

## Stockouts (low inventory but high sales):

select

```
product_name,  
count(*) as total_stockouts  
from retail_supply_chain  
where inventory_level=0  
group by product_name  
order by total_stockouts desc
```

	product_name character varying (300)	total_stockouts bigint
1	Reusable silicone food storage bags	25
2	Stainless steel french press coffee ma...	24
3	Bamboo cutting board set	24
4	Vegan leather wallet	24
5	Ceramic plant pot with saucer	24
6	Bluetooth wireless earbuds	24
7	Organic coconut oil	24
8	Yoga mat with carrying strap	23
9	Blueberry scented candle	23
10	Resistance band set	23
11	Stainless steel water bottle	23
12	Memory foam travel neck pillow	23
13	Glass meal prep containers set	23
14	Insulated lunch box	23
15	Aromatherapy essential oil diffuser	23
16	Handwoven rattan basket	23
17	Floral patterned throw pillow	22
18	LED desk lamp with USB charging port	22
19	Leather messenger bag	22
20	Himalayan salt lamp	22

## Dead Stock (high inventory but low sales):

select

```
product_name,  
Avg(inventory_level) as avg_inventory,  
Avg(weekly_sales) as avg_sales  
from retail_supply_chain  
group by product_name  
having avg(weekly_sales) < 1370000 and avg(inventory_level) > 0  
order by avg_inventory desc
```

	product_name character varying (150)	avg_inventory numeric	avg_sales numeric
1	LED desk lamp with USB charging p...	0.08333333333333333333	1365602.416666666667
2	Resistance band set	0.08000000000000000000	1351092.320000000000
3	Aromatherapy essential oil diffuser	0.08000000000000000000	1315463.640000000000
4	Bamboo cutting board set	0.04000000000000000000	1363729.080000000000

## Finding Standard deviation and Range:

select

```
product_name,  
Avg(weekly_sales) as avg_sales,  
stddev(weekly_sales) as stddev_sales,  
max(weekly_sales) - min(weekly_sales) as range_analysis  
from retail_supply_chain  
group by product_name  
order by stddev_sales desc
```

	product_name character varying (150)	avg_sales numeric	stddev_sales numeric	range_analysis numeric
1	Ceramic plant pot with saucer	1456714.160000000000	778625.00583944	3086490
2	Stainless steel french press coffee ma...	1429095.240000000000	765186.86414596	3164579
3	Stainless steel water bottle	1417863.760000000000	731230.70795533	2880607
4	Glass meal prep containers set	1425151.920000000000	705227.91855931	2274225
5	Bamboo cutting board set	1363729.080000000000	703137.87631332	2030604
6	Resistance band set	1351092.320000000000	702938.33568278	2259953
7	Floral patterned throw pillow	1423594.320000000000	698965.35546601	2294648
8	Yoga mat with carrying strap	1424824.760000000000	697949.83366281	2388329
9	Himalayan salt lamp	1406713.520000000000	691260.52927310	2441514
10	Aromatherapy essential oil diffuser	1315463.640000000000	684112.73702201	2012359
11	Handwoven rattan basket	1394597.280000000000	672287.71790925	1962908
12	Memory foam travel neck pillow	1387441.240000000000	672133.62771998	1817165
13	Leather messenger bag	1398627.880000000000	666328.33679296	1842263
14	Vegan leather wallet	1394768.160000000000	663653.12390081	1908941
15	Organic coconut oil	1384357.720000000000	658823.11142373	1971115
16	Bluetooth wireless earbuds	1393523.000000000000	653734.99125697	1789218
17	LED desk lamp with USB charging port	1365602.416666666667	652303.54337378	1934922
18	Insulated lunch box	1374239.520000000000	648832.25030268	1835443
19	Reusable silicone food storage bags	1397715.800000000000	645758.93082513	1852123
20	Blueberry scented candle	1371694.320000000000	640862.16161796	2073953

## Mode:

```
Select product_name, weekly_sales as mode_sales  
from  
(select product_name, weekly_sales,  
count(*) as freq,  
row_number() over(partition by product_name order by count(*) desc) as rnk  
from retail_supply_chain  
group by product_name, weekly_sales  
)  
where rnk= 1
```

	product_name	mode_sales
Add row	character varying (150)	numeric (10)
Alt	Aromatherapy essential oil diffuser	1428218
2	Bamboo cutting board set	1472516
3	Blueberry scented candle	1923957
4	Bluetooth wireless earbuds	409981
5	Ceramic plant pot with saucer	442075
6	Floral patterned throw pillow	423176
7	Glass meal prep containers set	1853162
8	Handwoven rattan basket	1649615
9	Himalayan salt lamp	1758051
10	Insulated lunch box	1466058
11	Leather messenger bag	345584
12	LED desk lamp with USB charging port	1525147
13	Memory foam travel neck pillow	389541
14	Organic coconut oil	1319326
15	Resistance band set	421642
16	Reusable silicone food storage bags	1438830
17	Stainless steel french press coffee ma...	1897429
18	Stainless steel water bottle	1624478
19	Vegan leather wallet	1624384
20	Yoga mat with carrying strap	1621032

## Finding Safety Stock Buffer and Reorder Point:

Select

```
product_name,  
avg(weekly_sales) as avg_sales,  
stddev(weekly_sales) as stddev_sales,  
(1.645 * stddev(weekly_sales) * sqrt(1)) as safety_stock_buffer,  
((avg(weekly_sales) * 1) + (1.645 * stddev(weekly_sales) * sqrt(1))) as  
reorder_point  
from retail_supply_chain  
group by product_name
```

	product_name	avg_sales	stddev_sales	safety_stock_buffer	reorder_point
1	Stainless steel french press coffee ma...	1429095.240000000000	765186.86414596	1258732.3915201041	2687827.631520104
2	Blueberry scented candle	1371694.320000000000	640862.16161796	1054218.2558615443	2425912.5758615443
3	Resistance band set	1351092.320000000000	702938.33568278	1156333.562198173	2507425.882198173
4	Stainless steel water bottle	1417863.760000000000	731230.70795533	1202874.5145865178	2620738.274586518
5	Vegan leather wallet	1394768.160000000000	663653.12390081	1091709.3888168326	2486477.5488168327
6	Reusable silicone food storage bags	1397715.800000000000	645758.93082513	1062273.4412073388	2459989.241207339
7	Organic coconut oil	1384357.720000000000	658823.11142373	1083764.018292036	2468121.7382920356
8	Memory foam travel neck pillow	1387441.240000000000	672133.62771998	1105659.8175993671	2493101.057599367
9	Himalayan salt lamp	1406713.520000000000	691260.52927310	1137123.5706542495	2543837.0906542493
10	LED desk lamp with USB charging port	1365602.416666666667	652303.54337378	1073039.3288498682	2438641.745516535
11	Glass meal prep containers set	1425151.920000000000	705227.91855931	1160099.926030065	2585251.846030065
12	Leather messenger bag	1398627.880000000000	666328.33679296	1096110.114024419	2494737.994024419
13	Bluetooth wireless earbuds	1393523.000000000000	653734.99125697	1075394.0606177156	2468917.0606177156
14	Insulated lunch box	1374239.520000000000	648832.25030268	1067329.0517479086	2441568.5717479084
15	Ceramic plant pot with saucer	1456714.160000000000	778625.00583944	1280838.1346058787	2737552.2946058786
16	Aromatherapy essential oil diffuser	1315463.640000000000	684112.73702201	1125365.4524012064	2440829.0924012065
17	Floral patterned throw pillow	1423594.320000000000	698965.35546601	1149798.0097415864	2573392.3297415865
18	Bamboo cutting board set	1363729.080000000000	703137.87631332	1156661.8065354114	2520390.8865354117
19	Handwoven rattan basket	1394597.280000000000	672287.71790925	1105913.2959607162	2500510.575960716
20	Yoga mat with carrying strap	1424824.760000000000	697949.83366281	1148127.4763753226	2572952.2363753226

## Reliability Improvement

Reliability improvement = Optimized Target – Manual Baseline

= 95% - 73%

= 22%