

# how to calculate Cumulative Sum by Group in Pandas

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## RECOMMENDED CITATION

stats writer (2025). *how to calculate Cumulative Sum by Group in Pandas*.

PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=101928>

In Pandas, cumulative sum by group can be calculated by using the `groupby()` and `cumsum()` functions. The `groupby()` function is used to group the dataframe by a specific column and the `cumsum()` function is then used to calculate the cumulative sum of the grouped values. The result of the cumulative sum calculation will be a new column in the dataframe containing the cumulative sum values.

You can use the following syntax to calculate a cumulative sum by group in pandas:

```
df = df.groupby().cumsum()
```

This particular formula calculates the cumulative sum of **col2**, grouped by **col1**, and displays the results in a new column titled **cumsum\_col**.

The following example shows how to use this syntax in practice.

### Example: Calculate Cumulative Sum by Group in Pandas

Suppose we have the following pandas DataFrame that contains information about sales for various stores:

```
import pandas as pd
```

```
#create DataFrame
```

```
df = pd.DataFrame({'store': ,  
'sales': })
```

```
#view DataFrame
```

```
print(df)
```

```
store sales
```

```
0 A 4
```

```
1 A 7
```

```
2 A 10
```

```
3 A 5
```

```
4 A 8
```

```
5 B 9
```

```
6 B 12
```

```
7 B 15
```

```
8 B 10
```

```
9 B 8
```

We can use the following syntax to calculate the cumulative sum of sales for each store:

**#add column that shows cumulative sum of sales by store**

```
df = df.groupby().cumsum()
```

```
#view updated DataFrame
```

```
print(df)
```

```
store sales cumsum_sales
```

```
0 A 4 4
```

```
1 A 7 11
```

```
2 A 10 21
```

```
3 A 5 26
```

```
4 A 8 34
```

```
5 B 9 9
```

```
6 B 12 21
```

```
7 B 15 36
```

```
8 B 10 46
```

```
9 B 8 54
```

The **cumsum\_sales** column shows the cumulative sales, grouped by each store.

**Note:** You can find the complete documentation for the **cumsum** function in pandas .