

British physician John Snow was one of the fathers of modern epidemiology, the study of how illness moves through a population. Studying an outbreak of cholera in London in 1849, Snow challenged the conventional wisdom that the disease is caused by bad air. He thought cholera might be caused by bad water instead, an idea he first laid out in his 1849 essay *On the Mode of Communication of Cholera*.

A further cholera outbreak in 1853 and 1854 claimed many lives in the London neighborhood of Soho. Snow attributed the Soho epidemic to water from a pump on Broad Street. Not afraid to give a natural experiment a helping hand, he convinced the local parish council to remove the handle of the Broad Street pump. Cholera deaths in Soho subsided soon after, though Snow noted that death rates in his Broad Street treatment zone were already declining, and that this made the data from his natural experiment hard to interpret. DD was as fickle at birth as it is today.

Snow was a meticulous data grubber, setting a standard we still aspire to meet. In an 1855 revision of his essay, Snow reported death rates by district and water source for various parts of London. He noted that many of the high-death-rate districts in South London were supplied by one of two companies, the Southwark and Vauxhall Company or the Lambeth Company. In 1849, both companies drew water from the contaminated Thames in central London. Starting in 1852, however, the Lambeth Company drew from the river at Thames Ditton, an uncontaminated water source up-stream. Snow showed that between 1849 and 1854 deaths from cholera fell in the area supplied by the Lambeth Company but rose in that supplied by the Southwark and Vauxhall Company. Our Figure 5.7 reproduces Table 12 from Snow's 1855 essay.¹¹ This table contains the ingredients for Snow's two-period DD analysis of death rates by water source.

11 John Snow, *On the Mode of Communication of Cholera*, John Churchill, second edition, 1855.

FIGURE 5.7
John Snow's DD recipe

TABLE XII.

Sub-Districts.	Deaths from Cholera in 1849.	Deaths from Cholera in 1854.	Water Supply.
St. Saviour, Southwark .	283	371	Southwark & Vauxhall Company only.
St. Olave	157	161	
St. John, Horsleydown .	192	148	
St. James, Bermondsey .	249	362	
St. Mary Magdalen . . .	259	244	
Leather Market	226	237	
Rotherhithe*	352	282	
Wandsworth	97	59	
Battersea	111	171	
Putney	8	9	
Camberwell	235	240	
Peckham	92	174	
Christchurch, Southwark	256	113	
Kent Road	267	174	
Borough Road	312	270	
London Road	257	93	
Trinity, Newington . . .	318	210	
St. Peter, Walworth . . .	446	388	
St. Mary, Newington . . .	143	92	
Waterloo Road (1st) . . .	193	58	
Waterloo Road (2nd) . . .	243	117	
Lambeth Church (1st) . . .	215	49	
Lambeth Church (2nd) . . .	544	193	
Kennington (1st)	187	303	
Kennington (2nd)	153	142	
Brixton	81	48	
Clapham	114	165	
St. George, Camberwell	176	132	
Norwood	2	10	Lambeth Company only.
Streatham	154	15	
Dulwich	1	—	
Sydenham	5	12	
First 12 sub-districts . .	2261	2458	Southwark & Vauxhall.
Next 16 sub-districts . .	3905	2547	Both Companies.
Last 4 sub-districts . . .	162	37	Lambeth Company.

* A small part of Rotherhithe is now supplied by the Kent Water Company.