

# NAPOLEON'S MARCH TO MOSCOW - THE WAR OF 1812

## THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION

by Ken Thomsen

The data-based map pictured is a superb example of the statistical graphics created by the French engineer Charles-Joseph Minard. Precise and beautiful in its presentation; it lets the observer appreciate the horrific consequences of Napoleon's decision to invade Russia in 1812. Napoleon sent an army of over 442,000 men ill prepared for the Russian winter to defeat the Russian army and enter Moscow. As French troops engaged the Russian forces, the Russian army would retreat. As they retreated, they destroyed and burned anything the French might find of use.

The chart graphically depicts the following information: the course of the invading army and the towns and battles encountered. The path of the invasion is colored in tan, and the width represents the size of the force. The observer can readily come to grips with the fact that the size of the force is decreasing as it approaches Moscow. Each millimeter of width of that line represents 10,000 men. When Napoleon's force finally reached Moscow, they found it virtually abandoned and devoid of anything of use.

The black line on the graft indicates the retreat. The graph at the bottom indicates temperature. It's worth noting that the rivers are

also indicated. Being forced to cross them in the brutal Russian winter, while under fire, took a huge toll on the retreating army. Over 20,000 men were lost in the crossing of the Berezina River alone. The C'est La Berezina is a term still used by the French to describe a total disaster. One can only imagine the human toll on an ill prepared army with no rations or shelter as the temperature drops to 30° below zero. Many of the troops simply froze to death. As the beleaguered French army left Russian soil only about 10,000 troops remained of the 442,000 that started the campaign.

As with much of history, Adolf Hitler will ignore the fate of the French. One hundred thirty years later, he will under estimate the severity of the Russian winter and the resolve of the Russian troops. Charles-Joseph Minard created this graphic in 1869 after retiring as inspector general of bridges and roads in Paris. Most of Minard's early graphic work dealt with the transport of goods, people and services.

B. Edward Tufte the world's best known information designer, said this statistical map of Napoleon's 1812 invasion and retreat from Russia was the greatest information graphic ever made.

Additional information about Charles Minard can be found on several sites:

[https://en.wikipedia.org/wiki/Charles\\_Joseph\\_Minard](https://en.wikipedia.org/wiki/Charles_Joseph_Minard)

<https://dirt.asla.org/2018/10/03/charles-joseph-minard-a-legacy-of-beautiful-data-based-maps/>

<https://www.edwardtufte.com/tufte/minard-obit>

<http://scih.org/charles-joseph-minard-infographics/>

<https://edspace.american.edu/visualwar/minard/>

# Losses of the French Army in the Russian Campaign 1812-1813, by Charles Joseph Minard

This classic of Charles Joseph Minard (1781-1870), the French engineer, shows the terrible fate of Napoleon's army in Russia. Described by E. J. Marey as seeming to defy the pen of the historian by its brutal eloquence, this combination of data map and time-series, drawn in 1869, portrays the devastating losses suffered in Napoleon's Russian campaign of 1812. Beginning at the left on the Polish-Russian border near the Niemen River, the thick band shows the size of the army (422,000 men) as it invaded Russia in June 1812. The width of the band indicates the size of the army at each place on the map. In September, the army reached Moscow, which was by then sacked and deserted, with 100,000 men. The path of Napoleon's retreat from Moscow is depicted by the darker, lower band, which is linked to a temperature scale and dates at the bottom of the chart.

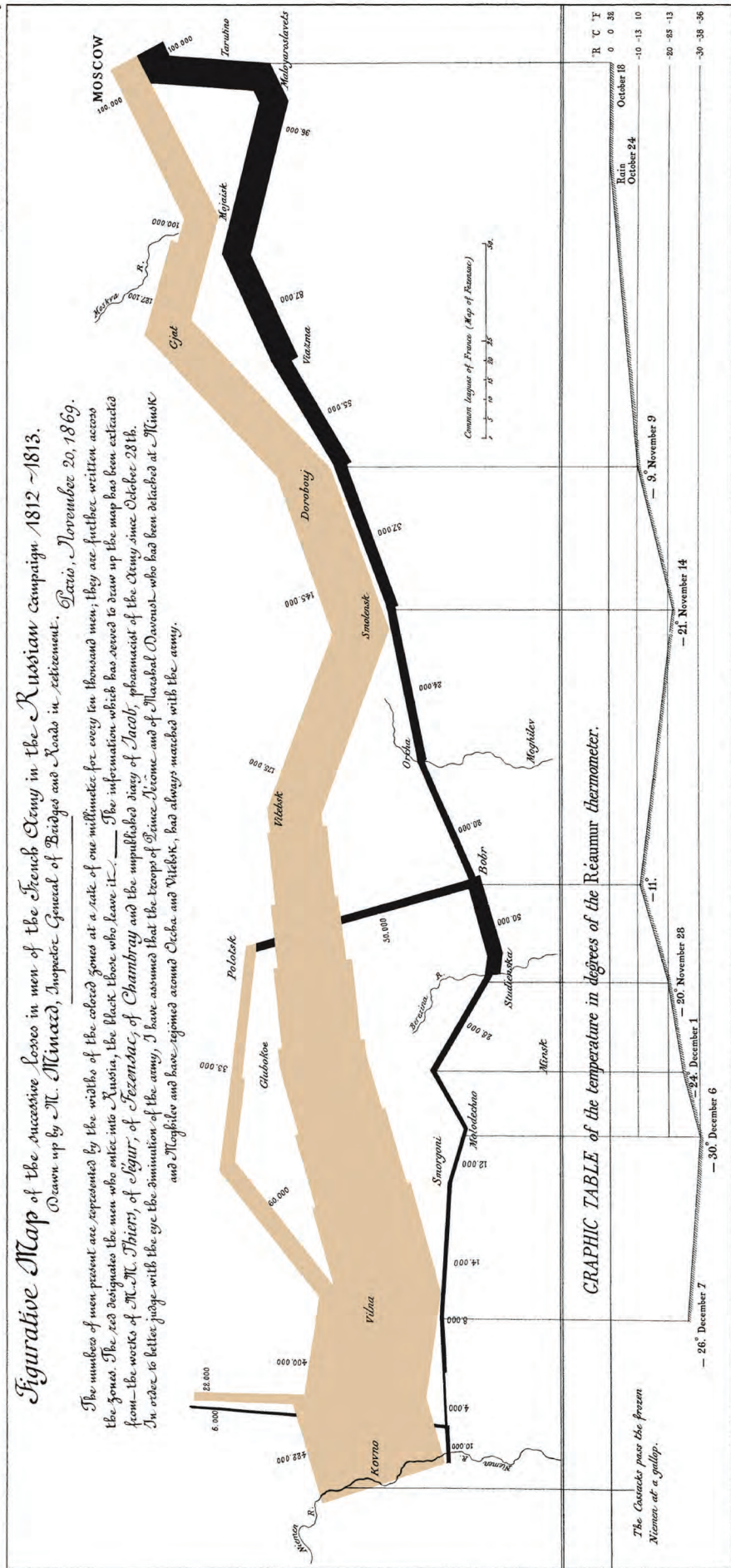
It was a bitterly cold winter, and many froze on the march out of Russia. As the graphic shows, the crossing of the Berezina River was a disaster, and the army finally struggled back into Poland with only 10,000 men remaining. Also shown are the movements of auxiliary troops, as they sought to protect the rear and the flank of the advancing army. Minard's graphic tells a rich, coherent story with its multivariate data, far more enlightening than just a single number bouncing along over time. Six variables are plotted: the size of the army, its location on a two-dimensional surface, direction of the army's movement, and temperature on various dates during the retreat from Moscow. Minard does not mention Napoleon; the point of the graphic is to memorialize the deaths of the soldiers. It may well be the best statistical graphic ever drawn.

ENGLISH TRANSLATION, 2003

## Figurative Map of the successive losses in men of the French Army in the Russian campaign 1812-1813.

Drawn up by M. Minard, Inspector-General of Bridges and Roads in retirement. Paris, November 20, 1869.

The numbers of men present are represented by the widths of the colored zones at a rate of one millimeter for every ten thousand men; they are further written across the zones. The red designates the men who enter into Russia, the black those who leave it. — The information which has served to draw up the map has been extracted from the works of M. M. Thiers, of Chambray, of Eszennat, of Chambray and the unpublished diary of Jacot, pharmacist of the Army since October 28th. In order to better judge with the eye the diminution of the army, I have assumed that the troops of Prince Jerome and of Marshal Davoust who had been detached at Minsk and Mlogilev and have rejoined around Ocha and Vitkebt, had always marched with the army.



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