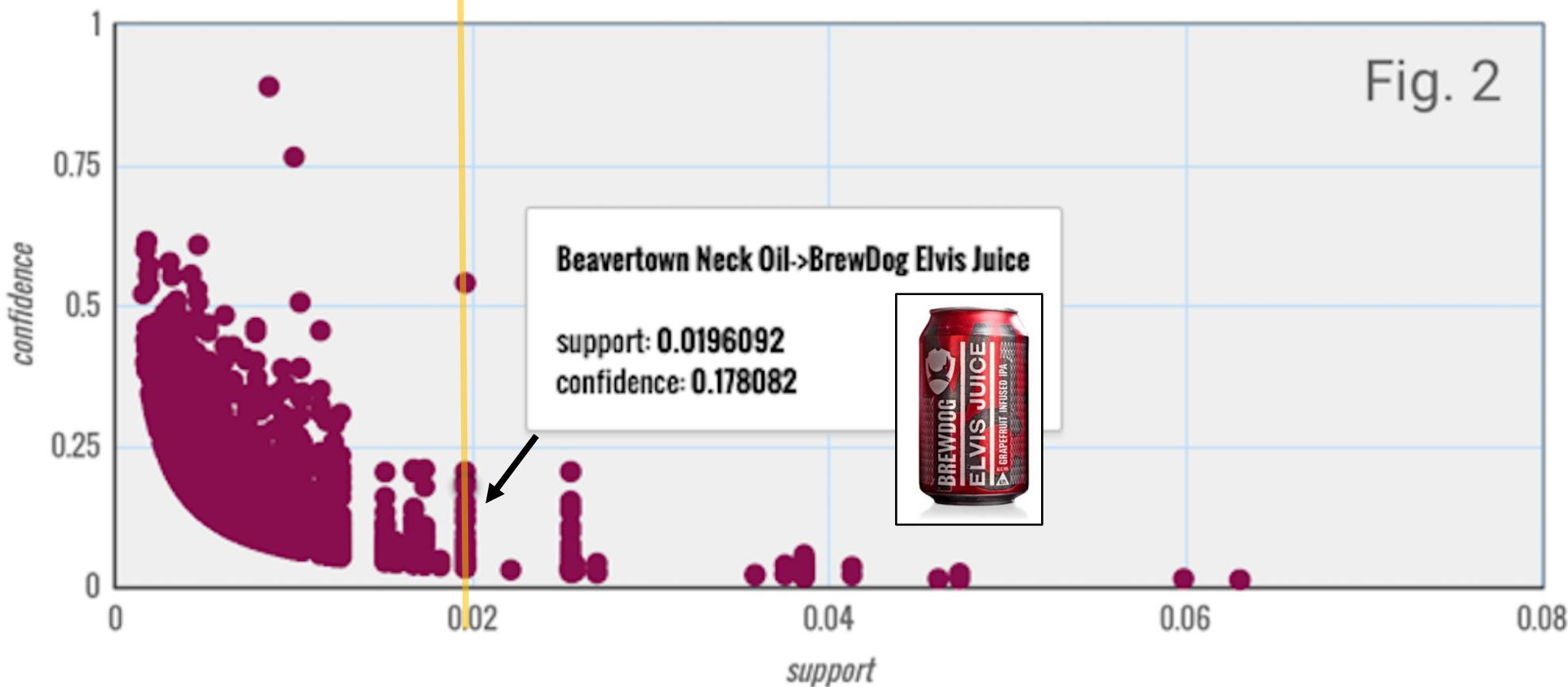


For example, along the orange line, A = 'Beavertown Neck Oil'. Along the green line, A = 'Black belt beer box'

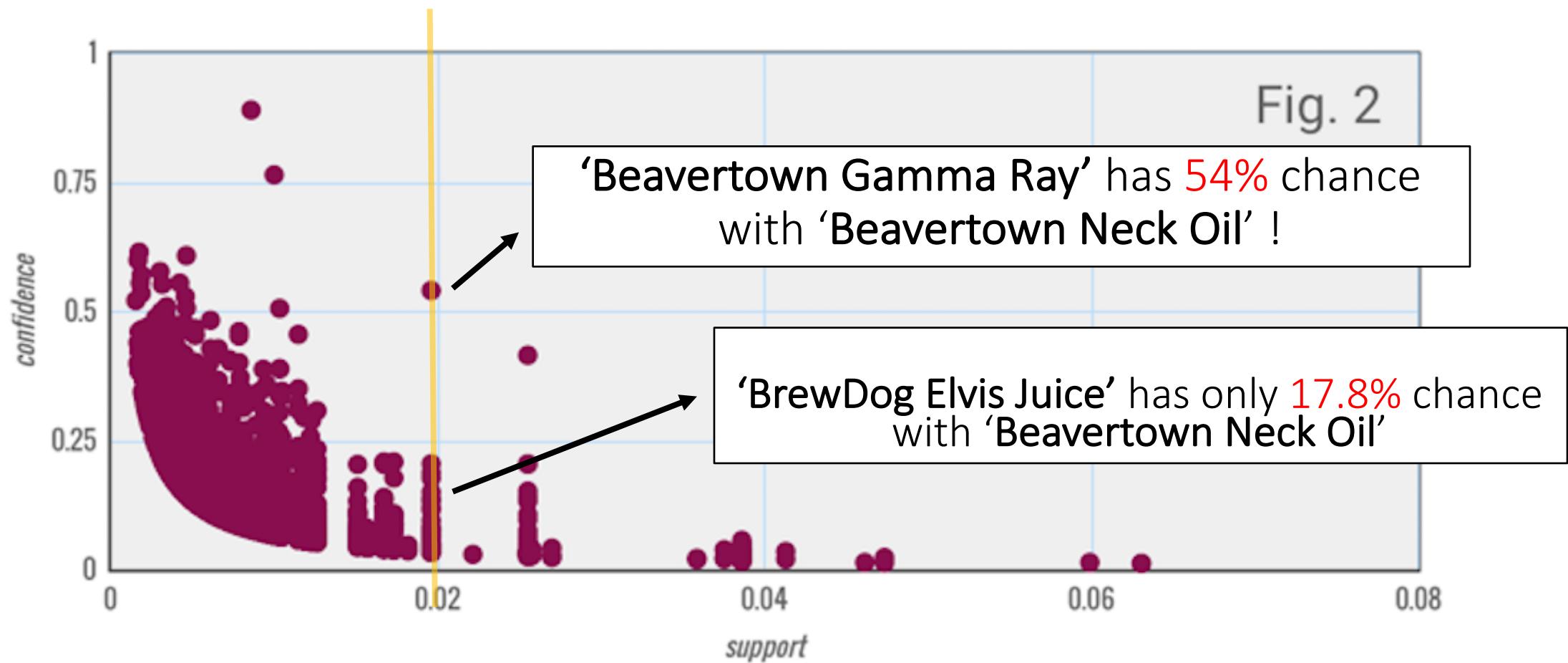


If buying 'Beavertown Neck Oil' ( $0.0196 = 1.96\%$  of whole sales),  
the chance to buy 'Beavertown Gamma Ray' is **54%**.

Fig. 2

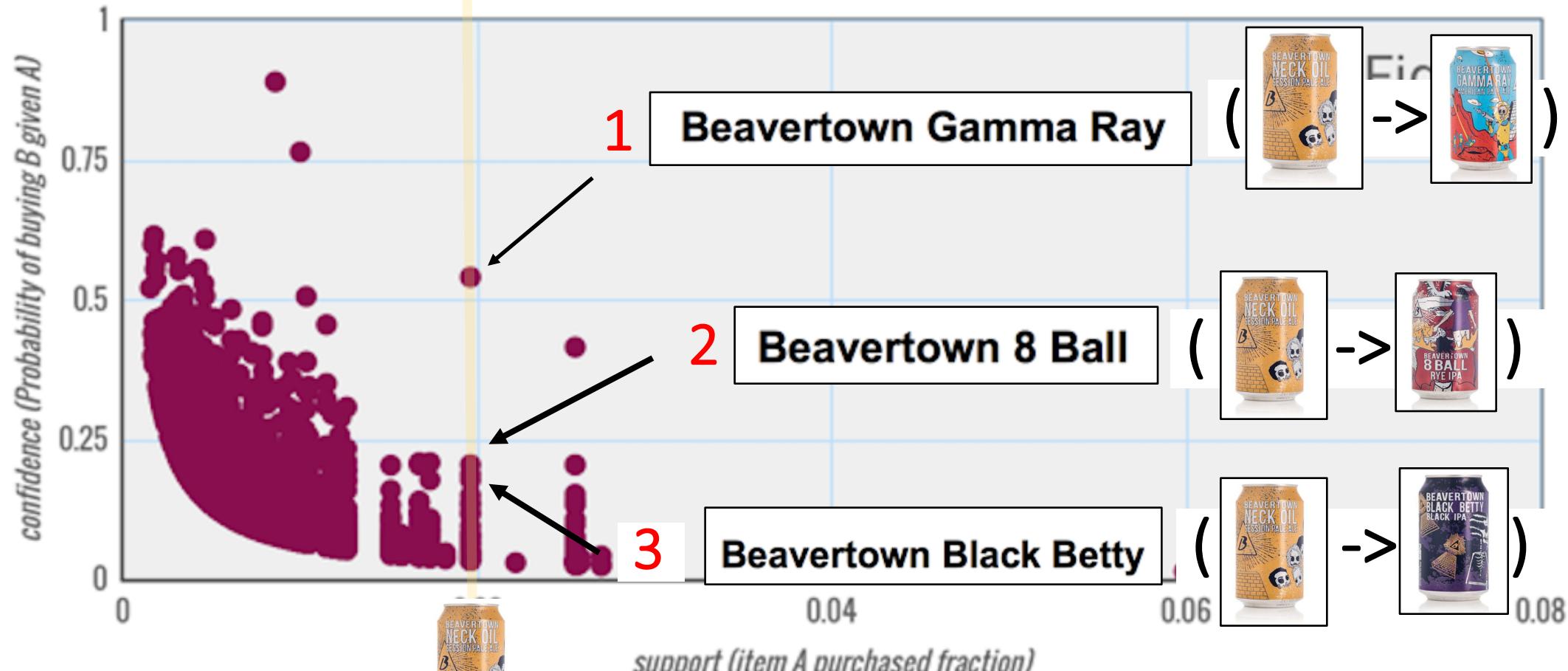


But if buying 'Beavertown Neck Oil' (1.96% of whole sales), the chance to buy 'BrewDog Elvis Juice' is only 17.8 %



When a customer is looking at 'Beavertown Neck Oil', we recommend him 'Beavertown Gamma Ray' rather than 'BrewDog Elvis Juice'

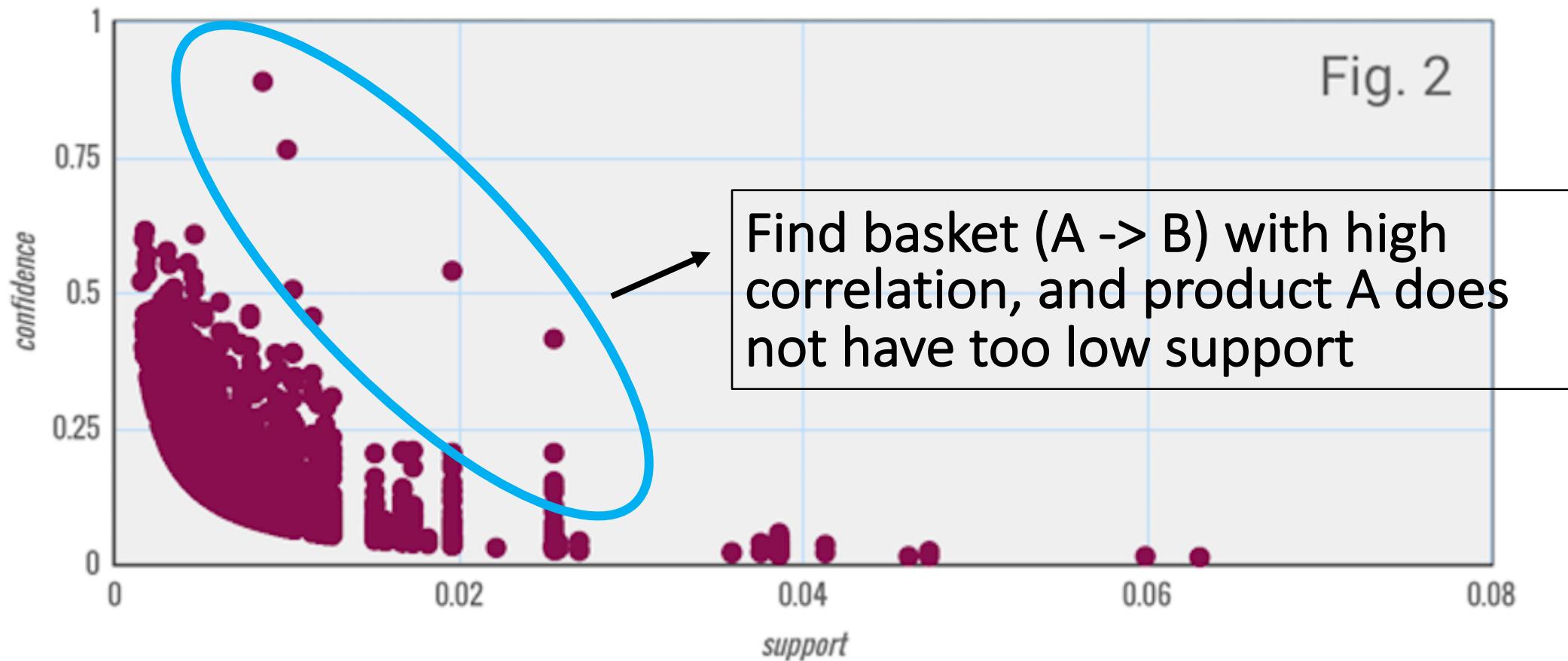
# Top 3 recommended baskets for Beavertown Neck Oil



# Business Strategies??

(Insight from google data studio)

# Strategy 1: Recommend highly-correlated basket



Strategy 2: Find way to raise the correlation for the products, like promotions or big deal?

