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# Market Analysis of Diabetic Products on Amazon Canada

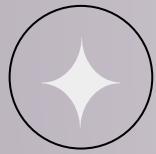
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# Research Objectives:



**Assess the market volume of diabetic products in Canada using the country's largest marketplace, Amazon.**



**Investigate sub-niches (categories of diabetic products), demand, and evaluate the level of competition and customer satisfaction in these sub-niches.**



**Conclude on the advisability of expanding the product line, identifying 3 product categories where commercial success is most likely.**

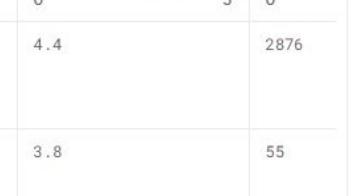
# Analysis Tools:

Python 3.11  
IDE Pycharm  
DBeaver

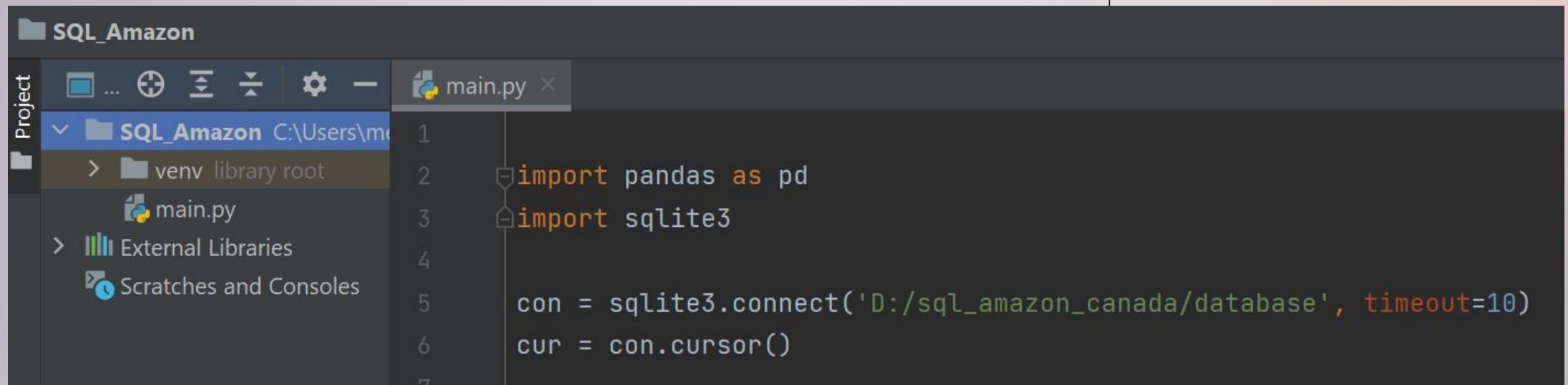
Libraries:  
Sqlite3  
Pandas

## Dataset

Amazon Canada Products 2023 (2.1M Products)

amz_ca_total_products_data_processed.csv (646.52 MB)					
Detail   Compact   Column					
10 of 11 columns ▾					
▲ asin	▲ title	☞ imgUrl	☞ productURL	# stars	# review
Product ID from Amazon.ca (type: str)	Title of the product (type: str)	URL of the product image (type: str)	URL of the product (type: str)	Rating of the product. If no rating is available, it is represented as 0 (type: float)	Number of reviews (type: int)
<b>2165926</b> unique values	<b>2065286</b> unique values	<b>1902544</b> unique values	<b>2165926</b> unique values		
B07CV4L6HX	Green Leaf WW3D Wonder Extension Cord Winder, Gray, 150 Foot	<a href="https://m.media-amazon.com/images/I/81cRe0AVC4L._AC_UL320_.jpg">https://m.media-amazon.com/images/I/81cRe0AVC4L._AC_UL320_.jpg</a>	<a href="https://www.amazon.ca/dp/B07CV4L6HX">https://www.amazon.ca/dp/B07CV4L6HX</a>	4.4	2876
B09N1HGY74	8pcs Toilet Seat Bumpers Universal Toilet Replacement	<a href="https://m.media-amazon.com/images/I/512CpB-">https://m.media-amazon.com/images/I/512CpB-</a>	<a href="https://www.amazon.ca/dp/B09N1HGY74">https://www.amazon.ca/dp/B09N1HGY74</a>	3.8	55

# Stage 1: Importing Libraries, Creating Database File



The screenshot shows the PyCharm IDE interface. The project name is "SQL\_Amazon". The "Project" tool window on the left shows a folder structure: "SQL\_Amazon" (containing "venv", "library root", "main.py", "External Libraries", and "Scratches and Consoles"). The "main.py" file is selected in the editor tab bar. The code in "main.py" is:

```
1 import pandas as pd
2 import sqlite3
3
4 con = sqlite3.connect('D:/sql_amazon_canada/database', timeout=10)
5 cur = con.cursor()
```

Create a database file using the Pycharm IDE

## Stage 2: Importing the Dataset into SQL

```
8 #подключаем файл БД
9 df = pd.read_csv('D:/sql_amazon_canada/amz_ca_total_products_data_processed.csv', sep=',')
10 df.to_sql(con=con, name='research_data', index=False, if_exists='replace')
11
12 #проверяем, подключилась ли таблица к базе данных
13 data_test = cur.execute('select * from research_data')
14 con.commit()
15 result = cur.fetchall()
16 print(result)
17
18 #проверяем информацию по загруженному датасету
```

The screenshot shows a Jupyter Notebook interface with a single cell containing Python code for importing a CSV file into an SQLite database and then querying it. The output of the code is displayed below the cell, showing a list of products from Amazon Canada. Each product entry includes its title, an image URL, a rating, a price, and a category.

Product Title	Image URL	Rating	Price	Category
Powerstep Unisex's Metatarsal Foot Pads Ball Cushion	<a href="https://m.media-amazon.com/images/I/51di8akpVPL._AC_UL320_.jpg">https://m.media-amazon.com/images/I/51di8akpVPL._AC_UL320_.jpg</a>	4.2	107, 44.99, 0.0	Health Care Products
ACTIVE RELEAF+ STICK Premium Pain Releaf Stick (75ml, Original)	<a href="https://m.media-amazon.com/images/I/41L1rSNOP8L._AC_UL320_.jpg">https://m.media-amazon.com/images/I/41L1rSNOP8L._AC_UL320_.jpg</a>	3.5	523, 20.33, 0.0	Health Care Products
Brynnl Insulin Cooler Travel Case Double-Layer Diabetic Travel Case	<a href="https://m.media-amazon.com/images/I/81CrFLJFCqL._AC_UL320_.jpg">https://m.media-amazon.com/images/I/81CrFLJFCqL._AC_UL320_.jpg</a>	4.2	17, 69.99, 0.0	Health Care Products
Boiron Homeopathic Medicine, pack of 3 tubes	<a href="https://m.media-amazon.com/images/I/61BKdsmYthL._AC_UL320_.jpg">https://m.media-amazon.com/images/I/61BKdsmYthL._AC_UL320_.jpg</a>	4.2	9, 19.95, 0.0	Health Care Products
Herbal Cigarettes - Peppermint Flavor   Pre Rolled Herbal Cigarettes	<a href="https://m.media-amazon.com/images/I/81VEeghuHpL._AC_UL320_.jpg">https://m.media-amazon.com/images/I/81VEeghuHpL._AC_UL320_.jpg</a>	5.0	2, 42.0, 0.0	Health Care Products
Damero Medical Trauma Bag, First Aid Bags	<a href="https://m.media-amazon.com/images/I/810jQT0veSL">https://m.media-amazon.com/images/I/810jQT0veSL</a>			

# Stage 3: Dataset Preprocessing

```
18     #проверяем информацию по загруженному датасету
19     df.info()
20
21     #проверяем на наличие дубликатов и пустых строк
22     duplicates = df.duplicated()
23     df_no_duplicates = df.drop_duplicates()
24     df_no_empty_rows = df.dropna()
```

The screenshot shows a Jupyter Notebook cell with the following code:

```
18     #проверяем информацию по загруженному датасету
19     df.info()
20
21     #проверяем на наличие дубликатов и пустых строк
22     duplicates = df.duplicated()
23     df_no_duplicates = df.drop_duplicates()
24     df_no_empty_rows = df.dropna()
```

Below the code, the notebook displays the output of the `df.info()` command:

```
RangeIndex: 2165926 entries, 0 to 2165925
Data columns (total 11 columns):
 #   Column           Dtype  
 --- 
 0   asin             object  
 1   title            object  
 2   imgUrl           object  
 3   productURL       object  
 4   stars            float64 
 5   reviews           int64  
 6   price             float64 
 7   listPrice         float64 
 8   categoryName     object  
 9   isBestSeller      bool   
 10  boughtInLastMonth int64  
 dtypes: bool(1), float64(3), int64(2), object(5)
 memory usage: 167.3+ MB
```

★

# Analyzing Dataset in SQL

```

CREATE VIEW DiabeticItemCa AS
SELECT
    title,
    reviews,
    price,
    listPrice,
    categoryName,
    isBestSeller,
    boughtInLastMonth
FROM research_data rd
WHERE title LIKE '%diabet%';

```

DiabeticItemCa | Введите SQL выражение чтобы отфильтровать результаты

	title	reviews	price	listPrice	categoryName	isBest	boughtInLastMo
1	Men's Memory Foam Diabetic Slippers Comfy W	3 505	33,99	66	Men's Shoes	0	50
2	Men's Memory Foam Diabetic Slippers Plush Fle	157	34,99	0	Men's Shoes	0	0
3	Men's Diabetic Shoes Adjust Closure Orthopedic	43	73,99	0	Men's Shoes	0	0
4	Diabetic Shoes for Men Extra Wide Width Orthop	715	105,75	0	Men's Shoes	0	0
5	Wide Shoes for Men Slip On Loafers Casual Wide	166	65,99	0	Men's Shoes	0	0
6	Men's Memory Foam Diabetic Slippers Comfy W	2 414	37,99	0	Men's Shoes	0	0
7	Men's Corded Velveteen Adjustable Hook And L	46	46,99	0	Men's Shoes	0	0
8	Men's Diabetic Shoes Adjust Closure Orthopedic	43	75,99	0	Men's Shoes	0	0
9	FitVille Men's Diabetic Shoes Leather Extra Wide	84	89,98	0	Men's Shoes	0	0
10	FitVille Diabetic Shoes for Men Adjustable Slip-o	34	98,99	0	Men's Shoes	0	0
11	FitVille Mens Diabetic Shoes Extra Wide Width Ve	27	98,99	0	Men's Shoes	0	0
12	Therapeutic Diabetic Sneaker Athletic Shoes   for	40	57,85	0	Men's Shoes	0	0
13	Men Stylish Diabetic Shoes, Warm Wool Boots Ca	3	117,79	0	Men's Shoes	0	0
14	FitVille Diabetic Shoes for Men Extra Wide Slip-o	361	109,98	0	Men's Shoes	0	0
15	Women's Diabetic Shoes   Adjustable Sneakers	117	59,99	0	Men's Shoes	0	0
16	Men Wide Width Shoes - Wide Casual Walking S	12	52,04	0	Men's Shoes	0	0
17	Men's Diabetic Shoes   Adjustable Walking Shoe:	52	57,99	0	Men's Shoes	0	0
18	Men's Diabetic Wide Width Shoes with Adjustab	15	76,99	0	Men's Shoes	0	0
19	Men's Wide Width Open Toe Diabetic Recovery S	18	56,81	0	Men's Shoes	0	0
20	Men Memory Foam Diabetic Slippers Adjustable	1 491	38,99	0	Men's Shoes	0	0
21	Walking Adjustable Diabetic Shoes, Men's Diabe	0	116,99	0	Men's Shoes	0	0
22	Casual Walking Shoes, Men's Diabetic Winter Wa	0	117,79	0	Men's Shoes	0	0
23	Women Men Adjustable Velco Extra Wide Shoes	2 366	62,99	0	Men's Shoes	0	0

First, I list all products that contain the key search term 'diabetic' in their titles and save this as a view for further work.



The screenshot shows a MySQL Workbench interface. At the top, there are tabs for 'research\_data', 'database', '\*<database> Script', and 'DiabeticItemCa...'. The script tab contains the following SQL query:

```
SELECT COUNT(*)
FROM research_data rd
WHERE title LIKE '%diabet%';
```

Below the script is a results table titled 'Результат 1' (Result 1). The table has one row with the value 763. The columns are labeled 'Таблица' (Table) and 'COUNT(\*)'.

Таблица	COUNT(*)
1	763

I found out how many products are presented in the Canadian segment. There are 763 products.

<pre> SELECT     title,     SUM(price * boughtInLastMonth) as TotalSales FROM research_data rd WHERE title LIKE '%diabet%' Group BY 1 ORDER BY TotalSales DESC; </pre>	<pre> SELECT     SUM(price * boughtInLastMonth) as TotalSales FROM research_data rd WHERE title LIKE '%diabet%'; </pre>	<span style="color: #4CAF50;">TotalSales</span> ▾ <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">1</td><td style="width: 90%;">282 207,5</td></tr> </table>	1	282 207,5
1	282 207,5			

	title	TotalSales
1	BOOST Diabetic Nutritional Supplement, Chocolate, 24 x 237 ml	16 788
2	BOOST Diabetic Nutritional Supplement, Vanilla, 4 six-packs of 237ml	16 428
3	Fanwer Sock aid device for seniors,sock helper easy on easy off with Pants Assist straps,sock assist device for seniors, Disabled,Pregnant	14 298
4	Flexitol Heel Magic - For Dry Skin or Rough Heels, Diabetic Friendly, Contains Shea Butter & Vitamin E - Protects and Softens Dry Heels	13 990
5	Prime Screen Keto Ketone Test Strips - For Low-carb Diets & Diabetics - 100 Ketone Urinalysis Tester Strips (Made in the U.S.)	12 591
6	Miko Foot Massager Shiatsu Machine With Multi-Pressure Settings, Vibration, Deep-Kneading, Heat and Wireless Remote- Alleviate Dis	12 499,5
7	Blood Glucose Monitor Kit, Portable Blood Sugar Test Kit with 1 Lancing Device, 50 Test Strips, 50 Lancets, 1 Blood Glucose Meter, Diabi	11 128
8	5 Pairs Mens Bamboo Blend Cotton Ankle Extra-Wide Diabetic Socks with Seamless Toe(Size:10-13)(black)	9 560
9	Flexitol Heel Balm - Super-Concentrated Moisturizer and Exfoliator, Diabetic Friendly, Pro-Vitamin B5, Vitamin E and L-Arginine, 112g	9 470
10	*NEW* No Sugar Sandwich Cookiez - Keto Food, Sugar Free Treats, Healthy Snack Foods, Diabetic Friendly, Ketogenic Products (240g)	8 394
11	Urine Ketone Strips - Suitable for Diabetics and Low Carb Dieters - Ketosis Strips & Diabetic Test Strips. Ketosis Test with Keto Strips Kit -	7 495
12	Steeves Sugar-Free Maple Syrup   Keto Friendly, 0g Net Carbs, 0 Calories per Serving, Diabetic Friendly (Maple, 1L)	7 194
13	Blood Sugar Glucose Monitor System Calibrated for Dogs and Cats - Accurate Diabetes Testing 2 Calibrated Code-Chips, Lancets, Logb	6 999
14	4mm 32G Nanofine Plus Diabetic Pen Needles [100 pen needles]	6 897
15	AlphaTRAK 8 Piece Pet Blood Glucose Monitoring Kit for Diabetic Cats and Dogs, All-in-One Solution for in-Clinic Or at Home, with Dig	6 249

Then I determine the monthly market volume by calculating the revenue for each product over the month, sorted in descending order. In the next query, I found out the total revenue from sales on Amazon of all diabetic products. The total for the month is \$282,207.



```
SELECT
    categoryName,
    COUNT(*) AS TotalDiabeticProducts
FROM research_data
WHERE title LIKE '%diabetic%'
GROUP BY categoryName
ORDER BY TotalDiabeticProducts DESC;
```

	categoryName	TotalDiabeticProducts
1	Women's Shoes	99
2	Men's Shoes	92
3	Health Care Products	89
4	Men's Watches	42
5	Men	42
6	Cycling Equipment	35
7	Medical Supplies Equipment	27
8	Grocery	25
9	Women	20
10	Diet Nutrition Products	20
11	Golf Equipment	16
12	Women's Clothing	11
13	Men's Clothing	11
14	Beauty	8
15	Clothing, Shoes Jewellery	7
16	Skin Care Products	6
17	Men's Jewelry	6

I identify the most popular categories of diabetic products by counting the number of products in each category and arranging them in descending order. The most in-demand categories are shoes, medical consumables, watches, clothing, and snacks.



```
SELECT
    title,
    SUM(price * boughtInLastMonth) as TotalSales
FROM research_data rd
WHERE title LIKE '%diabet%'
Group BY 1
ORDER BY TotalSales DESC
LIMIT 100
```

	title	TotalSales
1	BOOST Diabetic Nutritional Supplement, Chocolate, 24 x 237 ml	16 788
2	BOOST Diabetic Nutritional Supplement, Vanilla, 4 six-packs of 237ml	16 428
3	Fanwer Sock aid device for seniors,sock helper easy on easy off with Pants Assist straps,sock assist device for seniors, Disabled,Pregr	14 298
4	Flexitol Heel Magic - For Dry Skin or Rough Heels, Diabetic Friendly, Contains Shea Butter & Vitamin E - Protects and Softens Dry He	13 990
5	Prime Screen Keto Ketone Test Strips - For Low-carb Diets & Diabetics - 100 Ketone Urinalysis Tester Strips (Made in the U.S.)	12 591
6	Miko Foot Massager Shiatsu Machine With Multi-Pressure Settings, Vibration, Deep-Kneading, Heat and Wireless Remote- Alleviate	12 499,5
7	Blood Glucose Monitor Kit, Portable Blood Sugar Test Kit with 1 Lancing Device, 50 Test Strips, 50 Lancets, 1 Blood Glucose Meter, D	11 128
8	5 Pairs Mens Bamboo Blend Cotton Ankle Extra-Wide Diabetic Socks with Seamless Toe(Size:10-13)(black)	9 560
9	Flexitol Heel Balm - Super-Concentrated Moisturizer and Exfoliator, Diabetic Friendly, Pro-Vitamin B5, Vitamin E and L-Arginine, 11:	9 470
10	*NEW* No Sugar Sandwich Cookiez - Keto Food, Sugar Free Treats, Healthy Snack Foods, Diabetic Friendly, Ketogenic Products (240	8 394
11	Urine Ketone Strips - Suitable for Diabetics and Low Carb Dieters - Ketosis Strips & Diabetic Test Strips. Ketosis Test with Keto Strips	7 495
12	Steeves Sugar-Free Maple Syrup   Keto Friendly, 0g Net Carbs, 0 Calories per Serving, Diabetic Friendly (Maple, 1L)	7 194
13	Blood Sugar Glucose Monitor System Calibrated for Dogs and Cats - Accurate Diabetes Testing 2 Calibrated Code-Chips, Lancets, Lx	6 999
14	4mm 32G Nanofine Plus Diabetic Pen Needles [100 pen needles]	6 897
15	AlphaTRAK 8 Piece Pet Blood Glucose Monitoring Kit for Diabetic Cats and Dogs, All-in-One Solution for in-Clinic Or at Home, with	6 249
16	Castle Kitchen Sugar Free Double Dutch Premium Dark Hot Chocolate Mix (240g) - Vegan, Dairy Free, Plant Based - Keto & Diabetic	5 795
17	Blood Sugar Glucose Monitor System Calibrated for Dogs and Cats - Accurate Diabetes Testing 2 Calibrated Code-Chips. Lancets. Lx	5 499

I will select 100 products with the highest sales. Popular tags include: Supplement & Steeves Sugar, Sock aid device, Skin care, Test Strips & Glucose Monitor Kit, Foot Massager, Diabetic Socks, Sugar Free Treats, Diabetic Slippers & Shoes, Metatarsal Pads.



```
SELECT
    title,
    stars,
    reviews
FROM research_data rd
WHERE title LIKE '%diabet%'
Group BY 1, 2, 3
ORDER BY reviews DESC
LIMIT 100|
```

	title	stars	reviews
1	SB SOX Compression Socks (20-30mmHg) for Men & Women - Best Stockings for Running, Medical, Athletic, Edema	4,4	93 199
2	150 Medical Ketone Urine Test Strips - For Ketogenic (Low-carb) Diets & Diabetics – FRESH, Certified, Registered & US	4,2	17 931
3	DIABETIC Elastic Cotton Socks for SWOLLEN FEET for Mens & Womens	3,8	13 617
4	Falari Physicians Approved Diabetic Socks Crew Unisex 3, 6 or 12-Pack	4,5	13 226
5	Vive Sock Aid - Easy On and Off Stocking Slider - Pulling Assist Device - Compression Sock Helper Aide Tool - Puller	4,2	13 028
6	Cloud Massage Shiatsu Foot Massager Machine - Increases Blood Flow Circulation, Deep Kneading, with Heat Therap	4,4	12 379
7	Doctor's Choice Diabetic Socks for Men, Seamless Crew Socks with Non-Binding Top, 4-Pairs, Large 10-13 & X-Large	4,6	11 064
8	Yomandamor 6 Pairs Men's Bamboo Seamless Non-binding Ankle Diabetic Socks, 10-13 ...	4,4	10 345
9	6 Pairs Men's Bamboo Seamless Non-binding Ankle Diabetic Socks, 10-13 ...	4,4	10 326
10	5 Pairs Mens Bamboo Blend Cotton Ankle Extra-Wide Diabetic Socks with Seamless Toe(Size:10-13)(black)	4,4	10 325
11	Women Diabetic Ankle Socks, Super Soft & Thin Bamboo Socks, Wide & Loose, Non-Binding Top & Seamless Toe, 41	4,3	8 875
12	Metatarsal Pads, Toe Separator, Gel Metatarsal Cushion Toe Separators, (4 PCS Nude) *New Material* Forefoot Pads, 1	3,4	7 941
13	Fanwer Sock aid device for seniors,sock helper easy on easy off with Pants Assist straps,sock assist device for seniors,	4,3	7 802
14	Women's Furry Memory Foam Diabetic Slippers Comfy Cozy Arthritis Edema House Shoes	4,2	6 674
15	MediPeds mens 8 Pack Diabetic Crew Socks With Non-binding Top	4,5	6 359
16	Dr. Scholl's mens 4 Pack Diabetic and Circulatory Non-binding Crew Sock	4,3	5 891
17	mens 4 Pack Diabetic and Circulatory Non-bindina Crew Sock	4,3	5 890

Next I select 100 products with the highest number of reviews and analyze the categories. The more reviews a product has, the more well-known and in demand it is, indicating a competitive niche. Leading by a significant margin are Compression Socks, followed by Test Strips, diabetic socks, insoles, and shoes. The main products receiving reviews are various types of socks.



```
SELECT
    categoryName,
    AVG(stars) AS AverageRating,
    AVG(reviews) AS AverageReviews
FROM research_data
WHERE title LIKE '%diabet%'
GROUP BY 1
ORDER BY AverageRating ASC;
```

	categoryName	AverageRating	AverageReviews
17	Wellness	2,85	1 873,2
18	Sporting Apparel	2,8666666667	2 132,3333333333
19	Women's Shoes	2,9316831683	365,1782178218
20	Men's Shoes	3,020212766	367,3085106383
21	Grocery	3,35625	828,53125
22	Boys	3,48	133,6
23	Sport Specific Clothing	3,4833333333	371,8333333333
24	Beauty Tools Accessories	3,5	17,2
25	Men's Jewelry	3,5227272727	163,4090909091
26	Men's Clothing	3,6153846154	886,4615384615
27	Medical Supplies Equipment	3,7833333333	4 241,9
28	Cat Supplies	3,8	7
29	Skin Care Products	3,8	497,5
30	Farming Urban Agriculture	3,9	6
31	Pet Supplies	4	646
32	Health Care Products	4,0356435644	1 109,6831683168
33	Men	4,0744680851	810,4042553191

Finally, I display average ratings and the number of reviews by categories to assess the degree of customer satisfaction. Ratings from 3 to 4 with a substantial number of reviews are found in categories such as Sporting Apparel, Shoes, Sport Specific Clothing, Men's Clothing, and Skin Care Products. This indicates that there is unsatisfied demand for quality goods and/or service in these sub-niches.