

FIRMBACKBONE: Employment statistics

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Introduction

FIRMBACKBONE has access to data from *Stichting LISA* (LISA Foundation in English), which specializes in socio-economic data of all firm branches in the Netherlands where paid work is performed. Key data includes addresses, employment statistics, and economy activity indicators. This document has three main objectives. First, we compare the data obtained from LISA to the official (employment) statistics provided by the Dutch *Centraal Bureau voor de Statistiek* (Central Bureau of Statistics, CBS for short). Second, we compare two different waves of the LISA dataset (2019 and 2020) to construct summary statistics of employment growth between the two years. Third, we check the characteristics of firms that disappear (due to bankruptcy or closure) in 2019 and of those that are new in 2020.

Comparison with CBS

Comparison of employee count

In this section, we compare the employment data from LISA (waves 2019 and 2020) to the official statistics from CBS. The following table reports aggregate employment counts by SBI sector in the years 2019 and 2020 according to the two sources. Overall, we have consistent data from most sectors, with only smaller values from some sectors among B (mining), D (energy), E (water and waste), M and N (business services).

Table 1: Employment count by source and year

SBI	2019		2020	
	LISA	CBS	LISA	CBS
A ()	227,013	199,000	226,796	200,000
B-E, excl. C (Agriculture)	85,246	794,000	84,580	797,000
C (Mining, Energy, Water and waste)	858,419	723,000	847,845	725,000
F (Manufacturing)	497,299	514,000	507,157	525,000
G-I (Construction)	2,473,158	2,384,000	2,462,529	2,343,000
J (Retail, Transportation, Accomodation and food)	334,780	317,000	336,469	326,000
K (Information and communication)	212,098	199,000	211,305	205,000
L (Finance)	74,922	76,000	75,339	76,000
M-N (Real estate)	1,294,753	2,034,000	1,314,215	1,937,000

Table 1: Employment count by source and year

SBI	2019		2020	
	LISA	CBS	LISA	CBS
O (Business services)	450,082	579,000	453,143	592,000
P (Public administration) ¹	596,022	566,000	613,794	577,000
Q (Education)	1,381,132	1,488,000	1,417,129	1,530,000
R-U (Health)	427,687	423,000	433,132	417,000
Total	8,912,611	9,573,000	8,983,434	9,524,000

¹Note: LISA does not include public and administrative organizations.

The following graphs are based on the table above.



Note: LISA does not include public and administrative organizations.

Comparison of firm counts

Since LISA appears to under-report employment counts for some sectors (see above), we investigate whether LISA observes less firms than CBS in these SBI sectors. LISA captures somewhat less firms than CBS, but this appears to be mostly constant across sectors.

Table 2: Firm count by source and year

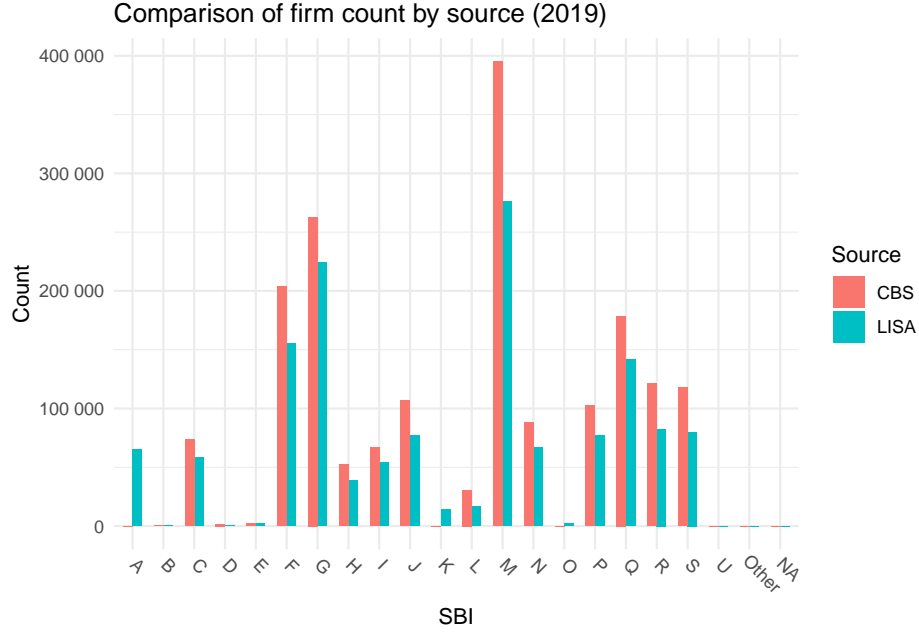
SBI	2019		2020	
	LISA	CBS	LISA	CBS
A (Agriculture)	65383	NA	68218	NA
B (Mining)	416	549	491	583
C (Manufacturing)	58093	73609	64130	76346

Table 2: Firm count by source and year

	2019		2020		
	SBI	LISA	CBS	LISA	CBS
D (Energy)		663	1731	770	2112
E (Water and waste)		2127	2240	2207	2042
F (Construction)		154940	203549	177222	217460
G (Retail)		224494	262873	252230	278018
H (Transportation)		38930	52476	45169	55622
I (Accommodation and food)		54011	66829	61767	70081
J (Information and communication)		76655	106735	88789	111594
K (Finance)		14448	NA	15287	NA
L (Real estate)		16582	30700	18018	31609
M (Specialized business services)		276258	395117	316184	413127
N (Other business support)		66548	88100	78179	94162
O (Public administration) ¹		2011	NA	2087	NA
P (Education)		77181	102392	91802	110882
Q (Health)		141686	178673	164230	189145
R (Culture and sports)		82515	121188	94198	125458
S (Other services)		80007	117879	89200	121902
U (Extraterritorial organizations)		6	NA	0	NA
Other		0	0	6	0
NA		0	0	1	0
Total		1432954	1804640	1630185	1900143

¹Note: LISA does not include public and administrative organizations.

The following graphs are based on the table above.



Comparison of two LISA waves

Comparison of employment

In this section, we compare two waves of LISA dataset (2019 and 2020) to estimate employment change between the two years. For each firm establishment, we compute absolute employment change as

$$\Delta Employment = Employment_{2020} - Employment_{2019},$$

and relative employment change as

$$\% \Delta Employment = \frac{Employment_{2020} - Employment_{2019}}{Employment_{2019}} * 100\%.$$

The latter excludes any observation where $Employment_{2019}$ is zero. The following tables report the absolute and relative frequency of the two measures at the establishment level.

Table 3: Establishments by absolute change in employment (2019-2020)

Delta	Count
Less than -50	742
[-49,-10]	6,633
[-9,-5]	12,134
[-4,-2]	50,035
-1	161,794
0	1,376,634
1	230,927

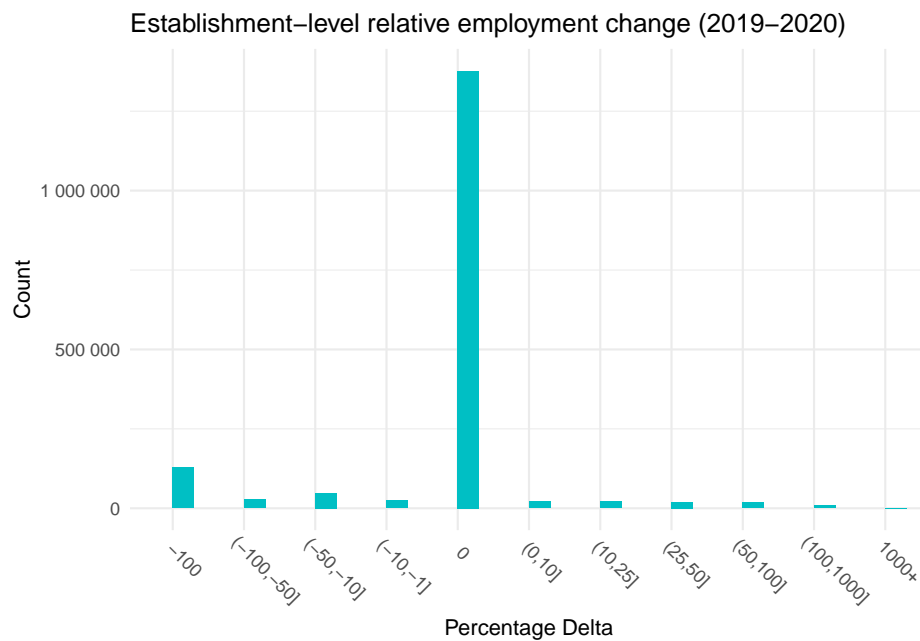
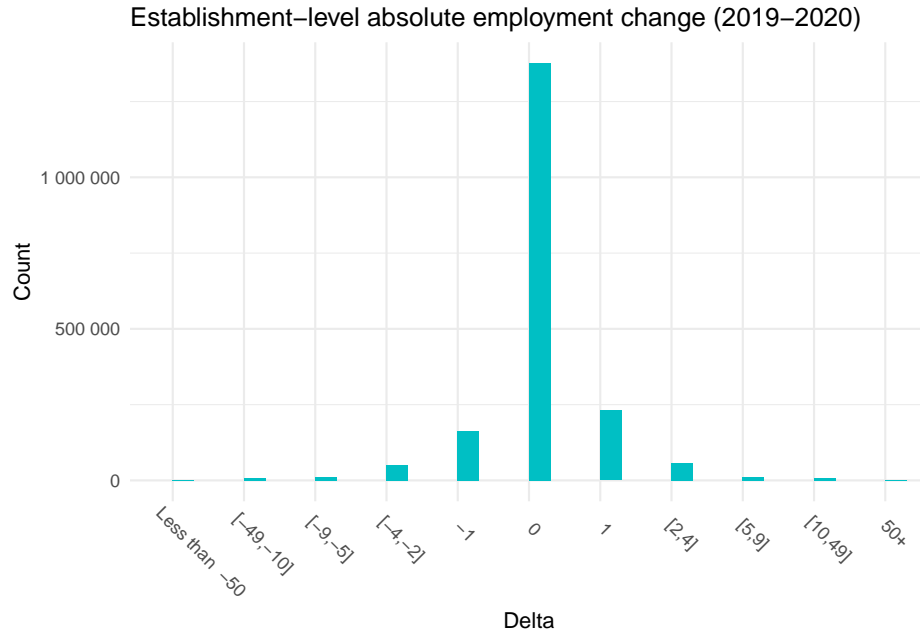
Table 3: Establishments by absolute change in employment (2019-2020)

Delta	Count
[2,4]	57,654
[5,9]	12,021
[10,49]	6,945
50+	617

Table 4: Establishments by relative change in employment (2019-2020)

Percentage Delta (%)	Count
-100	128,960
(-100,-50]	28,233
(-50,-10]	48,904
(-10,-1]	24,499
0	1,377,253
(0,10]	21,344
(10,25]	21,182
(25,50]	20,225
(50,100]	18,320
(100,1000]	8,867
1000+	234

The following graphs are based on the tables above.



Overall, we observe a positive growth of employment at the national level. The majority of firms do not experience any growth. We also observe some bunching at percentage decreases of 50% and 100%, which is likely due to establishments decreasing from 2 to 1 employee and from 1 to 0, respectively.

Comparison of location

In this section, we compare the location of firm establishments in the two waves of LISA dataset (2019 and 2020) to find relocated establishments. The majority of establishments do not relocate. We observe a relatively large number of relocations, especially between cities in the same municipality and between streets in the same city. We do not observe any relocations between provinces. However, we suspect that this results from how establishments are identified between LISA and KVK.

Table 5: Establishment relocations (2019-2020)

Relocation status	Freq.	Perc. (%)
No relocation	1473480	93.9
Relocated province	0	0
Relocated municipality	27013	1.7
Relocated city	8232	0.5
Relocated street	56116	3.6
Relocated postcode	1482	0.1
Relocated number	2979	0.2
Total	1569302	100

Characteristics of relocation

In this section, we provide summary statistics of the characteristics of those firm establishments which have relocated. We analyze relocations by sector, establishment size (in terms of employee count), and distance. Regarding the latter, we confirm that establishments which relocate to greater distances generally also relocate further away in terms of administrative level.

The following table presents levels of relocation by sector.

Table 6: Establishment relocation level by sector (2019-2020)

Relocation level SBI	Municipality		City		Street		Postcode		Number	
	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)
A (Agriculture)	319	0.4	305	0.4	604	0.8	32	0	99	0.1
B (Mining)	7	1.5	2	0.4	8	1.8	0	0	2	0.4
C (Manufacturing)	986	1.6	373	0.6	1664	2.7	58	0.1	144	0.2
D (Energy)	10	1.3	2	0.3	33	4.2	2	0.3	5	0.6
E (Water and waste)	43	1.8	12	0.5	57	2.4	2	0.1	10	0.4
F (Construction)	3465	2.1	1382	0.8	6477	4	143	0.1	263	0.2
G (Retail)	3778	1.6	1216	0.5	6824	2.8	355	0.1	743	0.3
H (Transportation)	925	2.2	240	0.6	1530	3.6	25	0.1	71	0.2
I (Accommodation and food)	621	1.1	171	0.3	1352	2.3	49	0.1	106	0.2
J (Information and communication)	1981	2.3	441	0.5	4229	5	65	0.1	157	0.2
K (Finance)	235	1.5	58	0.4	508	3.2	28	0.2	48	0.3
L (Real estate)	253	1.4	77	0.4	691	3.9	30	0.2	43	0.2
M (Specialized business services)	5730	1.9	1460	0.5	12757	4.2	277	0.1	479	0.2

Table 6: Establishment relocation level by sector (2019-2020)

Relocation level	Municipality		City		Street		Postcode		Number	
SBI	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)
N (Other business support)	1568	2.2	482	0.7	3185	4.4	64	0.1	159	0.2
O (Public administration)	6	0.2	0	0	26	0.8	2	0.1	2	0.1
P (Education)	1621	1.9	383	0.5	3264	3.9	50	0.1	92	0.1
Q (Health)	2450	1.5	728	0.5	5119	3.2	119	0.1	250	0.2
R (Culture and sports)	1772	1.9	362	0.4	4490	4.8	58	0.1	139	0.1
S (Other services)	1243	1.4	538	0.6	3298	3.7	123	0.1	167	0.2
Total	27013		8232		56116		1482		2979	

The following table presents levels of relocation by establishment-level employee count in 2019.

Table 7: Establishment relocation level by 2019 employment count (2019-2020)

Relocation level	Municipality		City		Street		Postcode		Number	
Employee count	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)
0	2	1.3	0	0	5	3.3	0	0	2	1.3
1	21301	2	6441	0.6	43181	4.1	889	0.1	1467	0.1
2	2447	1.6	758	0.5	5013	3.2	163	0.1	346	0.2
(2,4]	1577	1.3	512	0.4	3330	2.7	175	0.1	355	0.3
(4,9]	890	0.9	291	0.3	2387	2.3	136	0.1	386	0.4
(9,49]	678	0.7	202	0.2	1880	1.9	94	0.1	351	0.4
(49,99]	76	0.6	16	0.1	173	1.4	17	0.1	48	0.4
(99,499]	39	0.4	12	0.1	126	1.2	8	0.1	23	0.2
500+	3	0.2	0	0	21	1.7	0	0	1	0.1
Total	27013		8232		56116		1482		2979	

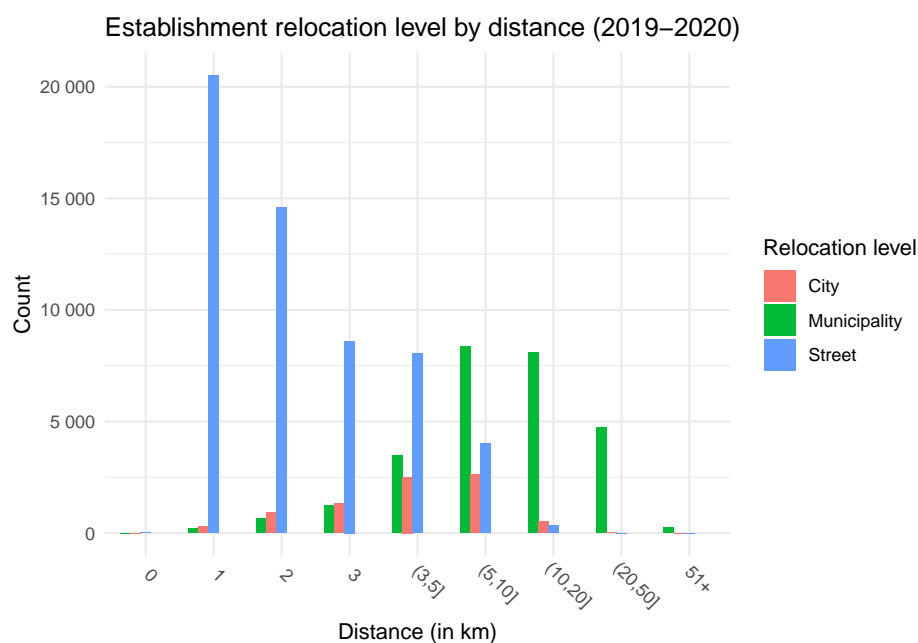
The following table and graph present levels of relocation by geographical distance of relocation.

Table 8: Establishment relocation level by distance (2019-2020)

Relocation level	Municipality		City		Street		Postcode		Number	
Distance (in km)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)
0	1	0	3	0	33	0	11	0	180	0

Table 8: Establishment relocation level by distance (2019-2020)

Relocation level	Municipality		City		Street		Postcode		Number	
Distance (in km)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)	Freq.	Perc. (%)
1	203	0.8	277	1	20500	77.1	1402	5.3	2783	10.5
2	654	4	939	5.8	14575	89.8	53	0.3	12	0.1
3	1255	11.2	1342	12	8607	76.7	12	0.1	3	0
(3,5]	3462	24.7	2511	17.9	8064	57.4	3	0	1	0
(5,10]	8362	55.8	2607	17.4	4012	26.8	1	0	0	0
(10,20]	8103	90.4	536	6	325	3.6	0	0	0	0
(20,50]	4713	99.6	17	0.4	0	0	0	0	0	0
51+	260	99.6	0	0	0	0	0	0	0	0
Total	27013		8232		56116		1482		2979	



Description of firm births and deaths

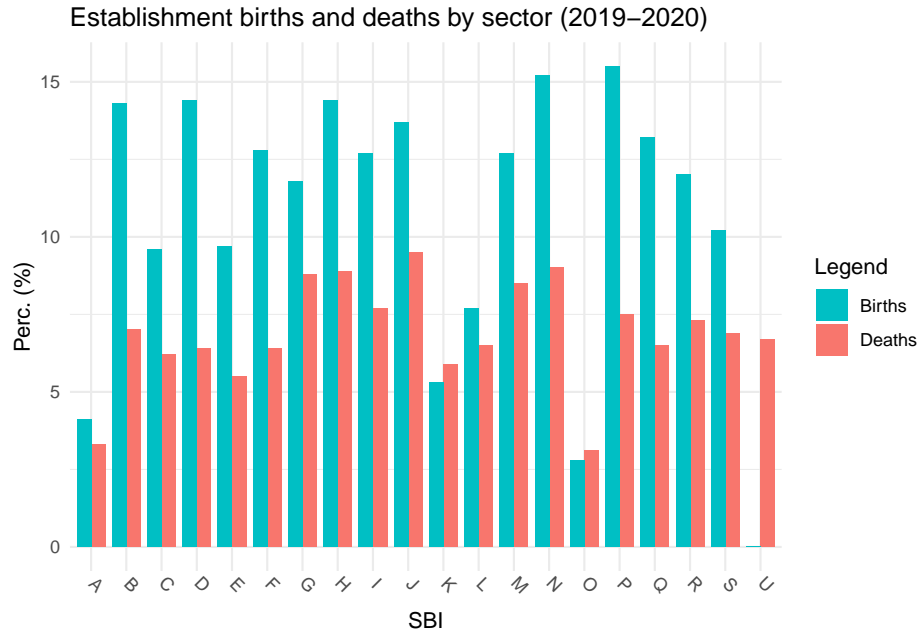
In this section, we compare the observable characteristics of firm establishments that close and open between the two LISA waves (2019 and 2020). We compare the distributions of sector, firm size, and province.

Births and deaths by sector

The following table and graph present establishment births and deaths by sector.

Table 9: Establishment births and deaths by sector (2019-2020)

SBI	Deaths		Births	
	Freq.	Perc. (%)	Freq.	Perc. (%)
A (Agriculture)	2523	3.3	3120	4.1
B (Mining)	34	7	76	14.3
C (Manufacturing)	4061	6.2	6583	9.6
D (Energy)	54	6.4	131	14.4
E (Water and waste)	140	5.5	244	9.7
F (Construction)	11094	6.4	24015	12.8
G (Retail)	23592	8.8	32487	11.8
H (Transportation)	4142	8.9	7135	14.4
I (Accommodation and food)	4910	7.7	8587	12.7
J (Information and communication)	8946	9.5	13469	13.7
K (Finance)	996	5.9	884	5.3
L (Real estate)	1242	6.5	1492	7.7
M (Specialized business services)	28050	8.5	43920	12.7
N (Other business support)	7133	9	12986	15.2
O (Public administration)	102	3.1	92	2.8
P (Education)	6816	7.5	15534	15.5
Q (Health)	11106	6.5	24286	13.2
R (Culture and sports)	7292	7.3	12726	12
S (Other services)	6625	6.9	10197	10.2
U (Extraterritorial organizations)	11	6.7	0	0
NA	0	0	1	100
Total	128869		217965	

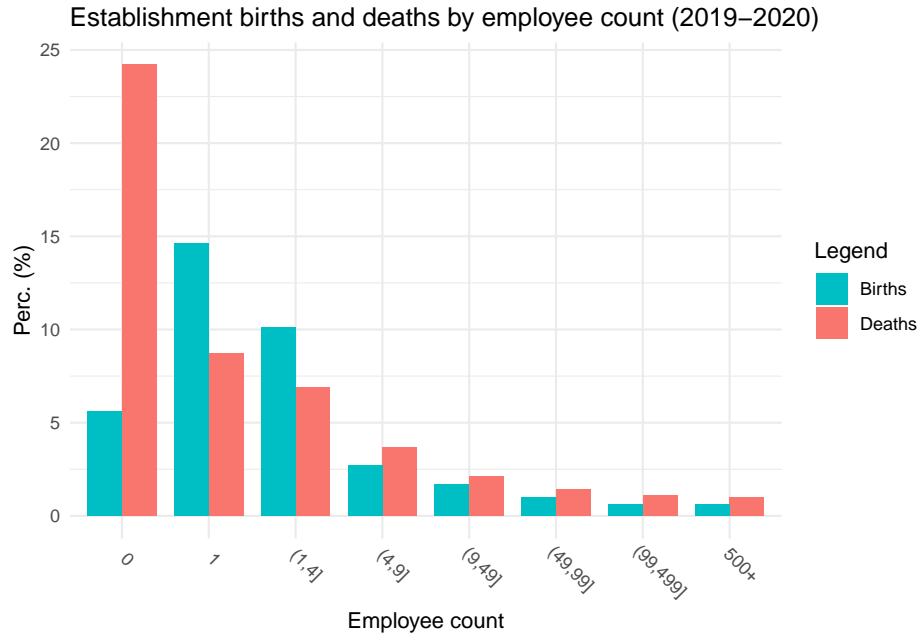


Births and deaths by size

The following table and graph present establishment births and deaths by employee count.

Table 10: Establishment births and deaths by employee count (2019-2020)

Employee count	Deaths		Births	
	Freq.	Perc. (%)	Freq.	Perc. (%)
0	48	24.2	12	5.6
1	101570	8.7	182275	14.6
(1,4]	20815	6.9	30899	10.1
(4,9]	4028	3.7	2891	2.7
(9,49]	2107	2.1	1692	1.7
(49,99]	177	1.4	122	1
(99,499]	112	1.1	67	0.6
500+	12	1	7	0.6
Total	128869		217965	

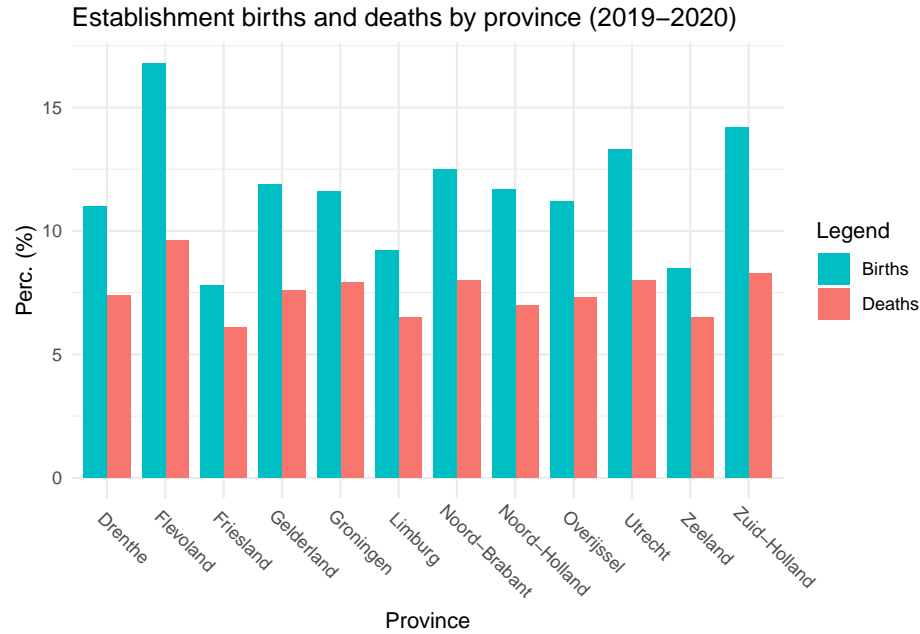


Births and deaths by province

The following table and graph present establishment births and deaths by province.

Table 11: Establishment births and deaths by province (2019-2020)

Province	Deaths		Births	
	Freq.	Perc. (%)	Freq.	Perc. (%)
Drenthe	3148	7.4	4865	11
Flevoland	4044	9.6	7645	16.8
Friesland	3805	6.1	4892	7.8
Gelderland	14394	7.6	23886	11.9
Groningen	3864	7.9	5887	11.6
Limburg	6310	6.5	9247	9.2
Noord-Brabant	19467	8	32026	12.5
Noord-Holland	24751	7	43772	11.7
Overijssel	7563	7.3	12135	11.2
Utrecht	11954	8	21082	13.3
Zeeland	2562	6.5	3412	8.5
Zuid-Holland	27007	8.3	49116	14.2
Total	128869		217965	



Gender comparison

In this section, we compare the gender distribution of establishments and firms. For all that follows, we only use 2020 data. The analysis with 2019 data is very similar.

Gender comparison by sector

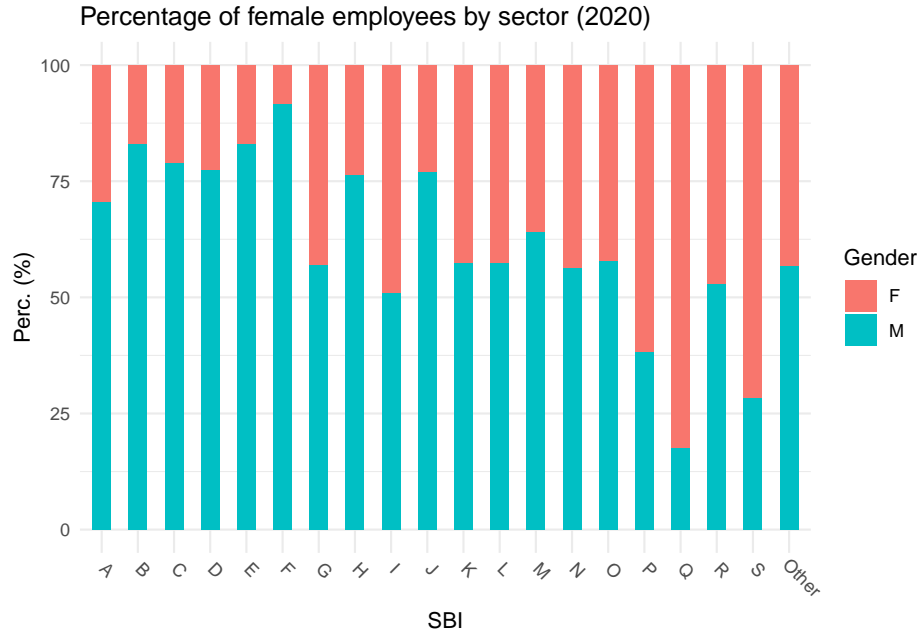
The following table and graph present the average percentage of female employees across firm establishments of different sectors.

Table 12: Percentage of female employees by sector (2020)

SBI	Female perc.
A (Agriculture)	29.5
B (Mining)	17
C (Manufacturing)	21.1
D (Energy)	22.7
E (Water and waste)	17.1
F (Construction)	8.3
G (Retail)	43.1
H (Transportation)	23.6
I (Accommodation and food)	49.1
J (Information and communication)	23
K (Finance)	42.7
L (Real estate)	42.6

Table 12: Percentage of female employees by sector (2020)

SBI	Female perc.
M (Specialized business services)	36
N (Other business support)	43.7
O (Public administration)	42.3
P (Education)	61.8
Q (Health)	82.5
R (Culture and sports)	47.2
S (Other services)	71.7
Other	43.3
NA	100
Mean	44.6



Gender comparison by size

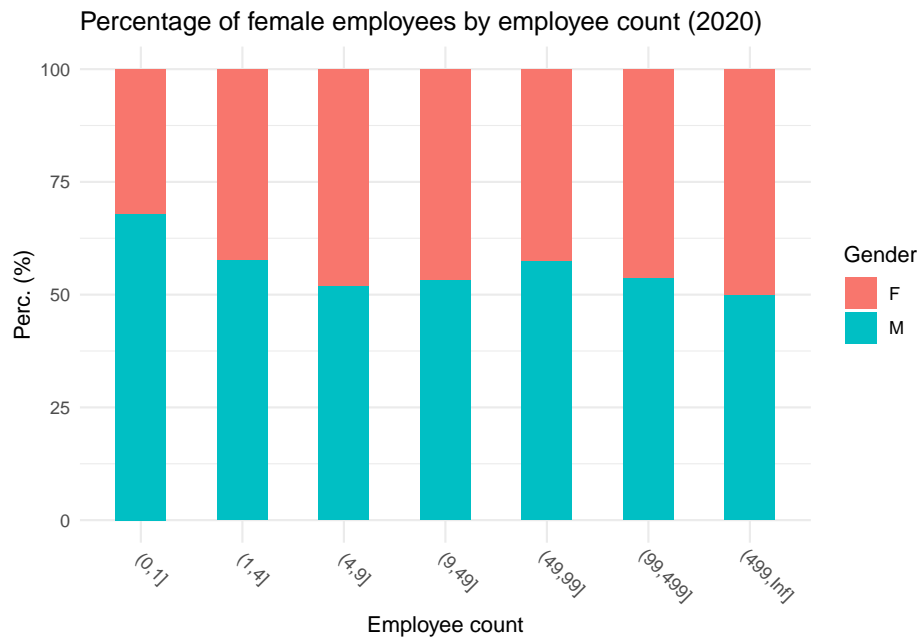
The following table and graph present the average percentage of female employees across firm establishments with different employee count. We notice that larger firms are very slightly less male-dominated.

Table 13: Percentage of female employees by employee count (2020)

Employee count	Female perc.
(0,1]	32.1
(1,4]	42.5
(4,9]	48.2

Table 13: Percentage of female employees by employee count (2020)

Employee count	Female perc.
(9,49]	46.9
(49,99]	42.7
(99,499]	46.4
(499,Inf]	50.2
NA	0
Mean	44.6



Gender comparison by province

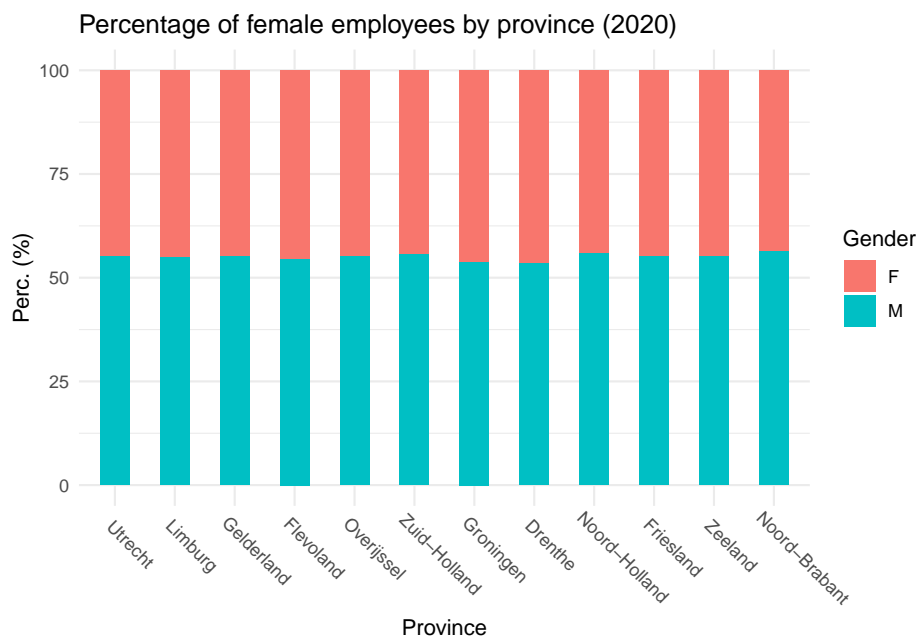
The following table and graph present the average percentage of female employees across firm establishments of different provinces. This percentage is mostly stable across provinces.

Table 14: Percentage of female employees by province (2020)

Province	Female perc.
Utrecht	44.9
Limburg	45.2
Gelderland	44.8
Flevoland	45.5
Overijssel	44.9
Zuid-Holland	44.4
Groningen	46.2

Table 14: Percentage of female employees by province (2020)

Province	Female perc.
Drenthe	46.5
Noord-Holland	44.1
Friesland	44.9
Zeeland	44.8
Noord-Brabant	43.7
Mean	44.6



Gender comparison in headquarters

With our FBB data, we are able to investigate whether headquarters are more male oriented than subsidiaries. This seems to be the case. This difference seems to be concentrated among medium enterprises. Small enterprises (up to 10 employees) have little difference in gender composition between headquarter and subsidiaries. This difference is also relatively small for very large firms (more than 5000 employees). The following table presents the results.

Table 15: Percentage of female employees in headquarters or subsidiaries by firm employee count (2020)

Employee count	Headquarter		Subsidiary	
	Female perc.	St. dev.	Female perc.	St. dev.
(0,1]	32	0.466	31.8	0.466
(1,4]	39.5	0.296	44.7	0.394
(4,10]	42.1	0.307	51.9	0.368

Table 15: Percentage of female employees in headquarters or subsidiaries by firm employee count (2020)

Employee count	Headquarter		Subsidiary	
	Female perc.	St. dev.	Female perc.	St. dev.
(10,50]	39.4	0.292	58.9	0.359
(50,100]	35.1	0.261	59.2	0.363
(100,500]	38.5	0.261	64.6	0.345
(500,1000]	47.4	0.255	62.7	0.333
(1000,5000]	54.7	0.248	71.6	0.298
(5000,Inf]	49.7	0.228	61.3	0.245
NA	0	NA	0	NA
Mean	34.1	0.429	56.8	0.377

