artofviz

5 PRACTICAL USE CASES FOR SANKEY DIAGRAMS

INTRODUCTION

Sankey diagrams not only look visually appealing but also help uncover valuable insights. But visualization is actually helpful if it is used for a certain purpose. So let's find out five practical use cases for Sankey diagrams.

VISUALIZING THE FLOW OF FOOD

Since the core purpose of the Sankey diagram is to show the flow between two elements/dimensions, we can use it to visualize the loss at each stage of the food supply chain. From primary availability to consumption, the food passes several stages, such as retail availability and consumer availability. And losses such as farm to retail losses, cooking loss, uneaten food, etc. occur as the food flows from primary availability to when it's finally consumed.

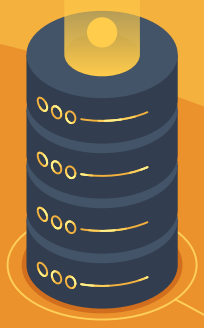
We can build a Sankey chart to see what percentage of losses occur at each stage and how much food is actually consumed. This can help analyze the efficiency of the production of food, its processing, and consumption. So you see Sankey diagram helps a lot in addressing food losses and food waste issues.

ANALYZING THE CUSTOMER JOURNEY

Another great practical use of the Sankey diagram is to measure the customer journey, which can then help you optimize it. For example, you can use the Sankey diagram to analyze the customer journey in PPC advertisements. You can build a Sankey chart that shows the percentage of match type that happens between the search query and a particular keyword on the left side and device type on the right-hand side with impressions in between.

This diagram can help gain useful insights into which keywords are generating the most traffic and where the traffic is coming from. Campaign managers can analyze how much a campaign missed out on opportunity and then make efforts to capture the remaining percentage.

Sankey diagram can also be used to analyze the customer journey through time. For instance, a Sankey diagram of a car rental service can be used to analyze which cars customers are renting. Similarly, these diagrams can be built for any organization offering a product or company to show paths customers took. Managers can then predict the path the customers are most likely to take and suggest product recommendations.



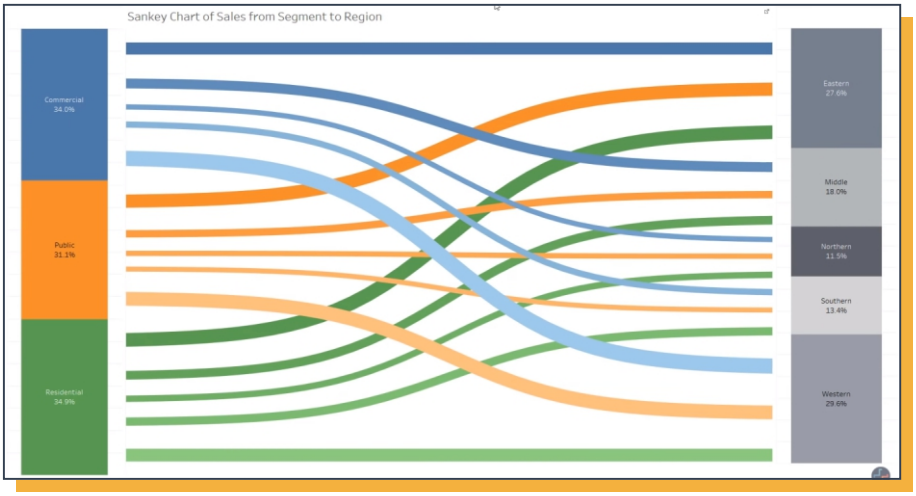
VISUALIZING THE HIERARCHICAL DATASET OF A COMPANY

If a company has a hierarchical dataset, it can build a Sankey diagram to make useful observations. For example, the dataset used in this article (hyperlink to the tutorial on Sankey diagram in tableau) is hierarchy type sales data (Country - City –Region-Segment) of African mobile.

Sort fields | Data source order

SalesData Date	SalesData Country	SalesData City	SalesData Region	SalesData Segment	SalesData Sales	SalesData Profit
01/01/2013 00:0...	Cote d'Ivoire	Abidjan	Western	Commercial	656.960	6.570
01/01/2013 00:0...	Madagascar	Antananarivo	Eastern	Public	875.940	-70.080
01/01/2013 00:0...	Rwanda	Kigali	Eastern	Public	258.350	18.080
01/01/2013 00:0...	Zimbabwe	Harare	Eastern	Residential	875.620	-35.020
02/01/2013 00:0...	Ethiopia	Addis Ababa	Eastern	Residential	509.930	10.200
03/01/2013 00:0...	Chad	N'Djamena	Middle	Commercial	443.130	4.430
03/01/2013 00:0...	Malawi	Blantyre	Eastern	Residential	651.780	19.550
03/01/2013 00:0...	Mauritius	Port Louis	Eastern	Public	896.640	-62.760
04/01/2013 00:0...	Sao Tome and Pri...	Sao Tome	Middle	Commercial	226.920	13.620
05/01/2013 00:0...	Burundi	Bujumbura	Eastern	Commercial	928.070	74.250
05/01/2013 00:0...	Cameroon	Yaoundé	Middle	Public	77.410	3.870
05/01/2013 00:0...	Cote d'Ivoire	Yamoussoukro	Western	Public	263.650	10.550
05/01/2013 00:0...	Nigeria	Lagos	Western	Residential	950.830	-47.540

The Sankey diagram built in this tutorial shows the flow from each segment over to each region and sales. Now, with this diagram, managers can analyze which country has the most number of cities that contribute to sales, which city or country is contributing to sales in each segment, etc. They can then take steps to improve sales.



INCREASING THE ENERGY EFFICIENCY OF CAR ENGINES

Since the inappropriate use of energy by car engines results in huge energy loss, Sankey diagrams can be built to visualize the flow of energy, from combustion to mobility, in cars. We can analyze how much energy is actually used for powering the car and other accessories and how much energy is lost. This analysis can then help improve the energy efficiency of car engines.

USING SANKEY DIAGRAM INSTEAD OF MACHINE LEARNING

Machine learning is usually used to learn patterns between two or more input columns and one output column. In some cases, we can use the Sankey diagram to replace machine learning. For example, let's say we have a dataset of bank direct marketing campaigns with categories like job, education, age, etc., of customers and a reponse column showing customers' responses with 'yes' or 'no.' We would normally use machine learning on this dataset to learn which customers are more likely to respond to direct marketing than others.

But, we can also build a Sankey diagram of this dataset with different categories such as age, marital status, education, etc., and the response column as the last column. With this Sankey diagram, you can analyze whether the customers who respond to marketing campaigns are single, married, engaged, or in a relationship. Similarly, you can see which age group responds the most to your marketing campaign.