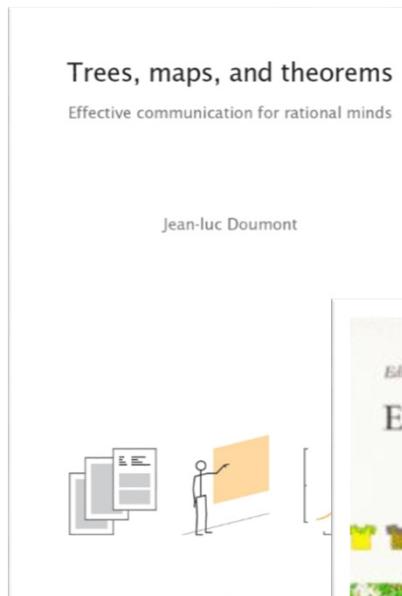
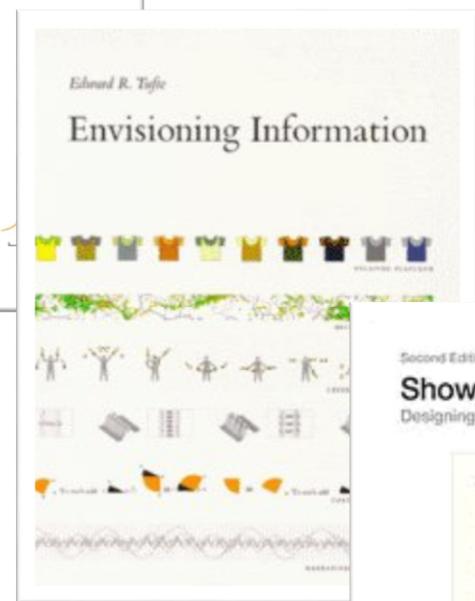


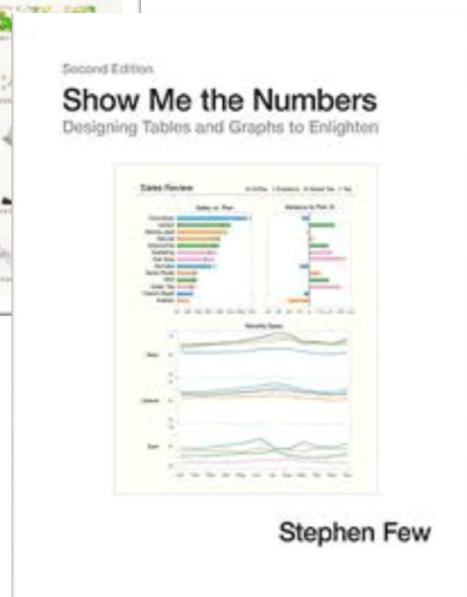
# Principles and practices of table design



Jean-luc Doumont



Edward Tufte



Stephen Few

rectangular tables

# To facilitate readability, data in a table are often not tidy.

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	84,759	92,738
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	78,826	86,246
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	81,191	88,834
Product 04	92,737	83,640	87,646	94,557	92,620	82,872	83,626	91,499
Product 05	86,245	77,785	81,511	87,938	86,136	77,071	77,773	85,094
Product 06	88,833	80,119	83,956	90,576	88,720	79,383	80,106	87,647
Product 07	82,614	74,511	78,079	84,236	82,510	73,826	74,498	81,511
Product 08	85,093	76,746	80,421	86,763	84,985	76,041	76,733	83,957
Product 09	87,646	79,048	82,834	89,366	87,535	78,322	79,035	86,475
Product 10	90,275	81,420	85,319	92,047	90,161	80,672	81,406	89,070

# 1-to-1 ratio of horizontal white space is the practical limit to improve left-to-right row scanning.

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	84,759	92,738
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	78,826	86,246
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	81,191	88,834
Product 04	92,737	83,640	87,646	94,557	92,620	82,872	83,626	91,499
Product 05	86,245	77,785	81,511	87,938	86,136	77,071	77,773	85,094
Product 06	88,833	80,119	83,956	90,576	88,720	79,383	80,106	87,647
Product 07	82,614	74,511	78,079	84,236	82,510	73,826	74,498	81,511
Product 08	85,093	76,746	80,421	86,763	84,985	76,041	76,733	83,957
Product 09	87,646	79,048	82,834	89,366	87,535	78,322	79,035	86,475
Product 10	90,275	81,420	85,319	92,047	90,161	80,672	81,406	89,070

# Correcting common grid errors.

Product	Jan	Feb	Mar	Apr	May	Jun
Product 01	93,993	84,773	88,833	95,838	93,874	83,994
Product 02	87,413	78,839	82,615	89,129	87,303	78,114
Product 03	90,036	81,204	85,093	91,803	89,922	80,458
Product 04	92,737	83,640	87,646	94,557	92,620	82,872
Product 05	83,733	75,520	79,137	85,377	83,627	74,826
Total	447,913	403,976	423,323	456,705	447,346	400,264

**Remove all rules but the ones under the header row  
and above the footer row.**



Product	Jan	Feb	Mar	Apr	May	Jun
Product 01	93,993	84,773	88,833	95,838	93,874	83,994
Product 02	87,413	78,839	82,615	89,129	87,303	78,114
Product 03	90,036	81,204	85,093	91,803	89,922	80,458
Product 04	92,737	83,640	87,646	94,557	92,620	82,872
Product 05	83,733	75,520	79,137	85,377	83,627	74,826
Total	447,913	403,976	423,323	456,705	447,346	400,264

## Light gray fill color to assist horizontal scanning.

Product	Jan	Feb	Mar	Apr	May	Jun	Jul
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	84,759
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	78,826
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	81,191
Product 04	92,737	83,640	87,646	94,557	92,620	82,872	83,626
Product 05	86,245	77,785	81,511	87,938	86,136	77,071	77,773
Product 06	88,833	80,119	83,956	90,576	88,720	79,383	80,106
Product 07	82,614	74,511	78,079	84,236	82,510	73,826	74,498
Product 08	85,093	76,746	80,421	86,763	84,985	76,041	76,733
Product 09	87,646	79,048	82,834	89,366	87,535	78,322	79,035
Product 10	90,275	81,420	85,319	92,047	90,161	80,672	81,406

These color fills are too dark.

Product	Jan	Feb	Mar	Apr	May	Jun	Jul
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	84,759
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	78,826
Product 03	90,036	81,204		91,803	89,922	80,458	81,191
Product 04	92,737	83,640		95,557	92,620	82,872	83,626
Product 05	86,245	77,785		89,938	86,136	77,071	77,773
Product 06	88,833	80,119		85,576	88,720	79,383	80,106
Product 07	82,614	74,511		81,236	82,510	73,826	74,498
Product 08	85,093	76,746		86,763	84,985	76,041	76,733
Product 09	87,646	79,048	82,834	89,366	87,535	78,322	79,035
Product 10	90,275	81,420	85,319	92,047	90,161	80,672	81,406



NOT  
RECOMMENDED

## Color fill can highlight particular data.

Product	Jan	Feb	Mar	Apr	May	Jun	Total
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	541,305
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	503,414
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	518,516
Product 04	92,737	83,640	87,646	94,557	92,620	82,872	534,072
Product 05	83,733	75,520	79,137	85,377	83,627	74,826	482,220
Total	447,913	403,976	423,323	456,705	447,346	400,264	2,579,526

## Categorical items can be listed in separate columns (wide format).

Product	Regions			
	North	East	South	West
Product 01	94	152	174	87
Product 02	122	198	226	113
Product 03	101	164	188	94
Product 04	142	230	263	131
Product 05	132	214	244	122
Product 06	174	282	323	161
Product 07	401	648	742	371
Product 08	281	454	519	260
Product 09	112	182	208	104
Product 10	584	944	1,081	540
Product 11	543	878	1,005	502
Product 12	163	263	301	151
Product 13	489	790	904	452
Product 14	327	529	606	303
Product 15	295	476	545	273
Total	3,960	6,403	7,330	3,665

## Switch to tidy format if the set has too many columns.



Region	Product	Units Sold
Region 01	Product 01	152
	Product 02	198
	Product 03	164
	Product 04	230
	Product 05	214
	Product 06	282
	Product 07	648
	Product 08	454
	Product 09	182
	Product 10	944
	Product 11	878
	Product 12	263
	Product 13	790
	Product 14	529
	Product 15	476
Region 02	Product 01	443
	Product 02	133
	Product 03	399

## Preferred arrangement of time-series data is across columns from left to right.

Region	2010				2011	
	Q1	Q2	Q3	Q4	Q1	Q2
North	393	473	539	639	439	538
East	326	393	447	530	364	447
South	401	483	550	652	448	549
West	538	647	737	874	601	736
Total	1,658	1,996	2,274	2,696	1,852	2,270

# White space and rules used to group data by a combination of categories.



Country: USA

Region: North

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	84,759	92,738	93,728	93,972
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	78,826	86,246	87,167	87,394
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	81,191	88,834	89,782	90,016
Product 04	92,737	83,640	87,646	94,557	92,620	82,872	83,626	91,499	92,476	92,716
Product 05	86,245	77,785	81,511	87,938	86,136	77,071	77,773	85,094	86,002	86,226
Product 06	88,833	80,119	83,956	90,576	88,720	79,383	80,106	87,647	88,582	88,813
Product 07	82,614	74,511	78,079	84,236	82,510	73,826	74,498	81,511	82,382	82,596
Product 08	85,093	76,746	80,421	86,763	84,985	76,041	76,733	83,957	84,853	85,074
Product 09	87,646	79,048	82,834	89,366	87,535	78,322	79,035	86,475	87,399	87,626
Product 10	90,275	81,420	85,319	92,047	90,161	80,672	81,406	89,070	90,021	90,255
Total	\$884,886	\$798,085	\$836,307	\$902,255	\$883,765	\$790,751	\$797,953	\$873,070	\$882,391	\$884,688

Country: USA

Region: East

Product	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	84,759	92,738	93,728	93,972
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	78,826	86,246	87,167	87,394
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	81,191	88,834	89,782	90,016

**Calculated values are placed to the right  
of the source column.**

Product	Units Sold	Actual Revenue	% of Total	Fcst Revenue	% of Fcst
Product A	938	187,600	47%	175,000	107%
Product B	1,093	114,765	28%	130,000	88%
Product C	3,882	62,112	15%	50,000	124%
Product D	873	36,666	9%	40,000	92%
Product E	72	2,088	1%	50,000	4%
Total	6,858	\$403,231	100%	\$445,000	91%

**Columns can be placed next to each other to facilitate comparisons.**

Product	Units Sold	Revenue	Last Year's Revenue	This Year's Revenue	Fcst Revenue	Planned Revenue
			Year's Revenue	Revenue	Revenue	Revenue
Product A	938	159,497	187,600	175,000	160,000	
Product B	1,093	123,007	114,765	130,000	125,000	
Product C	3,882	45,384	62,112	53,000	50,000	
Product D	873	41,003	36,666	38,000	40,000	
Product E	72	2,485	2,088	4,000	5,000	
Total	6,858	\$371,376	\$403,231	\$400,000	\$380,000	

## Align numbers to the right.



Sales	Sales	Sales
93,883.39	93,883.39	93,883.39
5,693,762.32	5,693,762.32	5,693,762.32
483.84	483.84	483.84
674,663.39	674,663.39	674,663.39
548.93	548.93	548.93
3,847.33	3,847.33	3,847.33
<u>\$6,467,189.20</u>	<u>\$6,467,189.20</u>	<u>\$6,467,189.20</u>



# Left-alignment generally works best for text.



Product Code	Product Name	Product Code	Product Name	Product Code	Product Name
A1838	2-Door Sport	A1838	2-Door Sport	A1838	2-Door Sport
A89	4-Door Sport	A89	4-Door Sport	A89	4-Door Sport
J98488	2-Door Luxury	J98488	2-Door Luxury	J98488	2-Door Luxury
J3883	4-Door Luxury	J3883	4-Door Luxury	J3883	4-Door Luxury
K9288	2-Door Truck	K9288	2-Door Truck	K9288	2-Door Truck
K38733	4-Door Truck	K38733	4-Door Truck	K38733	4-Door Truck



# Use a consistent number of decimal places.

Rate	Rate
3.5%	3.500%
12.675%	12.675%
5.%	5.000%
13.25%	13.250%
2.75%	2.750%
13.125%	13.125%
8.383%	8.383%



# What decimal precision does the audience need?

Region	Revenue	% of Total	?	% of Total	?	% of Total	?	% of Total
Americas	636,663,663	40%	39.8%	39.82%	39.816%			
Europe	443,874,773	28%	27.8%	27.76%	27.759%			
Asia	399,393,993	25%	25.0%	24.98%	24.978%			
Australia	99,838,333	6%	6.2%	6.24%	6.244%			
Middle East	10,399,383	1%	0.7%	0.65%	0.650%			
Africa	7,939,949	1%	0.5%	0.50%	0.497%			

**Columns and row summaries in bold for emphasis.**

Product	Jan	Feb	Mar	Apr	May	Jun	<b>Total</b>
Product 01	93,993	84,773	88,833	95,838	93,874	83,994	\$541,305
Product 02	87,413	78,839	82,615	89,129	87,303	78,114	\$503,414
Product 03	90,036	81,204	85,093	91,803	89,922	80,458	\$518,516
Product 04	92,737	83,640	87,646	94,557	92,620	82,872	\$534,072
Product 05	86,245	77,785	81,511	87,938	86,136	77,071	\$496,687
Product 06	88,833	80,119	83,956	90,576	88,720	79,383	\$511,587
Product 07	82,614	74,511	78,079	84,236	82,510	73,826	\$475,776
Product 08	85,093	76,746	80,421	86,763	84,985	76,041	\$490,049
Product 09	87,646	79,048	82,834	89,366	87,535	78,322	\$504,751
Product 10	90,275	81,420	85,319	92,047	90,161	80,672	\$519,893
<b>Total</b>	<b>\$884,886</b>	<b>\$798,085</b>	<b>\$836,307</b>	<b>\$902,255</b>	<b>\$883,765</b>	<b>\$790,751</b>	<b>\$5,096,049</b>

arrange text to facilitate comparisons

# Alphabetical order is usually the wrong order for tabulated information

Three groups differed in how they did something or other.

group C	57%
group A	53%
group B	46%

# How Different Groups Voted for President

Based on 12,782 interviews with voters at their polling places. Shown is how each group divided its vote for President and, in parentheses, the percentage of the electorate belonging to each group.

	CARTER	REAGAN	ANDERSON	CARTER-FORD in 1976
Democrats (43%)	66	26	6	77 - 22
Independents (23%)	30	54	12	43 - 54
Republicans (28%)	11	84	4	9 - 90
Liberals (17%)	57	27	11	70 - 26
Moderates (46%)	42	48	8	51 - 48
Conservatives (28%)	23	71	4	29 - 70
Liberal Democrats (9%)	70	14	13	86 - 12
Moderate Democrats (22%)	66	28	6	77 - 22
Conservative Democrats (8%)	53	41	4	64 - 35
Politically active Democrats (3%)	72	19	8	—
Democrats favoring Kennedy in primaries (13%)	66	24	8	—
Liberal Independents (4%)	50	29	15	64 - 29
Moderate Independents (12%)	31	53	13	45 - 53
Conservative Independents (7%)	22	69	6	26 - 72
Liberal Republicans (2%)	25	66	9	17 - 82
Moderate Republicans (11%)	13	81	5	11 - 88
Conservative Republicans (12%)	6	91	2	6 - 93
Politically active Republicans (2%)	5	89	6	—
East (32%)	43	47	8	51 - 47
South (27%)	44	51	3	54 - 45
Midwest (20%)	41	51	6	48 - 50
West (11%)	35	52	10	46 - 51
Blacks (10%)	82	14	3	82 - 16
Hispanics (2%)	54	36	7	75 - 24
Whites (88%)	36	55	8	47 - 52

by which column of numbers are the data ordered?

# How Different Groups Voted for President

Based on 12,782 interviews with voters at their polling places. Shown is how each group divided its vote for President and, in parentheses, the percentage of the electorate belonging to each group.

	CARTER	REAGAN	ANDERSON	CARTER-FORD in 1976
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Independents (23%)	30	54	12	43 - 54
Republicans (28%)	11	84	4	9 - 90
Liberals (17%)	57	27	11	70 - 26
Moderates (46%)	42	48	8	51 - 48
Conservatives (28%)	23	71	4	29 - 70
Liberal Democrats (8%)	70	14	13	86 - 12
Moderate Democrats (22%)	66	28	6	77 - 22
Conservative Democrats (8%)	53	41	4	64 - 35
Politically active Democrats (3%)	72	19	8	—
Democrats favoring Kennedy in primaries (13%)	66	24	8	—
Liberal Independents (4%)	50	29	15	64 - 29
Moderate Independents (12%)	31	53	13	45 - 53
Conservative Independents (7%)	22	69	6	26 - 72
Liberal Republicans (2%)	25	66	9	17 - 82
Moderate Republicans (11%)	13	81	5	11 - 88
Conservative Republicans (12%)	6	91	2	6 - 93
Politically active Republicans (2%)	5	89	6	—
East (32%)	43	47	8	51 - 47
South (27%)	44	51	3	54 - 45
Midwest (20%)	41	51	6	48 - 50
West (11%)	35	52	10	46 - 51
Blacks (10%)	82	14	3	82 - 16
Hispanics (2%)	54	36	7	75 - 24
Whites (88%)	36	55	8	47 - 52

ordered by Jimmy  
Carter's win in the  
previous election

# How Different Groups Voted for President

Based on 12,782 interviews with voters at their polling places. Shown is how each group divided its vote for President and, in parentheses, the percentage of the electorate belonging to each group.

	CARTER	REAGAN	ANDERSON	CARTER-FORD in 1976
Democrats (43%)	66	26	6	77 - 22
Independents (23%)	30	54	12	43 - 54
Republicans (28%)	11	84	4	9 - 90
Liberals (17%)	57	27	11	70 - 26
Moderates (46%)	42	48	8	51 - 48
Conservatives (28%)	23	71	4	29 - 70
Liberal Democrats (8%)	70	14	13	86 - 12
Moderate Democrats (22%)	66	28	6	77 - 22
Conservative Democrats (8%)	53	41	4	64 - 35
Politically active Democrats (3%)	72	19	8	—
Democrats favoring Kennedy in primaries (13%)	66	24	8	—
Liberal Independents (4%)	50	29	15	64 - 29
Moderate Independents (12%)	31	53	13	45 - 53
Conservative Independents (7%)	22	69	6	26 - 72
Liberal Republicans (2%)	25	66	9	17 - 82
Moderate Republicans (11%)	13	81	5	11 - 88
Conservative Republicans (12%)	6	91	2	6 - 93
Politically active Republicans (2%)	5	89	6	—
East (32%)	43	47	8	51 - 47
South (27%)	44	51	3	54 - 45
Midwest (20%)	41	51	6	48 - 50
West (11%)	35	52	10	46 - 51
Blacks (10%)	82	14	3	82 - 16
Hispanics (2%)	54	36	7	75 - 24
Whites (88%)	36	55	8	47 - 52

ordered by Jimmy  
Carter's win in the  
previous election

time tables designed for the reader

<i>Train</i>	<i>Paris</i>	<i>London</i>
9005	06:43	07:58
9007	07:13	08:28
9009	07:43	08:59
9011	08:07	09:34
9015	09:07	10:36
9019	10:13	11:28
9027	12:13	13:28
9031	13:01	14:34
9039	15:13	16:36
9043	16:13	17:34



<i>Train</i>	<i>Paris</i>	<i>London</i>
9005	06:43	07:58
9007	07:13	08:28
9009	07:43	08:59
9011	08:07	09:34
9015	09:07	10:36
9019	10:13	11:28
9027	12:13	13:28
9031	13:01	14:34
9039	15:13	16:36
9043	16:13	17:34

**align columns  
use white space  
erase “rules” (borders)**



	<i>Train</i>	<i>Paris</i>	<i>London</i>
	9005	06:43	07:58
	9007	07:13	08:28
	9009	07:43	08:59
	9011	08:07	09:34
	9015	09:07	10:36
	9019	10:13	11:28
	9027	12:13	13:28
	9031	13:01	14:34
	9039	15:13	16:36
	9043	16:13	17:34

# New Jersey Transit, Northeastern Corridor Timetable (Newark, 1985).

Train No.	3701	XM 3301	3801	A 67	3 3803	3 3201	A3 51	.3 3703	3 3807	3 3203	A3 61	3 3809	A3 47	3 3901	3 3811	3 3903	3 3813	3205	3815	3817	3819	3207	3821	3823	3825	3209	3827	3829	3831	
New York, N.Y.	A.M. 12.10	A.M. 12.40	A.M. 1.30	A.M. 3.52	A.M. 4.50	A.M. 6.10	A.M. 6.25	A.M. 6.35	A.M. 6.50	A.M. 7.10	A.M. 7.30	A.M. 7.33	A.M. 7.45	A.M. 7.50	A.M. 8.05	A.M. 8.25	A.M. 8.40	A.M. 8.50	A.M. 9.10	A.M. 9.40	A.M. 10.10	A.M. 10.25	A.M. 10.40	A.M. 11.10	A.M. 11.40	A.M. 11.50	P.M. 12.10	P.M. 12.40	P.M. 1.10	
Newark, N.J. P North Elizabeth Elizabeth	12.24	12.55	1.44	4.07	5.04	6.24	6.38	6.49	7.04	7.24	7.45	7.47	7.59	8.04	8.19	8.39	8.54	9.04	9.24	9.54	10.24	10.39	10.54	11.24	11.54	12.04	12.24	12.54	1.24	
Linden North Rahway Rahway	12.31	1.03	1.51	..	5.11	6.31	..	6.56	7.11	7.32	..	7.54	..	8.13	8.26	8.46	9.01	9.11	9.31	10.01	10.31	10.46	11.01	11.31	12.01	12.11	12.31	1.01	1.31	
Metro Park (Iselin) Metuchen	12.36	..	1.56	..	5.16	6.36	..	7.01	7.15	7.37	..	7.59	..	8.18	8.31	8.51	9.06	..	9.36	10.06	10.36	..	11.06	11.36	12.06	..	12.36	1.06	1.36	
Edison New Brunswick Jersey Avenue	12.40	1.11	2.00	..	5.20	6.40	..	7.06	7.20	7.42	..	8.03	..	8.24	8.36	8.57	9.10	9.18	9.40	10.10	10.40	10.53	11.10	11.40	12.10	12.18	12.40	1.10	1.40	
Princeton Jct. S Trenton, N.J.	12.44	..	2.04	4.26	5.24	..	6.56	7.10	7.25	..	8.04	8.07	8.15	..	8.40	..	9.14	..	9.44	10.14	10.44	..	11.14	11.44	12.14	..	12.44	1.14	1.44	
	12.48	..	2.08	..	5.28	..	..	7.14	7.29	..	..	8.11	..	..	8.44	..	9.18	..	9.48	10.18	10.48	..	11.18	11.48	12.18	..	12.48	1.18	1.48	
	12.51	..	2.11	..	..	..	..	7.17	7.32	..	..	8.14	..	..	8.47	..	9.21	..	..	10.21	..	..	11.21	..	..	12.21	..	..	1.21	..
	12.55	..	2.15	..	5.35	..	7.05	7.21	7.35	..	..	8.18	8.25	..	8.50	..	9.25	..	9.54	10.25	10.54	..	11.25	11.54	12.25	..	12.54	1.25	1.54	
	1.02	..	2.18	..	..	..	..	7.28	..	..	..	8.21	..	..	..	..	9.28	..	..	10.28	..	..	11.28	..	..	12.28	..	..	1.28	..
	..	..	2.31	..	5.50	..	7.19	..	7.50	..	..	8.34	8.41	..	9.05	..	9.41	..	10.09	10.41	11.09	..	11.41	12.09	12.41	..	1.09	1.41	2.09	
	..	..	2.42	4.58	6.03	..	7.28	..	8.01	..	8.31	8.44	8.52	..	9.16	..	9.52	..	10.19	10.52	11.19	..	11.52	12.19	12.52	..	1.22	1.52	2.20	



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New York, NY	12.10	12.40	1.30	3.52	4.50	6.10	6.25	6.35	6.50	7.10	7.30	7.33	7.45	7.50	8.05	8.25	8.40	8.50	9.10	9.40	10.10	10.25	10.40	11.10	11.40			
Newark, NJ <sup>P</sup>	12.24	12.55	1.44	4.07	5.04	6.24	6.38	6.49	7.04	7.24	7.45	7.47	7.59	8.04	8.19	8.39	8.54	9.04	9.24	9.54	10.24	10.39	10.54	11.24	11.54			
North Elizabeth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Elizabeth	12.31	1.03	1.51	..	5.11	6.31	..	6.56	7.11	7.32	..	7.54	..	8.13	8.26	8.46	9.01	9.11	9.31	10.01	10.31	10.46	11.01	11.31	12.01	..	..	
Linden	12.36	..	1.56	..	5.16	6.36	..	7.01	7.15	7.37	..	7.59	..	8.18	8.31	8.51	9.06	..	9.36	10.06	10.36	..	11.06	11.36	12.06	..	..	
North Rahway	..	..	..	..	..	..	..	..	7.03	..	7.39	..	..	..	8.20	8.33	8.54	..	..	..	..	..	..	..	..	..	..	..
Rahway	12.40	1.11	2.00	..	5.20	6.40	..	7.06	7.20	7.42	..	8.03	..	8.24	8.36	8.57	9.10	9.18	9.40	10.10	10.40	10.53	11.10	11.40	12.10	..	..	
Metro Park (Iselin)	12.44	2.04	4.26	5.24	..	6.56	7.10	7.25	..	8.04	8.07	8.15	..	8.40	..	9.14	..	9.44	10.14	10.44	..	11.14	11.44	12.14	..	..		
Metuchen	12.48	2.08	..	5.28	..	..	7.14	7.29	..	..	8.11	..	..	8.44	..	9.18	..	9.48	10.18	10.48	..	11.18	11.48	12.18	..	..		
Edison	12.51	2.11	..	..	..	..	7.17	7.32	..	..	8.14	..	..	8.47	..	9.21	..	..	10.21	..	..	11.21	..	..	12.21	..	..	
New Brunswick	12.55	2.15	..	5.35	..	7.05	7.21	7.35	..	..	8.18	8.25	..	8.50	..	9.25	..	9.54	10.25	10.54	..	11.25	11.54	12.25	..	..		
Jersey Avenue	1.02	2.18	..	..	..	..	7.28	..	..	..	8.21	..	..	..	..	..	9.28	..	..	10.28	..	..	11.28	..	..	12.28	..	..
Princeton Junction <sup>S</sup>	..	2.31	..	5.50	..	7.19	..	7.50	..	..	8.34	8.41	..	9.05	..	9.41	..	10.09	10.41	11.09	..	11.41	12.09	12.41	..	..		
Trenton, NJ	..	2.42	4.58	6.03	..	7.28	..	8.01	..	8.31	8.44	8.52	..	9.16	..	9.52	..	10.19	10.52	11.19	..	11.52	12.19	12.52	..	..		

TRAIN NUMBER      3701    3301    3801    67    3803    3201    51    3703    3807    3203    61    3809    47    3901    3811    3903    3813    3205    3815    3817    3819    3207    3821    3823    3825    3209    3827    3829    3831  
NOTES                XM            3

New Jersey Transit, *Northeastern Corridor Timetable* (Newark, 1985).

**align columns  
use white space  
erase “rules” (borders)  
row chunks in a lightly contrasting color**



# Close-up

Train No.	3701	XM 3301	3801	A 67
New York, N.Y.	A.M. 12.10	A.M. 12.40	A.M. 1.30	A.M. 3.52
Newark, N.J. P	12.24	12.55	1.44	4.07
North Elizabeth	....	....	....	....
Elizabeth	12.31	1.03	1.51	....
Linden	12.36	....	1.56	....
North Rahway	....	....	....	....
Rahway	12.40	1.11	2.00	....
Metro Park (Iselin)	12.44	....	2.04	4.26
Metuchen	12.48	....	2.08	....
Edison	12.51	....	2.11	....
New Brunswick	12.55	....	2.15	....
Jersey Avenue	1.02	....	2.18	....
Princeton Jct. S	....	....	2.31	....
Trenton, N.J.	....	....	2.42	4.58

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New York, NY .....	12.10	12.40	1.30	3.52	...
Newark, NJP .....	12.24	12.55	1.44	4.07	...
North Elizabeth .....					
Elizabeth .....	12.31	1.03	1.51	...	
Linden .....	12.36	..	1.56	...	
North Rahway .....					
Rahway .....	12.40	1.11	2.00	...	
Metro Park (Iselin) .....	12.44			2.04	4.26
Metuchen .....	12.48			2.08	...
Edison .....	12.51			2.11	...
New Brunswick .....	12.55			2.15	...
Jersey Avenue .....	1.02			2.18	...
Princeton JunctionS .....				2.31	...
Trenton, NJ .....				2.42	4.58
TRAIN NUMBER	3701	3301	3801	67	
NOTES		X	M		➡

# A train time table from 1913

<i>New York, New Haven and Hartford RAILROAD</i>	
LOCAL TIME TABLE.	
BETWEEN	
NEW YORK AND NEW HAVEN.	
HARLEM RIVER AND NEW ROCHELLE.	
STAMFORD AND NEW CANAAN.	
SOUTH NORWALK AND BROOKFIELD JC.	
IN EFFECT	
OCTOBER 5, 1913.	
REVISED TO OCT. 20, 1913.	
Subject to Change without Notice.	
C. L. BARDO,	A. B. SMITH,
General Manager,	Gen'l Passenger Agent,
New Haven, Conn.	New Haven, Conn.
Form Adv. 222.	

	Leave Harlem River 4.45 p. m.	4 † 35	5 † 00	5 † 02	5 † 05	5 † 08	5 † 11
<i>New York, G.C.T.</i>							
<i>New York, 125th St.</i>		4 h 46				5 h 16	5 h 19
<i>Woodlawn</i>	♦	5 h 00	▲	▲	♦	♦	
<i>Mount Vernon</i>		5.05				5.37	
<i>Columbus Ave.</i>		5.08	□	□		5.39	
<i>Pelham</i>		5.11				5.41	
<i>NEW ROCHELLE</i>	5 † 06	5.16				5.45	5 h
<i>Larchmont Manor</i>		5.11	5.21				5.
<i>Mamaroneck</i>		5.15	5.25				5.
<i>Harrison</i>		5.19	5.29				
<i>Rye</i>		5.23	5.33				
<i>Port Chester</i>		5.27	5.37				
<i>Greenwich</i>		5.33					
<i>Cos Cob</i>		5.37					
<i>Riverside</i>		5.39					
<i>Sound Beach</i>		5.43					
<i>STAMFORD</i>	Due	5.47					
<i>STAMFORD</i>	Lv.				5.58		
<i>Glenbrook</i>					6.02		
<i>Noroton</i>							
<i>Darien</i>					6.09		
<i>Rowayton</i>							
<i>SOUTH NORWALK</i>					6.15		
<i>East Norwalk</i>					6.21		
<i>Westport &amp; Saugatuck</i>					6.29		
<i>Green's Farms</i>							
<i>Southport</i>							
<i>Fairfield</i>							
<i>BRIDGEPORT</i>	Due						
<i>BRIDGEPORT</i>	Lv.				6.40		
<i>Stratford</i>							
<i>DEVON (Naugatuck Jct)</i>							
<i>Milford</i>					6.51		
<i>Woodmont</i>							
<i>West Haven</i>							
<i>NEW HAVEN</i>	Due	6.41	6.47	7.07			
"Merchants' Limited," via Shore Line (all Parlor Cars) for which special form of ticket must be purchased. See Note.							

## NEW YORK TO NEW HAVEN

### MONDAY TO FRIDAY, EXCEPT HOLIDAYS

Leave	Arrive	Leave	Arrive	Leave	Arrive
New York	New Haven	New York	New Haven	New York	New Haven
AM 12:35	AM 2:18	PM 2:05	PM 3:45	PM 1:42 <sup>5</sup>	PM 8:19
5:40	7:44	3:05	4:45	T 7:05	8:56
7:05	8:45	T 4:01	5:45	T 8:05	9:45
8:05	9:45	4:41	6:25	T 9:05	10:50
9:05	10:45	T 4:59	6:53	10:05	11:45
10:05	11:45	X T 5:02E	6:33	11:20	1:05
11:05	12:45	X T 5:20	7:08	12:35	2:18
12:05	1:45	X T 5:42	7:26	.....	.....
1:05 PM	2:45 PM	X T 6:07E	7:46	.....	.....

### SATURDAY, SUNDAY & HOLIDAYS

AM	AM	PM	PM	PM	PM
12:35	2:18	2:05	3:45	7:05	8:45
5:40	7:37	S 3:05	S 4:45	H 8:05	H 9:45
8:05	9:45	4:05	5:45	9:05	10:45
10:05	11:47	5:05	6:48	11:20	1:00
12:05 PM	1:45 PM	6:05 PM	7:48 PM	12:35 AM	2:18 AM

The service shown herein is operated by  
Metro-North Commuter R.R.

## NEW YORK → NEW HAVEN

Grand Central Station

Monday to Friday,  
except holidays

Leaves New York	Arrives New Haven
12.35 am	2.18
5.40 am	7.44 am
7.05	8.45
8.05	9.45
9.05	10.45
10.05	11.45
11.05	12.45 pm
12.05 pm	1.45
1.05	2.45
2.05	3.45
3.05	4.45
4.01	5.45
4.41	6.25
4.59	6.53
5.02	6.33
5.20	7.08
5.42	7.26
6.07	7.46
6.25	8.19

Economy off-peak tickets are  
not valid on trains in boxed areas.

Saturday, Sunday,  
and holidays

Leaves New York	Arrives New Haven
12.35 am	2.18
5.40 am	7.37 am
8.05	9.45
10.05	11.47
12.05 pm	1.45 pm
2.05	3.45
3.05	4.45
Saturdays only	4.45
4.05	5.45
5.05	6.48
6.05	7.42

# The layout is designed with the user's needs in mind

align columns  
use white space  
erase “rules” (borders)  
meet the needs of the user

## NEW YORK → NEW HAVEN

Grand Central Station

Monday to Friday,  
except holidays

Leaves New York	Arrives New Haven
--------------------	----------------------

12.35 am	2.18
5.40 am	7.44 am
7.05	8.45
8.05	9.45
9.05	10.45
10.05	11.45
11.05	12.45 pm
12.05 pm	1.45
1.05	2.45
2.05	3.45
3.05	4.45
4.01	5.45
4.41	6.25
4.59	6.53
5.02	6.33
5.20	7.08
5.42	7.26
6.07	7.46
6.25	8.19

Economy off-peak tickets are  
not valid on trains in boxed areas.

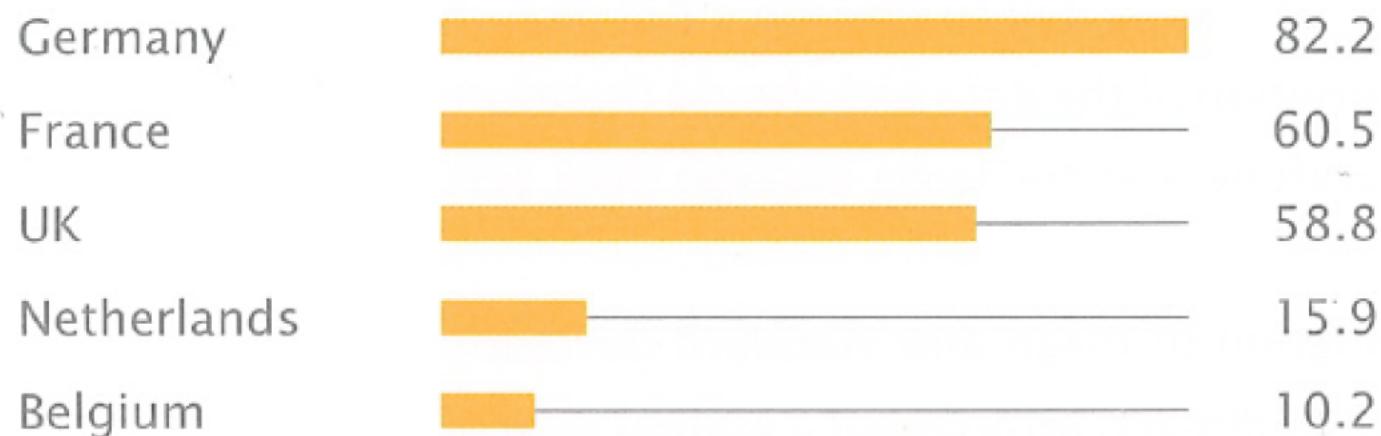
Saturday, Sunday,  
and holidays

Leaves New York	Arrives New Haven
--------------------	----------------------

12.35 am	2.18
5.40 am	7.37 am
8.05	9.45
10.05	11.47
12.05 pm	1.45 pm
2.05	3.45
3.05	4.45
4.05	5.45
5.05	6.48
6.05	7.42

**tables with a visual design**

Population [millions]





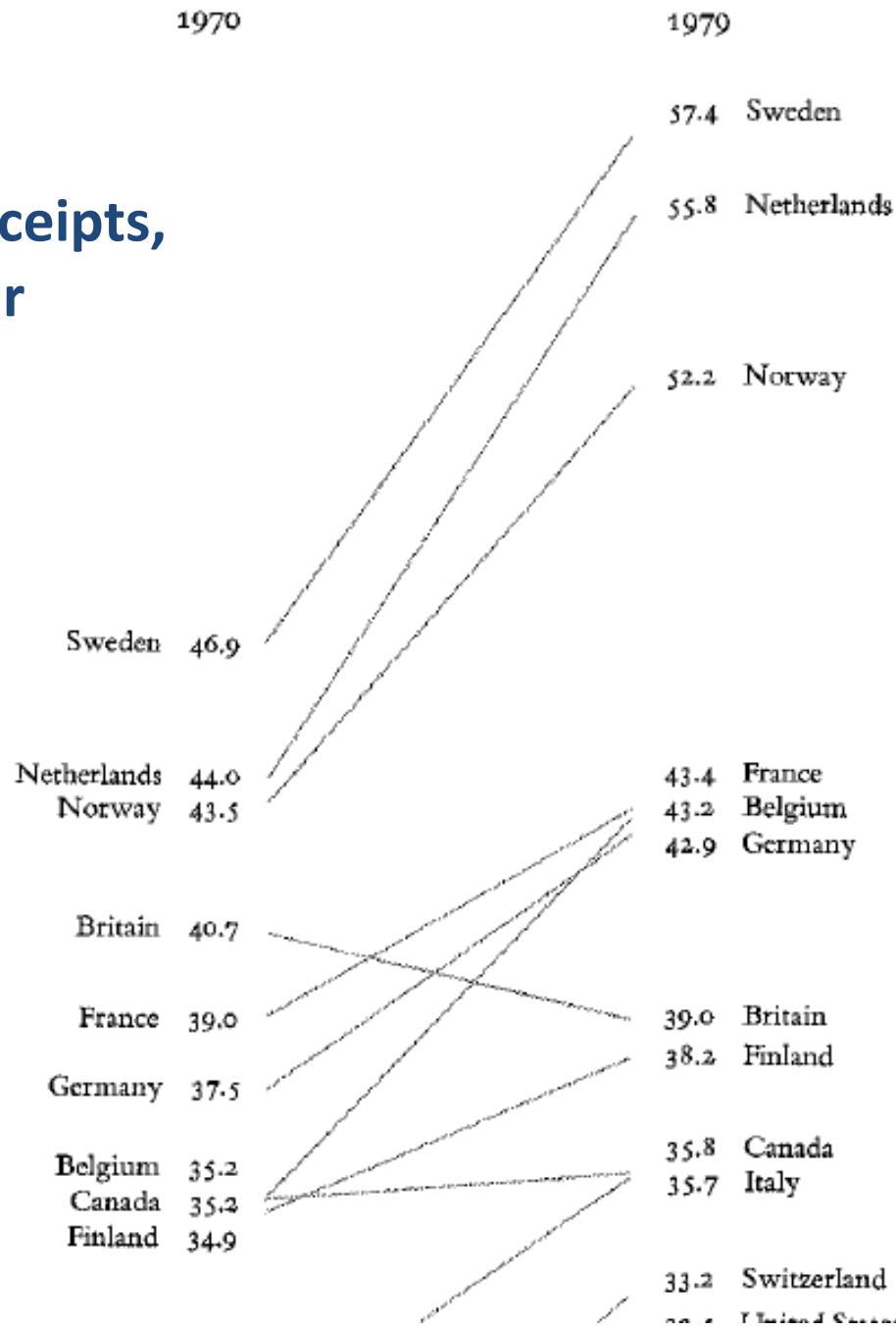
Black Eagle Holding

Net profit in 2008

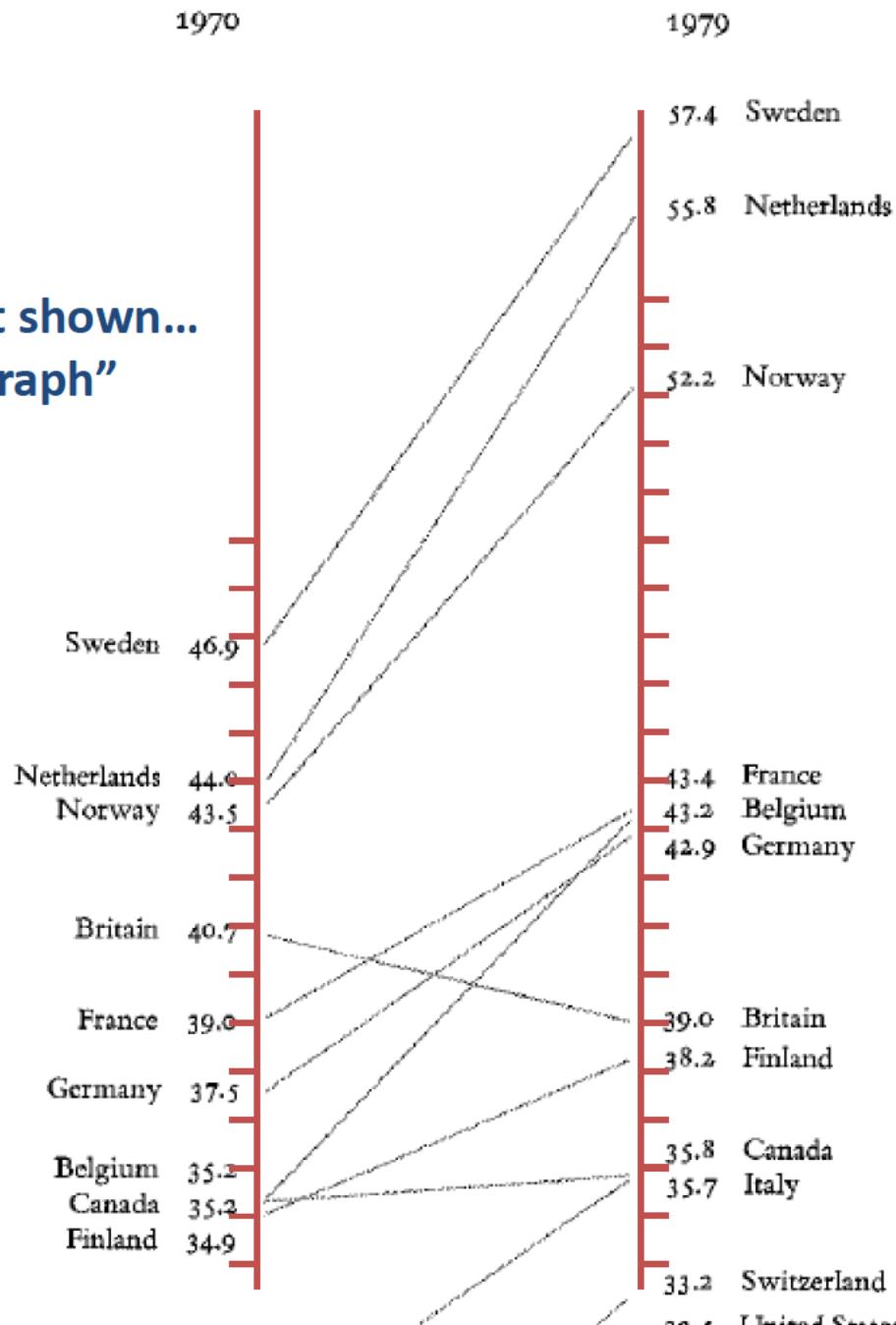
Merchant banking	34%		245
Retail banking	32%		230
Insurance	24%		173
Asset management	10%		72

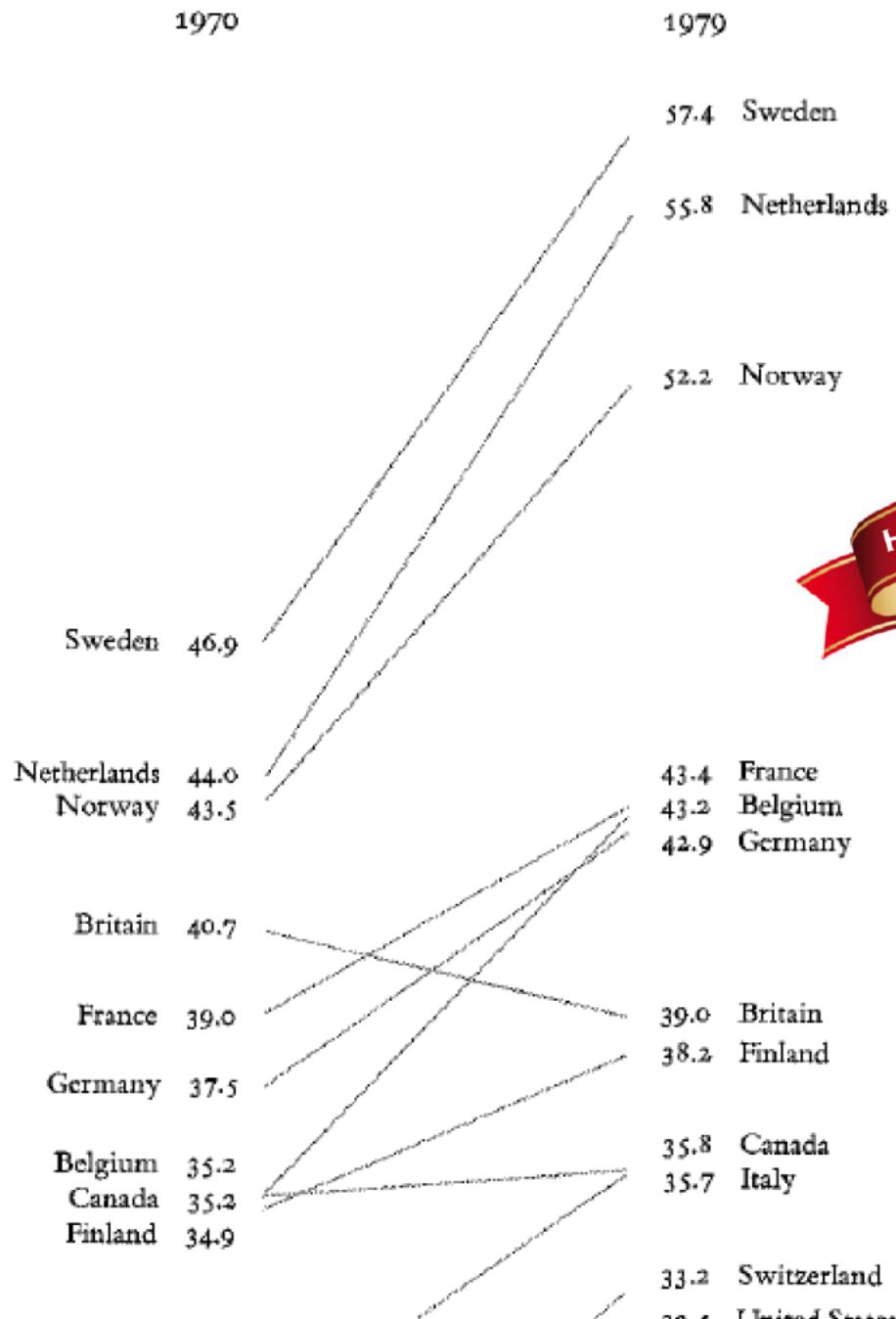
\$ 720 million

## Government receipts, % of GDP, 9 year difference.



Vertical scale not shown...  
another “table-graph”





# This week's reading from Stephen Few

## 3 DIFFERING ROLES OF TABLES AND GRAPHS

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Tables and graphs are the two fundamental vehicles for presenting quantitative information. They have developed over time to the point that we now thoroughly understand which works best for different circumstances and why. This chapter introduces tables and graphs and gives simple guidelines for selecting which to use for your particular purpose.

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# creating tables in R

## online tutorial