Analysing elite careers

Jacob Aagaard Lunding, Christoph Houman Ellersgaard, Lasse Folke Henriksen & Anton Grau Larsen

Department of Organization, Copenhagen Business School. Correspondence: che.ioa@cbs.dk

Abstract:

In this paper, we propose a methodological framework to analyse cross-sectorial elite career using sequence analysis to identify particular career trajectories. As empirical case, we use 416 members of the Danish power elite, found in the core of the Danish elite networks. We describe how career data can be constructed based on CV's, how career states can be coded and how sequence analysis in combination with optimal matching and of hierarchical agglomerative clustering can be used to develop typologies of careers.

Introduction

The purposes of this paper is to provide a methodological framework for building a typology of career patterns. Thus, we describe how sequential data of careers can be collected and coded for cross-sectorial elites and how to use optimal matching distances between individuals to create a set of different career clusters or trajectories. Finally, we describe how to compare these clusters based on their different characteristics.

Since any comparison will always rest on the selections and definitions of the different qualities and characteristics on which the compared may differ or not, the main focus of this working paper is laying out the principles behind our approach.

Our population is what we call the Danish power elite: 423 individuals belonging to the core of the Danish elite networks in 2012. These were identified through a k-core decomposition to a large relational database of 5079 boards, networks, committees and councils consisting of 37,750 individuals and 56,536 positions (a more detailed description of the methodology is described in Larsen & Ellersgaard 2017).

To analyse their careers we draw upon sequence analysis. Sequence analysis has already been used to study elite careers (Abbott & Hrycak, 1990; Araujo 2018; Blair-Loy, 1999; Bühlmann, 2008; Koch, Forgues, & Monties 2017; Ohmura, Bailer, Meißner, & Selb 2018; Stovel, Savage, & Bearman, 1996; Seabrooke and Nilsson 2015). However, all these studies focus on elites within a particular sector. The framework developed here aim to extend this work to be used for a cross-sectorial elite group.

Data: Constructing the curriculum vitae data of the power elite

We draw on a wide range of sources. Portraits from the Danish equivalent of *Who's Who*, *Kraks Blå Bog*, were supported by LinkedIn profiles and official CVs found online. Further information is drawn from approximately 3,000 newspaper portrait articles, acquired from *infomedia.dk*, a Danish newspaper article database. Records were made on a year-to-year basis of the name and location of the employer organization and descriptions of the job function. Furthermore, we gathered information on biographical details such as social background, level and type of education and age from the same sources. Finally, we use the network centrality calculated in Larsen & Ellersgaard (2017) to compare the groups identified in the analysis.

Some issues with the collection and treatment of CV are worth mentioning here. And many of these issues concern the status of an employment. First, the time span can be difficult to access. Periods of employment may not always be recordable in full length years. We dealt with this by simply rounding up to one year, when the 'event' was more than half a year. Second, a time span in a CV or a portrait might cover several employments, e.g. in 1982 to 2005 X was employed in A, B and C. In such cases, each employment was given a proportional share of the whole period. Third, with regard to geographical location and career level, in particular, the actual rhythm of ascend or the circulation between different offices may be 'invisible' in a CV that only mentions the final position. In case this could not be reconstructed from other sources, we had to go

with the reported place and career level, even if it seemed somewhat implausible. One example could be a CEO, who reports 15 years of employment as a ‘director’ in a medium-sized corporation directly after finishing his university degree. It would seem plausible that he had in fact moved his way up to a management position, but none of our sources can help us to distinguish the different career levels.

Coding of career states

Based on the reconstructed CVs, we constructed each career as an approximate year-by-year succession of definite sets of possible states in six channels: sector, sub-sector, organization, organizational size, career level and geographical position (see Table 1). In the analyses, we restricted ourselves to an analysis of the ‘employment careers’, leaving out education, and restricting the observed time range to the age of 20 to 70 years. Seven individuals were removed from the analysis, either because of too much missing data or because they were too young (under 40 years old) and therefore difficult to compare with the rest of the population. This left us with a sample of 416 careers.

Table 1: Sequence channels

Channels	States
Sector	6
Sub-sector	18
Career level (1–8)	8
Organization size (S – M – L – V)	4
Geography (‘Outside Copenhagen’ – ‘Copenhagen area’ – ‘Abroad’)	3
Organization shifts (‘Same organization’ – ‘New organization’)	2

The *sector* channel was reduced to six broad categories: business, state administration, politics, unions, business associations, and science and education, roughly corresponding to the different institutional orders found in the analysis of the power elite (Larsen & Ellersgaard 2018) or to the fields on the field of power as described by Bourdieu (1996). Almost exactly half of all states – 1300 of 2597 career years – took place in the business sector, followed by state administration, science and education, with unions, business associations, and politics as the least frequent sectors (see Table A2).

The *sub-sector* channel has 19 possible states, capturing both differences within and similarities across the sectors. Sub-sectors like commerce and services, and technology and industries, thus, set aside different kinds of business. On the other hand, it connects ‘industry-linked unions’ to ‘industry-linked business’. Similarly, sub-sectors distinguish between branches of state administration while connecting it to other sectors at sub-sector level. The relationship between sector and sub-sector is displayed in Table 2.

Organizational size was coded as either **very large** (+5000 employees or +100,000 members), **large** (+500 employees or +10,000 members or the organization is part of the Danish Elite Network), **medium-sized** (10–

500 employees or +1000 members) or **small** (fewer than 10 employees or 1000 members) in order to capture the weight of the organizations.

Table 2: Number of career years by sector and sub-sector

Sub-sector	Sector						Total
	Business	Business association	State administration	Science and education	Politics	Union	
Industry & technology	2,389	337		371		361	3,458
Economy & finance	1,324	137	352	385		75	2,273
Agriculture & food production	370	144	31	65		67	677
Transportation & infrastructure	577		71				648
Consultancy & accountancy	497						497
Commerce & services	385	42				62	489
Business administration		76	220				296
Law	305		72	94			471
Culture & media	271		112	80			463
Health	329		94	76		76	575
State administration		71		181	429	91	772
Science/education		20	85				105
Military & police			338			51	389
International organizations			187				187
Administration			95	190			285
Local governance			145		203	125	473
The royal court			184				184
Organizations					60		60
Educational sector				330		108	438
No subsector						198	198
Total	6,447	827	1,986	1,772	692	1,214	12,938

To capture the progression in *career level* we found inspiration in previous studies of career sequences (Blair-Loy, 1999; Koch, Forgues, & Monties, 2017). A nine-level scheme was developed: 0: In education; 1: Manual working occupation; 2: White-collar occupation or self-employed; 3: Career position at the lowest level, but with access to probable promotion to higher positions, e.g. a junior lawyer or an assistant professor; 4: Leadership position at the lowest level, e.g. a junior manager or a union secretary; 5: Senior leadership position, such as an MP or a professor; 6: Chief executive position in a medium-sized organization or senior management position in a larger organization, e.g. a CEO or a business association director; 7: Chief executive position in a large organization, e.g. a permanent secretary of infrastructure or a university rector; 8: Chief executive position

in a very large organization, e.g. a prime minister, a monarch or a CEO of a top 50 corporation. Examples of occupations falling into the different career levels based on size and sector of organization are shown in Table 3.

Table A3: Career level and sector codes

Career level	Position	Examples for sectors					
		Business	Business association	State administration	Science and education	Politics	Union
8	Leader of a very large organization	CEO in top 50 firm	CEO, Confederation of Danish Industry	Permanent secretary, finance minister	University principal in a very large university	Prime minister	President in a very large union
7	Leader of a large organisation, leadership in a very large organisation	CEO in top 200 firm, CE in top 50 firm	Executive in Confederation of Danish Industry	Permanent secretary in Ministry of Culture	Principal in a large university	Culture minister, mayor of the largest cities	President in a large union
6	Leader in a medium-sized organisation, leadership in a large organization	CE in top 200 firm, CEO or owner in medium-sized firm	Executive in medium-sized business association	Director in state agency, ambassador	Dean, professor, centre leader	Group leader in parliament, mayor of other cities	Director or vice chairman in a very large union
5	Managerial position	Division director, sales director, CEO or owner in a small firm	Department head	Office chief, municipal director	Professor, head of department	MP	Vice chairman in a large union
4	Junior managerial position	Project manager	Senior consultant	Section leader	Associate professor	Spin doctor	Union secretary
3	Career position	Consultant, engineer	Consultant	Head of section	Assistant professor, PhD fellow	Personal secretary	Consultant, local union leader
2	Non-manual position with little chance of progression to a higher level	Secretary	Clerk	Secretary	Technician, teacher	Clerk	Clerk
1	Manual position with little chance of progression to a higher level	Metalworker			Janitor		
0	In education (no sector)						

The *rhythm of organizational shifts* is identified as succession of two different states: ‘new organization’, when an organization is entered, or ‘same organization’, if it is the same as the year before.

Career geography is recorded in three possible states: provinces (outside the capital region), the capital region, and abroad.

All codes have been tested for inter-coder reliability, and all values have been checked by at least two of the researchers. An example of the coding of careers is found in the Appendix A, in which the careers of the pair of most similar, of the pair of most different and of the two most central individuals of the Danish Elite Network are shown.

Analysis: Developing a typology of careers

Measuring distance

Having defined the possible states within each sequence channel, we need a good measure of the distance between the different sequences to develop reasonable and well-founded typologies and taxonomies, a craft that has been a driving force in the development of all the empirical sciences (Benzécri, 1973). Here we apply the optimal matching technique (Lesnard, 2014; Macindoe & Abbott, 2004). As opposed to distances based on state distributions or counts of common attributes, the optimal matching (OM) distance is a so-called edit distance (Ritschard & Studer, 2016). That is, the degree of difference or similarity between two distinct careers amounts to the cost of transforming one sequence into the other. The transformation of sequences can be done with three different ‘edit-operations’; i.e. by substituting, inserting, or deleting states. As there are often many ways of ‘aligning’ to sequences, the ‘cheapest’ or optimal solution determines the distance, i.e. the one requiring least edits. However, since not all states within a channel are equally similar or different (state administration may or may not be more similar to politics than to business), we need to define the relative similarity of the states; a major methodological challenge in any OM procedure (Gauthier, Widmer, Bucher, & Notredame, 2009; Lesnard, 2010, 2014). Having no prior knowledge of the relative similarity, we rely here on costs that are empirically generated from probabilities in our data. The cost of substituting one state for another in order to align two sequences is low when it is empirically likely to go from the one state to the other in a career, and higher when the shift from the one state to the other is less likely.

One thing is setting the cost of substituting one state or event with another and the cost of insertions and deletions; another is balancing the ratio between substitution and insertion and deletion costs. This ratio determines the weight given in the analysis to either timing or order (Lesnard, 2014). When the substitution cost is larger than the insertion and deletion costs, the comparing of sequences amounts to the insertions and deletions needed to find the longest common sub-string, whereas the comparison, when insertion and deletion costs are larger than the substitution cost, becomes a kind of event approximation. In this analysis, we have

chosen a ‘cost scheme’ trying to balance out the two extremes by setting a constant insertion and deletion cost at 1.1, i.e. a bit higher than half the maximum substitution cost, which is 2. There is, however, one important exception. The cost of substituting missing states in the new organization versus that in the same organization channel is set to 2.3, which is more than one insertion + one deletion, which means it will never be used, as it is always less costly to insert and empty the slot in this sequence and delete the missing slot in the other.

The relatively recent development of multichannel sequence analysis (Gauthier, Widmer, Bucher, & Notredame, 2010) makes it possible to study all the relevant characteristics of the careers simultaneously, thus integrating the interaction between channels in the analysis. Based on the individual trajectory in these six channels, two measures of diversity can be calculated, i.e. turbulence and internal entropy. While the turbulence measure captures career volatility, i.e. the diversity and varying length of states in a sequence (Elzinga & Liefbroer, 2007), entropy represents the ‘uncertainty’ of predicting the states in a sequence (Gabadinho, Ritschard, Studer, & Müller, 2011, p. 78). In a sequence with low entropy, we have good chances of guessing the next career move based on the previous one. Complexity is measured based on the number of distinct subsequences and the variance of durations within these (Elzinga, 2010). Examples of the distances are found in Appendix A.

Grouping the similar

To construct the typology of career paths presented in the article, we relied on the principle of hierarchical agglomerative clustering (HAC). On the basis of a Euclidean distance measure, the optimal matching edit-distance, between all pairs of career trajectories, groups of individuals (i.e. their careers) are created in successive steps using the Ward criterion, which groups units in a way that in each step minimizes the increase in internal variance within groups in relation to the variance between groups (Ward, 1963). In our analysis, we both look at the two overall branches of this cluster and four and six clusters nested within these clusters. Inspecting the structure of the tree, we find a fundamental distinction between private and public pathways to power (see Figure 1). The first cluster is tied to careers in the private sector ($n = 212$) and has four sub-clusters: ‘the landed gentry’, the ‘bankers’, the ‘industrial inner circle’ and the ‘corporate ambassadors’. The second main cluster is tied to careers located mainly in the public sector or in interest organisations ($n = 204$) and has six sub-clusters: ‘education and local politics’, the ‘scientists’, the ‘unionists’, the ‘state nobility’, ‘professional politicians’ and the ‘lobbyists’. We arrive at the ten cluster due by heuristics – there is a sociologically interpretable differentiation between clusters – and by assessing the ratio of the between-cluster-variance, or the variance of cluster mean points, to the total variance of optimal matching distances. Identifying 10 clusters yields a correlation ratio of $\eta^2 = 0.335$, i.e. one-third of the total variance is ‘explained’ by the 10 clusters. Furthermore, as seen by Figure 2, the marginal benefit of including more clusters to account for more of the total variance – not to speak of the difficulties of reporting about each cluster – decrease when choosing more than around 10 clusters (27 clusters is needed to explain 50 %).

Figure 1: Hierarchical agglomerative cluster analysis dendrogram of the 10 clusters

Figure 2: Ratio of between variance to total variance depending on number of clusters

Figure 3: Career progression per cluster

To explore the homogeneity and diversity in the 10 clusters identified in the analysis, progression in career by age can be seen by career level in Figure 3 and by the six channels – sector, subsector, organizational size, organization location, career level and career changes – in Figure Appendix B. Characteristics of each cluster are described in Appendix C. We identified significant deviations between the group mean and the global mean on a range of characteristics, related to both career traits and other biographical information such as type and length of education and parental background. Test-values were calculated as proposed by Lebart, Morineau and Piron (2006), where absolute values above 2 indicate a significant difference between the group mean (or frequency) and the global mean (or frequency).

Concluding remarks

This paper have provided examples on how to collect, code and through multichannel sequence analysis develop typologies of elites careers. We use the careers of 426 members of the Danish power elite as empirical case. We argue that a solution identifying two main clusters, and four and six subclusters within these clusters best serves as heuristics to develop a typology for elite careers. Furthermore, we show how to characterize the clusters based on the variables included in the sequence analysis and descriptive characteristics of the individuals.

References:

- Abbott, A., & Hrycak, A. (1990). Measuring Resemblance in Sequence Data: An Optimal Matching Analysis of Musicians' Careers. *American Journal of Sociology*, 96(1), 144–185.
- Araujo, P. (2018). Dynamics of Internationalism: A Sequential Analysis of the Careers of Swiss Banking Elites. In O. Korsnes, J. Heilbron, J. Hjellbrekke, F. Bühlmann & M. Savage (Eds.) *New Directions in Elite Studies*, (pp. 73–89). London: Routledge.
- Benzécri, J.-P. (1973). *La taxinomie*. Paris: Dunod.
- Blair-Loy, M. (1999). Career Patterns of Executive Women in Finance: An Optimal Matching Analysis. *American Journal of Sociology*, 104(5), 1346–1397.
- Bourdieu, P. (1996). *State Nobility - Elite Schools in the Field of Power*. Cambridge: Polity Press.
- Bühlmann, F. (2008). The Corrosion of Career?—Occupational Trajectories of Business Economists and Engineers in Switzerland. *European Sociological Review*, 24(5), 601–616.
- Elzinga, C. H. (2010). Complexity of Categorical Time Series. *Sociological Methods & Research*, 38(3), 463–481.
- Elzinga, C. H., & Liefbroer, A. C. (2007). De-standardization of Family-Life Trajectories of Young Adults: A Cross-National Comparison Using Sequence Analysis: Dé-standardisation des trajectoires de vie familiale des jeunes adultes: comparaison entre pays par analyse séquentielle. *European Journal of Population / Revue Européenne de Démographie*, 23(3–4), 225–250.
- Gabadinho, A., Ritschard, G., Studer, M., & Müller, N. S. (2011). Mining sequence data in R with the TraMineR package: A users guide for version 1.8. *Geneva: University of Geneva*.
- Gauthier, J.-A., Widmer, E. D., Bucher, P., & Notredame, C. (2009). How Much Does It Cost?: Optimization of Costs in Sequence Analysis of Social Science Data. *Sociological Methods & Research*, 38(1), 197–231.
- Koch, M., Forgues, B., & Monties, V. (2017). The Way to the Top: Career Patterns of Fortune 100 CEOs. *Human Resource Management*, 56(2), 267–285.
- Larsen, A. G., & Ellersgaard, C. H. (2017). Identifying power elites—k-cores in heterogeneous affiliation networks. *Social Networks*, 50, 55–69.
- Larsen, A. G., & Ellersgaard, C. H. (2018). A Scandinavian Variety of Power Elites? – Key Institutional Orders in the Danish Elite Networks. In O. Korsnes, J. Heilbron, J. Hjellbrekke, F. Bühlmann, & M. Savage (Eds.) *New Directions in Elite Research*, (pp. 133–49). London: Routledge.
- Lebart, L., Morineau, A., & Piron, M. (2006). *Statistique exploratoire multidimensionnelle: visualisations et inférences en fouilles de données : Cours et exercices corrigés*. Paris: Dunod.
- Lesnard, L. (2010). Setting Cost in Optimal Matching to Uncover Contemporaneous Socio-Temporal Patterns. *Sociological Methods & Research*, 38(3), 389–419.
- Lesnard, L. (2014). Using Optimal Matching Analysis in Sociology: Cost Setting and Sociology of Time. In P. Blanchard, F. Bühlmann, & J.-A. Gauthier (Eds.), *Advances in Sequence Analysis: Theory, Method, Applications* (pp. 39–50). Springer International Publishing.

- Macindoe, H., & Abbott, A. (2004). Sequence Analysis and Optimal Matching Techniques for Social Science Data. In M. Hardy & A. Bryman, *Handbook of Data Analysis* (pp. 386–406). London: Sage.
- Ohmura, T., Bailer, S., Meißner, P., & Selb, P. (2018). Party animals, career changers and other pathways into parliament. *West European Politics*, 41(1), 169–195.
- Ritschard, G., & Studer, M. (2016). What matters in differences between life trajectories: a comparative review of sequence dissimilarity measures. *Journal of the Royal Statistical Society. Series A, Statistics in Society*, 179(2), 481–511.
- Seabrooke, L., & Nilsson E. R. (2015). Professional Skills in International Financial Surveillance: Assessing Change in IMF Policy Teams. *Governance*, 28(2): 237–54
- Stovel, K., Savage, M., & Bearman, P. (1996). Ascription into Achievement: Models of Career Systems at Lloyds Bank, 1890-1970. *American Journal of Sociology*, 102(2), 358–399.
- Ward, J. H. (1963). Hierarchical Grouping to Optimize an Objective Function. *Journal of the American Statistical Association*, 58(301), 236–244. <https://doi.org/10.2307/2282967>

Appendix A: Examples of career coding

Sector	Subsector	Region	Organization	Size	Position	Career level	Start	End
Example 1: The two most similar careers (OM-distance = 0.56)								
<i>Oluf Christian Engell</i>								
Business	Law	Capital region	Bruun & Hjejle	L	Lawyer	4	1971	1975
Business	Law	Capital region	Bruun & Hjejle	L	Partner	5	1976	2013
<i>Henrik Mogens Wedell-Wedellsborg</i>								
Business	Law	Capital region	Gorissen Federspiel	L	Lawyer	4	1970	1972
Business	Law	Abroad	Gide Loyrette Nouel	L	Law assistant	3	1973	1974
Business	Law	Capital region	Gorissen Federspiel	L	Partner	5	1975	1979
Business	Law	Capital region	Bruun & Hjejle	L	Partner	5	1980	2013
Example 2: The two least similar careers (OM-distance = 9.3)								
<i>Kim Koch Boyter</i>								
Business	Industry & technology	Provinces	Pressalit Group	M	Employee	2	1988	1989
Business	Industry & technology	Abroad	Pressalit Group	M	Employee	2	1990	1992
Business	Industry & technology	Abroad	Pressalit Group	M	Employee	2	1993	1998
Business	Industry & technology	Provinces	Pressalit Group	M	CEO (and owner)	5	1999	2013
<i>Flemming Vinther</i>								
Business	Commerce & services	Provinces	Matas	L	Shop assistant	1	1983	1983
State administration	Military & police	Capital region	The Royal Life Guards	L	Conscripted soldier		1984	1984
Business	Commerce & services	Provinces	Matas	L	Shop assistant	1	1985	1985
State administration	Military & police	Capital region	The Danish army	V	Contract soldier	1	1986	1995
Union	Military & police	Capital region	HKKF	L	Union secretary	4	1996	2003
Union	Military & police	Capital region	HKKF	L	Union leader	6	2004	2013
Example 3: Careers of the two most central individuals in the elite network (OM-distance= 6.49)								
<i>Thorkild Engell Jensen</i>								
Business	Industry & technology	Provinces	Vølund	M	Blacksmith	1	1972	1984
Union	Industry & technology	Provinces	Dansk Metal	L	Local union leader	3	1985	1991
Union	Industry & technology	Capital region	Dansk Metal	L	Union secretary	4	1992	1992
Union	Industry & technology	Capital region	Dansk Metal	L	Union secretary	5	1993	1993
Union	Industry & technology	Capital region	Dansk Metal	L	Union vice-president	6	1994	2002
Union	Industry & technology	Capital region	Dansk Metal	L	Union leader	8	2003	2012
<i>Lars Nørby Johansen</i>								
Science/education	State administration	Provinces	University of Southern Denmark	L	Assistant professor	3	1974	1976
Science/education	State administration	Abroad	EUI	V	Assistant professor	3	1977	1979
Science/education	State administration	Provinces	University of Southern Denmark	L	Assistant professor	3	1980	1981
Science/education	State administration	Abroad	Harvard University	V	Associate professor	4	1982	1982
Science/education	State administration	Capital region	Danmarks Forvaltningshøjskole	M	Consultant	4	1983	1985
Business association	Economy & finance	Capital region	Forsikring og Pension	L	Assistant director	5	1986	1986
Business	Economy & finance	Capital region	Tryg	V	Assistant director	5	1987	1988
Business	Commerce & services	Capital region	Falck	L	CEO	7	1989	2005
Business	-	-	-	-	Board chairman	8	2006	2013

Appendix B: Sector, subsector, career level, organization size, location and career changes sequences by cluster

Figure B1: Sector

Figure B2: Subsector

Figure B3: Career level

Figure B4: Organization Size

Figure B5: Organizational location

Figure B6: Organizational shifts

Appendix C: Cluster characteristics

Cluster*	Private										Public										
	CA		IC		LG		Bankers		SN		SC		Lobbyists		Unionist		PP		E&LP		
	n = 85		n = 50		n = 29		n = 48		n = 60		n = 38		n = 27		n = 40		n = 19		n = 20		
Length of career 20-70	38.14	<u>35.95</u>	-3.03	38.46	0.32	39.00	0.64	40.29	2.12	39.10	1.07	38.76	0.54	35.96	-1.57	39.60	1.30	35.95	-1.31	38.30	0.10
ACTIVE SEQUENCE STATES																					
Sector																					
Business	50.0%	90.0%	9.26	97.0%	7.91	93.0%	5.37	80.0%	4.93	<u>9.0%</u>	-7.67	<u>1.0%</u>	-7.13	<u>10.0%</u>	-4.88	<u>18.0%</u>	-4.88	<u>10.0%</u>	-3.99	<u>4.0%</u>	-4.79
State administration	15.0%	<u>2.0%</u>	-4.53	<u>0.0%</u>	-3.82	<u>2.0%</u>	-2.57	10.0%	-1.31	73.0%	16.53	<u>5.0%</u>	-2.20	8.0%	-1.25	10.0%	-1.16	7.0%	-1.26	11.0%	-0.58
Science/Education	14.0%	<u>6.0%</u>	-2.75	<u>2.0%</u>	-2.90	<u>1.0%</u>	-2.40	<u>2.0%</u>	-2.83	7.0%	-1.87	93.0%	16.85	<u>1.0%</u>	-2.19	<u>1.0%</u>	-2.89	5.0%	-1.25	45.0%	4.78
Union	8.0%	<u>0.0%</u>	-3.82	<u>0.0%</u>	-2.79	1.0%	-1.77	<u>2.0%</u>	-2.04	3.0%	-1.80	<u>0.0%</u>	-2.39	<u>0.0%</u>	-1.99	68.0%	17.47	4.0%	-0.89	17.0%	1.84
Business association	7.0%	<u>1.0%</u>	-2.71	<u>0.0%</u>	-2.38	2.0%	-1.39	5.0%	-0.56	3.0%	-1.53	<u>0.0%</u>	-2.00	77.0%	17.43	3.0%	-1.18	4.0%	-0.54	0.0%	-1.50
Politics	6.0%	<u>1.0%</u>	-2.85	<u>1.0%</u>	-2.11	2.0%	-1.16	<u>1.0%</u>	-2.06	4.0%	-0.61	1.0%	-1.85	3.0%	-0.68	1.0%	-1.72	69.0%	15.85	22.0%	4.21
Turbulence	0.08	0.08	-0.96	<u>0.05</u>	-5.04	<u>0.06</u>	-3.21	0.07	-1.07	0.09	2.94	<u>0.07</u>	-2.15	0.10	3.32	0.09	1.28	0.12	4.89	0.10	2.59
Sub Sector																					
Industry and Technology	27.0%	25.0%	-0.59	72.0%	9.05	51.0%	3.51	<u>3.0%</u>	-4.56	<u>2.0%</u>	-5.44	23.0%	-0.66	45.0%	2.63	36.0%	1.57	<u>8.0%</u>	-2.18	<u>0.0%</u>	-3.24
Economy and Finance	18.0%	<u>5.0%</u>	-3.86	<u>1.0%</u>	-3.64	<u>5.0%</u>	-2.03	84.0%	14.48	13.0%	-1.24	32.0%	2.67	12.0%	-0.96	8.0%	-1.85	<u>2.0%</u>	-2.08	<u>1.0%</u>	-2.29
State administration	6.0%	<u>1.0%</u>	-2.96	<u>1.0%</u>	-2.17	2.0%	-1.25	<u>1.0%</u>	-2.13	3.0%	-1.41	11.0%	1.56	8.0%	0.39	8.0%	0.69	69.0%	13.91	1.0%	-1.21
Consultancy and accountancy	5.0%	16.0%	7.60	7.0%	1.18	1.0%	-1.15	1.0%	-1.83	1.0%	-1.74	0.0%	-1.85	0.0%	-1.47	0.0%	-1.90	1.0%	-1.08	0.0%	-1.31
Transportation and infrastructure	5.0%	14.0%	5.65	4.0%	-0.39	3.0%	-0.77	2.0%	-1.44	5.0%	0.02	1.0%	-1.55	3.0%	-0.82	3.0%	-1.02	1.0%	-1.21	0.0%	-1.42
Health	5.0%	3.0%	-0.63	11.0%	2.78	0.0%	-1.39	5.0%	0.21	9.0%	1.89	0.0%	-1.53	0.0%	-1.29	4.0%	-0.21	0.0%	-1.11	5.0%	0.13
Agriculture and food production	5.0%	2.0%	-1.95	<u>0.0%</u>	-2.00	33.0%	7.76	<u>0.0%</u>	-2.00	3.0%	-1.13	4.0%	-0.55	16.0%	2.95	7.0%	0.49	1.0%	-0.99	5.0%	-0.03
Commerce and Service	4.0%	13.0%	6.09	2.0%	-1.21	3.0%	-0.36	<u>0.0%</u>	-2.02	<u>1.0%</u>	-1.95	0.0%	-1.78	2.0%	-0.58	7.0%	1.25	3.0%	-0.40	0.0%	-1.26
Law	4.0%	10.0%	3.86	1.0%	-1.33	0.0%	-1.19	0.0%	-1.40	3.0%	-0.52	10.0%	2.20	1.0%	-0.91	2.0%	-0.65	0.0%	-0.95	0.0%	-0.98
Culture and Media	4.0%	9.0%	3.30	0.0%	-1.67	0.0%	-1.24	0.0%	-1.48	7.0%	2.08	4.0%	0.28	1.0%	-0.93	1.0%	-0.93	2.0%	-0.47	0.0%	-0.98
Local governance	4.0%	<u>1.0%</u>	-2.01	0.0%	-1.78	0.0%	-1.32	0.0%	-1.69	3.0%	-0.04	0.0%	-1.32	2.0%	-0.68	14.0%	4.70	3.0%	-0.08	26.0%	6.80
Military and Police	3.0%	1.0%	-1.47	0.0%	-1.33	1.0%	-0.77	0.0%	-1.23	14.0%	7.33	0.0%	-1.23	0.0%	-1.02	0.0%	-1.22	3.0%	0.16	2.0%	-0.13
Educational sector	3.0%	1.0%	-1.91	0.0%	-1.64	0.0%	-1.22	0.0%	-1.61	1.0%	-1.37	0.0%	-1.24	0.0%	-1.17	1.0%	-0.95	5.0%	0.52	57.0%	16.01
Business	3.0%	<u>0.0%</u>	-2.07	0.0%	-1.64	0.0%	-1.23	2.0%	-0.68	9.0%	4.97	1.0%	-1.16	6.0%	1.76	5.0%	1.21	2.0%	-0.41	0.0%	-1.04
Administration	2.0%	<u>0.0%</u>	-2.35	0.0%	-1.61	0.0%	-1.35	0.0%	-1.78	5.0%	2.82	13.0%	7.77	0.0%	-1.02	1.0%	-0.73	1.0%	-0.67	0.0%	-1.11
Science/Education	1.0%	0.0%	-1.32	0.0%	-1.29	0.0%	-0.76	0.0%	-1.12	2.0%	2.20	0.0%	-1.11	3.0%	1.84	3.0%	2.07	0.0%	-0.76	2.0%	0.67
International organisations	1.0%	0.0%	-1.39	0.0%	-1.10	1.0%	-0.48	1.0%	-0.34	7.0%	5.72	1.0%	-0.43	0.0%	-0.62	0.0%	-1.01	0.0%	-0.68	0.0%	-0.70

Cluster*	Private										Public										
	CA		IC		LG		Bankers		SN		SC		Lobbyists		Unionist		PP		E&LP		
	n = 85		n = 50		n = 29		n = 48		n = 60		n = 38		n = 27		n = 40		n = 19		n = 20		
The Royal Court	1.0%	0.0%	-1.42	0.0%	-1.04	0.0%	-0.77	0.0%	-1.01	9.0%	6.83	0.0%	-0.89	0.0%	-0.74	0.0%	-0.92	0.0%	-0.61	0.0%	-0.63
Organisations	0.0%	0.0%	-0.53	0.0%	-0.88	0.0%	-0.65	0.0%	-0.14	2.0%	3.22	0.0%	-0.76	0.0%	-0.63	0.0%	-0.78	0.0%	-0.13	1.0%	0.98
<i>Turbulence</i>	<i>0.09</i>	<i>0.10</i>	<i>1.75</i>	<i><u>0.08</u></i>	<i>-2.01</i>	<i><u>0.07</u></i>	<i>-2.60</i>	<i><u>0.08</u></i>	<i>-2.49</i>	<i>0.11</i>	<i>3.27</i>	<i>0.09</i>	<i>-0.01</i>	<i>0.12</i>	<i>2.32</i>	<i><u>0.07</u></i>	<i>-2.63</i>	<i>0.13</i>	<i>3.01</i>	<i>0.09</i>	<i>-0.79</i>
Career level																					
1-2	4.0%	<u>1.0%</u>	-2.80	<u>0.0%</u>	-2.33	4.0%	-0.05	<u>0.0%</u>	-2.23	2.0%	-1.22	1.0%	-1.84	0.0%	-1.62	23.0%	10.77	4.0%	0.14	13.0%	3.59
3-4	33.0%	34.0%	0.46	30.0%	-0.98	<u>18.0%</u>	-4.05	35.0%	0.61	34.0%	0.36	41.0%	2.49	44.0%	2.92	31.0%	-0.79	25.0%	-1.67	33.0%	-0.03
5-6	47.0%	55.0%	3.72	41.0%	-1.85	56.0%	2.13	41.0%	-1.72	46.0%	-0.48	50.0%	0.98	47.0%	0.10	<u>35.0%</u>	-3.24	42.0%	-0.87	49.0%	0.50
7-8	16.0%	<u>10.0%</u>	-2.92	28.0%	4.20	22.0%	1.44	24.0%	2.54	18.0%	0.87	<u>8.0%</u>	-2.35	9.0%	-1.90	11.0%	-1.69	28.0%	2.41	<u>4.0%</u>	-2.49
<i>Turbulence</i>	<i>0.15</i>	<i><u>0.14</u></i>	<i>-2.63</i>	<i>0.16</i>	<i>2.29</i>	<i><u>0.12</u></i>	<i>-3.99</i>	<i>0.16</i>	<i>1.90</i>	<i>0.15</i>	<i>0.31</i>	<i>0.16</i>	<i>1.84</i>	<i>0.15</i>	<i>-0.14</i>	<i>0.14</i>	<i>-1.62</i>	<i>0.19</i>	<i>4.52</i>	<i>0.14</i>	<i>-1.62</i>
Organisation Size																					
Small	2.0%	6.0%	3.75	1.0%	-0.79	4.0%	0.83	1.0%	-0.66	2.0%	-0.43	0.0%	-1.41	2.0%	-0.19	0.0%	-1.17	1.0%	-0.45	0.0%	-1.00
Medium	16.0%	26.0%	3.78	<u>3.0%</u>	-3.71	38.0%	4.58	<u>9.0%</u>	-2.02	<u>9.0%</u>	-2.42	<u>3.0%</u>	-3.30	12.0%	-0.80	16.0%	0.02	8.0%	-1.39	55.0%	6.75
Large	38.0%	39.0%	0.25	<u>26.0%</u>	-2.61	<u>13.0%</u>	-3.93	45.0%	1.52	52.0%	3.30	52.0%	2.49	36.0%	-0.27	39.0%	0.12	27.0%	-1.37	27.0%	-1.39
Very large	44.0%	<u>29.0%</u>	-4.08	70.0%	5.44	45.0%	0.28	44.0%	0.17	38.0%	-1.34	46.0%	0.37	50.0%	0.90	45.0%	0.21	64.0%	2.47	<u>18.0%</u>	-3.22
<i>Turbulence</i>	<i>0.11</i>	<i>0.12</i>	<i>1.88</i>	<i><u>0.09</u></i>	<i>-2.84</i>	<i>0.09</i>	<i>-1.64</i>	<i>0.11</i>	<i>-0.24</i>	<i>0.12</i>	<i>2.95</i>	<i>0.09</i>	<i>-1.84</i>	<i>0.11</i>	<i>0.61</i>	<i>0.11</i>	<i>-0.28</i>	<i>0.12</i>	<i>1.00</i>	<i>0.10</i>	<i>-0.55</i>
Geography																					
Abroad	6.0%	10.0%	2.72	10.0%	2.19	5.0%	-0.29	5.0%	-0.50	9.0%	1.35	2.0%	-1.74	2.0%	-1.31	<u>0.0%</u>	-2.65	5.0%	-0.21	0.0%	-1.87
Outside the Copenhagen Area	19.0%	<u>11.0%</u>	-2.55	<u>6.0%</u>	-2.91	83.0%	11.17	<u>6.0%</u>	-2.88	<u>6.0%</u>	-3.28	36.0%	3.47	<u>2.0%</u>	-2.76	16.0%	-0.53	14.0%	-0.60	57.0%	5.43
Copenhagen Area	75.0%	79.0%	1.22	83.0%	1.80	<u>11.0%</u>	10.52	89.0%	2.96	85.0%	2.53	<u>62.0%</u>	-2.53	95.0%	3.21	84.0%	1.67	80.0%	0.67	<u>43.0%</u>	-4.35
<i>Turbulence</i>	<i>0.09</i>	<i>0.10</i>	<i>1.13</i>	<i>0.11</i>	<i>2.91</i>	<i>0.09</i>	<i>0.20</i>	<i>0.08</i>	<i>-1.56</i>	<i>0.09</i>	<i>0.31</i>	<i>0.09</i>	<i>-0.92</i>	<i>0.08</i>	<i>-1.17</i>	<i><u>0.07</u></i>	<i>-3.43</i>	<i>0.12</i>	<i>2.49</i>	<i>0.09</i>	<i>-0.10</i>
DESCRIPTIVE CHARACTERISTICS																					
Men	80.8%	76.5%	-1.13	92.0%	2.14	93.1%	1.74	89.6%	1.64	86.7%	1.25	73.7%	-1.16	70.4%	-1.42	<u>67.5%</u>	-2.24	78.9%	-0.21	70.0%	-1.26
Age (in 2015)	59.2	<u>56.6</u>	-3.12	60.1	0.88	60.7	1.04	62.9	3.22	60.3	1.15	59.1	-0.06	56.3	-1.84	59.8	0.53	56.2	-1.58	58.4	-0.41
Level of education																					
Ph.D.	13.2%	11.8%	-0.43	10.0%	-0.71	<u>0.0%</u>	-2.17	4.2%	-1.96	8.3%	-1.21	81.6%	13.05	7.4%	-0.92	0.0%	-2.59	0.0%	-1.74	0.0%	-1.79
Higher Degree	59.9%	65.9%	1.26	72.0%	1.86	<u>31.0%</u>	-3.29	70.8%	1.64	81.7%	3.72	<u>15.8%</u>	-5.81	92.6%	3.58	27.5%	-4.39	73.7%	1.25	45.0%	-1.39
First Degree	13.0%	15.3%	0.71	8.0%	-1.12	44.8%	5.27	6.2%	-1.49	6.7%	-1.57	2.6%	-2.00	0.0%	-2.07	7.5%	-1.09	21.1%	1.07	45.0%	4.36
Vocational	11.3%	5.9%	-1.76	10.0%	-0.31	20.7%	1.66	16.7%	1.25	3.3%	-2.11	0.0%	-2.31	0.0%	-1.92	47.5%	7.60	5.3%	-0.84	5.0%	-0.91

Cluster*	Private										Public										
	CA		IC		LG		Bankers		SN		SC		Lobbyists		Unionist		PP		E&LP		
	n = 85		n = 50		n = 29		n = 48		n = 60		n = 38		n = 27		n = 40		n = 19		n = 20		
None	2.2%	1.2%	-0.70	0.0%	-1.13	3.4%	0.46	0.0%	-1.10	0.0%	-1.25	0.0%	-0.97	0.0%	-0.80	15.0%	5.80	0.0%	-0.67	5.0%	0.87
Area of education																					
Business economy	12.5%	30.6%	5.65	26.0%	3.07	20.7%	1.38	6.2%	-1.40	<u>1.7%</u>	-2.73	<u>2.6%</u>	-1.93	<u>0.0%</u>	-2.03	<u>0.0%</u>	-2.51	0.0%	-1.68	10.0%	-0.35
Engineering & technical sciences	12.5%	16.5%	1.25	34.0%	4.89	27.6%	2.55	4.2%	-1.85	5.0%	-1.90	13.2%	0.14	7.4%	-0.83	<u>2.5%</u>	-2.01	0.0%	-1.68	0.0%	-1.73
Agriculture	1.2%	0.0%	-1.14	0.0%	-0.83	13.8%	6.45	0.0%	-0.81	1.7%	0.38	0.0%	-0.71	0.0%	-0.59	0.0%	-0.73	0.0%	-0.49	0.0%	-0.50
Economy	19.5%	12.9%	-1.72	10.0%	-1.81	6.9%	-1.77	50.0%	5.66	15.0%	-0.95	36.8%	2.82	25.9%	0.87	<u>5.0%</u>	-2.43	31.6%	1.36	5.0%	-1.68
Vocational (white collar)	6.7%	5.9%	-0.33	10.0%	0.99	13.8%	1.58	16.7%	2.94	1.7%	-1.67	0.0%	-1.73	0.0%	-1.44	12.5%	1.54	0.0%	-1.19	0.0%	-1.23
Army or police	2.2%	1.2%	-0.70	0.0%	-1.13	0.0%	-0.84	0.0%	-1.10	11.7%	5.42	0.0%	-0.97	0.0%	-0.80	0.0%	-1.00	5.3%	0.94	0.0%	-0.69
Natural sciences	8.7%	5.9%	-1.03	12.0%	0.88	3.4%	-1.05	4.2%	-1.17	10.0%	0.39	23.7%	3.44	11.1%	0.46	2.5%	-1.46	0.0%	-1.38	15.0%	1.02
Political science	8.9%	<u>2.4%</u>	-2.36	<u>0.0%</u>	-2.35	0.0%	-1.74	4.2%	-1.21	21.7%	3.76	7.9%	-0.23	29.6%	3.90	7.5%	-0.33	26.3%	2.72	5.0%	-0.63
Vocational (blue collar)	4.6%	<u>0.0%</u>	-2.27	0.0%	-1.65	6.9%	0.61	0.0%	-1.62	1.7%	-1.16	0.0%	-1.42	0.0%	-1.18	35.0%	9.64	5.3%	0.15	5.0%	0.09
Teaching	3.4%	0.0%	-1.94	0.0%	-1.41	0.0%	-1.05	0.0%	-1.38	1.7%	-0.78	0.0%	-1.21	0.0%	-1.01	5.0%	0.59	10.5%	1.75	45.0%	10.51
Humanities	5.0%	10.6%	2.65	2.0%	-1.04	0.0%	-1.28	2.1%	-0.98	5.0%	0.00	5.3%	0.09	3.7%	-0.32	0.0%	-1.52	10.5%	1.12	10.0%	1.05
Law	12.3%	12.9%	0.19	6.0%	-1.44	3.4%	-1.51	10.4%	-0.43	23.3%	2.80	10.5%	-0.35	22.2%	1.62	12.5%	0.04	10.5%	-0.24	0.0%	-1.71
None	2.2%	1.2%	-0.70	0.0%	-1.13	3.4%	0.46	0.0%	-1.10	0.0%	-1.25	0.0%	-0.97	0.0%	-0.80	15.0%	5.80	0.0%	-0.67	5.0%	0.87
Social background																					
Upper class	27.9%	29.4%	0.35	44.0%	2.70	25.0%	-0.36	41.4%	2.21	31.7%	0.71	28.9%	0.14	22.2%	-0.68	<u>5.0%</u>	-3.39	15.8%	-1.20	20.0%	-0.81
Upper middle class	23.6%	29.4%	1.41	22.0%	-0.28	20.8%	-0.37	<u>3.4%</u>	-3.50	28.3%	0.93	26.3%	0.41	37.0%	1.69	<u>10.0%</u>	-2.13	36.8%	1.39	15.0%	-0.93
Lower middle class	18.5%	14.1%	-1.17	18.0%	-0.10	25.0%	0.93	27.6%	1.72	15.0%	-0.75	15.8%	-0.45	18.5%	0.00	12.5%	-1.03	15.8%	-0.31	40.0%	2.53
Farmers	7.5%	7.1%	-0.16	2.0%	-1.57	4.2%	-0.70	3.4%	-1.15	6.7%	-0.25	13.2%	1.40	14.8%	1.49	10.0%	0.63	15.8%	1.40	5.0%	-0.43
Working class	11.8%	7.1%	-1.50	8.0%	-0.89	14.6%	0.48	13.8%	0.46	10.0%	-0.47	10.5%	-0.26	<u>0.0%</u>	-1.96	27.5%	3.23	15.8%	0.55	20.0%	1.16
Missing	10.8%	12.9%	0.70	6.0%	-1.16	10.4%	-0.07	10.3%	-0.12	8.3%	-0.67	5.3%	-1.14	7.4%	-0.59	35.0%	5.18	0.0%	-1.55	0.0%	-1.59
Grandparents class																					
Upper class	21.6%	22.4%	0.18	24.0%	0.43	41.4%	2.67	16.7%	-0.89	30.0%	1.70	26.3%	0.73	18.5%	-0.41	<u>5.0%</u>	-2.68	5.3%	-1.77	15.0%	-0.74
Upper middle class	12.0%	10.6%	-0.45	6.0%	-1.39	3.4%	-1.47	20.8%	1.99	8.3%	-0.95	18.4%	1.27	18.5%	1.07	12.5%	0.10	15.8%	0.52	10.0%	-0.28
Lower middle class	14.4%	10.6%	-1.13	20.0%	1.20	10.3%	-0.65	16.7%	0.47	18.3%	0.93	13.2%	-0.23	11.1%	-0.51	10.0%	-0.84	15.8%	0.17	20.0%	0.73
Farmers	11.3%	10.6%	-0.23	14.0%	0.64	20.7%	1.65	<u>2.1%</u>	-2.14	8.3%	-0.78	10.5%	-0.16	22.2%	1.85	12.5%	0.25	10.5%	-0.11	10.0%	-0.19
Working class	10.3%	11.8%	0.48	8.0%	-0.58	0.0%	-1.89	14.6%	1.03	5.0%	-1.47	10.5%	0.04	0.0%	-1.82	12.5%	0.47	31.6%	3.11	20.0%	1.45
Missing	30.3%	34.1%	0.86	28.0%	-0.38	24.1%	-0.75	29.2%	-0.18	30.0%	-0.05	21.1%	-1.30	29.6%	-0.08	47.5%	2.49	21.1%	-0.90	25.0%	-0.53

Cluster*	Private										Public										
	CA		IC		LG		Bankers		SN		SC		Lobbyists		Unionist		PP		E&LP		
	n = 85		n = 50		n = 29		n = 48		n = 60		n = 38		n = 27		n = 40		n = 19		n = 20		
Career advancement																					
Age at 1 st elite position (>= level 6)	43.5	42.6	-1.20	42.2	-1.37	<u>40.6</u>	-2.26	44.7	1.24	43.9	0.48	46.9	3.08	41.4	-1.58	45.4	1.80	41.5	-1.20	45.2	1.10
Age at 1 st leadership position (>= level 4)	33.1	<u>31.8</u>	-2.25	<u>30.8</u>	-2.81	<u>29.3</u>	-3.39	32.5	-0.75	33.9	1.00	33.5	0.39	33.3	0.19	39.6	6.90	31.3	-1.28	37.6	3.28
Percent of career in same organization	63.0%	61.0%	-1.18	67.0%	1.46	72.0%	2.11	62.0%	-0.51	<u>57.0%</u>	-2.34	79.0%	4.52	59.0%	-1.01	58.0%	-1.58	67.0%	0.78	56.0%	-1.43
Sector shifts at top level (Pantouflage)	14.0%	<u>4.0%</u>	-2.29	4.0%	-1.59	3.0%	-1.25	21.0%	1.15	32.0%	3.28	13.0%	-0.08	19.0%	0.56	10.0%	-0.54	42.0%	2.76	0.0%	-1.37
Network centrality in the Danish elite																					
Betweenness (mean)	89.9	66.2	-1.53	64.5	-1.20	98.1	0.28	79.7	-0.47	89.0	-0.05	76.3	-0.55	166.4	2.57	160.8	2.94	60.4	-0.82	78.7	-0.32
Reach (mean)	241.1	235.9	-0.73	269.4	2.89	238.8	-0.18	254.0	1.29	226.4	-1.67	<u>217.8</u>	-2.05	248.1	0.51	275.0	3.06	<u>199.1</u>	-2.54	216.3	-1.55
Royal ties																					
Chaimberlain or master of the royal hunt	3.8%	3.5%	-0.16	2.0%	-0.71	17.2%	3.91	2.10%	-0.65	10.0%	2.71	0.0%	-1.28	0.0%	-1.07	0.0%	-1.32	0.0%	-0.89	0.0%	-0.91

* **CA:** Corporate ambassadors, **IC:** Industrial inner circle, **LG:** Landed gentry, **SN:** State nobility, **SC:** Scientists, **PP:** Professional politicians, **E&LP:** Education and local politics.

Underlined cell have significantly lower values than expected, **bold** significantly higher than expected (p<0.05).