CHAPTER 8

Quantitative Data as Sources for the History of Experience

Pirjo Markkola and Ilari Taskinen

In the fields of economic and social history, quantitative sources and methods have been commonly utilised. The well-established tradition of using official statistics, tax records, population records, and account books as sources investigated by quantitative methods is a productive way to analyse social structures. However, the same tradition seems to dismiss or relegate questions of experience and experiencing. In this chapter, we argue that the history of experience can be studied by using quantitative sources and methods. This means using statistical data, large-scale datasets, and quantitative methodologies that analyse the past through numbers. Quantitative sources provide aggregated knowledge of groups and structures, while experiences are traditionally thought to belong to individual people. We argue that this division is mistaken. The idea that

P. Markkola (✉)
Tampere University, Tampere, Finland
e-mail: pirjo.markkola@tuni.fi

I. Taskinen
Tampere University, Tampere, Finland
e-mail: ilari.taskinen@tuni.fi

© The Author(s) 2026

R. Eiranen et al. (eds.), *Sources and Methods for the History of Experience*, Palgrave Studies in the History of Experience,
https://doi.org/10.1007/978-3-032-22098-1_8

experiences arise and reside chiefly in individual people is a misconception grounded in essentialist notions of experience. The history of experience examines social and societal phenomena.[1] No experience is born in a vacuum; individual experiences are constructed in the intersections of social interaction, institutions, and cultural systems of meaning that guide people to think and feel in shared ways. Quantitative perspectives enable the historian to place the individuals and communities under investigation into larger context, which is just as vital to historians of experience as any other perspective. The history of experience can benefit in multiple ways from adopting quantitative data and tools into their toolkit.

Historians tend to agree that quantitative data sets are fruitful when demographic patterns, economic factors, and social structures are examined, but how do they translate into the language of experience? We propose three ways of translating quantitative data into the language of experience. The first option is to read quantitative sources as if they were qualitative sources. Official statistics in particular include descriptive sections and elements. The second option is to look closer at statistical categorisations and address them as processes, norms, and structures of experiencing. How do categorisations contribute to the processes of experiencing? The third option is to transform information on individual lives and autobiographical texts into a quantitative form and analyse it statistically. In this chapter, we introduce all three ways and outline some examples of the quantitative history of experience, including its potential and limitations.

Quantitative data consist of a rich variety of sources. In this chapter, we divide our material into two main categories (with subcategories). First, we discuss data gathered by statisticians and other authorities involved in knowledge production in the past. When it comes to published data, The Official Statistics of Finland[2] serves here as an example of quantitative statistical sources. Our main focus is on population statistics, but we also look at statistical accounts of labour markets and living conditions, among others. Other sources discussed in this chapter include some quantitative archival data.

[1] For the new history of experience, see, e.g. Boddice & Smith 2020; Kivimäki, Suodenjoki, & Vahtikari 2021 (esp. the chapter by Hoegaerts and Olsen); Katajala-Peltomaa & Toivo 2022; Annola, Lindberg, & Markkola 2023; Haapala, Harjula, & Kokko 2023.

[2] Official Statistics of Finland (OSF).

Another major set of quantitative data consists of digitalised or digital databases. Historians have used digital data from the beginning of computing from the 1960s onwards, especially in the fields of demographic and economic history. These data have become increasingly important in the past few decades due to the digitalisation that has revolutionised the production and analysis of digital data.[3] Large digital datasets are these days produced by archives and libraries as well as by historians themselves, who have at their disposal powerful new digitisation tools. Digital big data can be divided into two groups. The first consists of numerical data excerpted from population registers, archival materials, and other instances traditionally studied in fields like demographic history. The second is digitised textual data, such as letters, diaries, newspapers, and publications, which are central sources of the nascent field of *digital history*.

This chapter examines quantitative data as sources for the history of experience. In this effort, we benefit from historical studies that have addressed human experiences in collective or quantifying settings. Such approaches include collective biography, prosopography, historical family demography, and the life-course approach.[4] All these approaches utilise quantitative data, combine macro- and microhistories, and interpret people's experiences in a historical context.

Quantified Experiences

The compilation of statistics is a proven way to organise information, highlight social problems, and generate administrative patterns. Published statistics have also wider implications related to experience, expectation, and the construction of historical time. Here we turn to the German historian Reinhart Koselleck, who defines experience as the present past and expectation as the future made present. As the presence of the past and the presence of the future differ, he expresses time using the spatial metaphors "space of experience" and "horizon of expectation". Experience is understood as a spatial complex with many historical layers, whereas the more fluid metaphor of horizon suits better the category

[3] Crymble 2021.

[4] See, e.g. Laslett 1974; Anderson 1980; Bertaux 1981; Elder & Giele 2009; Caine 2010, 47–65.

of expectations. Thus, in Koselleckian terms, official statistics produce commonly shared spaces of experience and horizons of expectation.[5] Population statistics, for example, depict population movements, family relations, and reproduction. They register experienced phenomena, such as births, deaths, marriages, migration, occupations, and changes in the structure and size of population, among others.[6] In other words, population statistics record the space of experience in which people have lived in their most intimate communities and inform what kind of expectations have been available to them. Statistics also cement social structures and provide tools to interpret society. Those tools both reveal and hide different layers and structures of experience as well as processes of experiencing.

In the nineteenth century, many countries established authorities to compile national statistics and develop administrative instruments. For instance, the Prussian Office of Statistics was founded in 1805, and more broadly, the link between population and the state formed an axiom that pushed European authorities to gather statistical data. Advocates of public health promoted statistics in France, whereas in early Victorian Britain the statistical movement focused on social problems.[7] The oldest continuous population statistics can be found in Sweden and Finland, where a growing concern over shortages in the labour force emerged in the eighteenth century (Finland was part of Sweden until 1809). The Swedish *Tabellverket* (Tables Office) was founded in 1748, and the first population statistics were compiled the following year. The state could also rely on the longer tradition of the Lutheran Church to register births and deaths since the seventeenth century.[8] When the Statistical Office of Finland, established in 1865, published the first statistics, the population records were extended back to 1749, thus providing an explicit historical perspective on the categorisation of human experience.

The fact that our examples of statistics are drawn from one country does not limit the adaptability and scope of observations to Finland. International comparison has been a widely used political practice. Nation

[5] Koselleck 1985, 267–288; Kivimäki 2013.

[6] Nieminen 1999.

[7] Porter 1986, 23–39; Wilke 2004, 64–65; van der Zande 2010, 412–414.

[8] Luther 1993; Nieminen 1999, 10; Tala 2008; Haapala & Peltola 2018; Mikkonen 2025, 5–6. For the German-speaking countries, see Wilke 2004.

states have compared different systems used in other countries and adapted the best practices—or patterns that were considered the best—to their national policies.[9] In the field of statistical standards, the first international conference in the 1850s launched statistical cooperation that was further consolidated by the International Statistical Institute (ISI) in 1885. In 1929, the League of Nations formalised inter-governmental cooperation on official statistics; later, the United Nations took responsibility for international statistical cooperation.[10] As a result, international collaboration has taken place between national statistical offices; moreover, other international organisations, such as the ILO, coordinate and standardise classifications and categorisations. National statistical offices usually apply the international standards in their respective bookkeeping and publishing.[11] Coordination and standardisation facilitate the comparison of national statistics. They also allow the application of similar tools in the use of statistics as sources.

People do not only figure as numbers in official statistics. Structures and social processes, depicted by official statistics, cannot be separated from the lives of people. As members of society, people live in a certain time and space recorded in the statistics. Therefore, official statistics provide valuable information on the ways in which people in the past were shaped by their experiences. Encounters with people, communities, and society constitute experiences; moreover, experiences become social when they are acknowledged, reflected on, and communicated. Shared and communicated experiences constitute collective resources, a social stock of knowledge, and they accumulate in social institutions.[12] Some experiences in the past can be constructed by interpreting social structures and processes depicted in the statistical data. As a good example, we can mention Pertti Haapala's study on the social crisis of Finnish society in the 1910s. His study relies on statistical data, but it still reaches people's

[9] Kettunen 2006; Kettunen & Petersen 2011.

[10] Handbook on Management and Organization of National Statistical Systems.

[11] Tilasto-opas 1978, 14–15; Nieminen 1999.

[12] Katajala-Peltomaa & Toivo 2022, 13; Kivimäki, Suodenjoki, & Vahtikari 2021, 11; Markkola 2022, 222.

space of experience and the ways in which social inequalities were experienced. Statistical data on landowning, food prices, and other expenditures summarise those experiences.[13]

Official statistics are also textual sources. The published volumes include large descriptive, introductory sections which can be analysed like any qualitative source. In particular, the early volumes of the population statistics commented on people's daily life and described their practices. They can easily be read as expressions of the educated classes' view of vernacular life in rural Finland and the country's growing towns. They inform us how experiences of encountering the uneducated classes were put into words by statisticians, but they are more silent concerning how rural labourers or industrial workers experienced the phenomena the upper classes were registering, categorising, and reporting. However, by reading and re-reading these descriptive sections, we believe, it is possible to find patterns and tropes that give viable hints of the circumstances in which the anonymous masses were experiencing society. Changes in the descriptive sections usually suggest that societal changes have occurred. If crop failures, for example, suddenly disappear from explanations, one can ask if changes took place in farming patterns or explanatory horizons. Those changes, when traced and documented, may talk about experiencing subjects in society. If they do not reach the level on which subjects are constructed through experiences,[14] at least they reach the level on which notions of the experiencing subjects are produced.

Various other records concerning population, taxation, and poor relief, among others, can also be turned into qualitative sources in which remarks and notes, sometimes in the margins, give answers to questions of experiencing society. Moreover, records of poor relief can be investigated by mixing qualitative and quantitative methods. A quantitative analysis of poor relief records reveals who experienced poverty and whose experience of poverty counted (age, gender, occupation). These structures of experiencing poverty can be complemented by a qualitative analysis of concepts and descriptive remarks available in the records. The experience of being a widow with minor children in an industrial town in the 1890s entitled her to public aid, but it did not free her from the obligation of earning a living. Widowers were strikingly absent in the records of poor relief,

[13] Haapala 1995.

[14] Cf. Scott 1991.

whereas their children were found in other records documenting foster care.[15] Applying both the triangulation of various records of poor relief and a mixed-methods approach, family experiences of the working classes become visible in quantitative data sets.

Structures of Experiencing

Statistical categorisations can be read as processes, norms, and structures of experiencing, as indicated by sociologist Merja Kinnunen.[16] Analysing labour statistics, she addresses gendered and gendering wage gaps by investigating how statistical categorisations describe the wage gap between men and women. According to Kinnunen, statistical categorisations uphold gendering hierarchies and indicate societal power relations and the cultural constructions of gender. Reading statistics from the methodological perspectives suggested by Kinnunen, we are particularly interested in the ways in which population statistics and labour statistics, among others, reveal and construct processes, norms, and structures of experiencing.

Statistics help us to understand experiences in historical situations, but they are also important in understanding the general frames of experiencing. Every life is unique, but lives are often experienced in common ways due to social and cultural factors that lead them onto shared trajectories. To understand these patterns as the structures of experiencing, statistics are vital. One of the first structural elements of the population statistics in the nineteenth century was the age cohort. The same year of birth makes people members of a birth cohort, gives them a particular historical experience with certain life opportunities, and makes it possible to follow their life trajectories in time and space. Social embeddedness or social ties change over the life course but are to some extent tied to the birth cohort. Since the 1960s sociologists and social historians have applied a life-course approach to work and family, among others. In his groundbreaking study of children of the Great Depression, Glen H. Elder Jr names four factors that shape life courses: "historical and geographical location, social ties to others, human agency in the construction of one's life course, and variations in timing of events and social roles". All

[15] Markkola 1994, 109.

[16] Kinnunen 2001.

factors are related to experiences and experiencing. Elder Jr and Janet Giele further point out that the life-course perspective covers many levels and spans "from aggregate, institutionalised pathways to the lived experience of people working out their life course".[17] Again, taking birth cohorts and their cultural backgrounds into consideration helps historians to understand the many layers of experience.

Sometimes the official statistics can suggest new research questions related to the history of experience. For example, when statisticians put together a longitudinal review of annual marriages (or birth rates, mortality, etc.), they comment on factors like epidemics or crop failures affecting the statistical figures in question.[18] While comparing deviance in annual figures, historians can find quantitative patterns which, for their part, inspire and inform deeper analyses of people's daily practices and structures of experience. Such deviance can appear in the timing of marriages or in differences between social classes in their family transitions. Alternatively, by reading statistics, historians can find examples of less common experiences, such as teenage pregnancies, women dying in childbirth, or triplet pregnancies,[19] and further explore those cases as histories of experience.

Birth and death belonged to the first phenomena to be quantified by authorities. Population statistics provide aggregated data but also some more detailed information concerning childbirth. Health statistics and population statistics can also be read as sources of experiencing childbirth and of structuring experiences at various turning points in the life course. Tables in published statistics are based on data gathered by authorities, and some local archives have filed the more nuanced original tables put together by midwives and physicians. Their records illustrate the experiences of giving birth and reveal, for example, cases in which mothers first tried to rely on the help of their neighbours and then turned to a midwife or relied directly on a midwife and were later sent to a medical doctor or a hospital. The midwives reported their cases, which were summarised in the annual reports of local health authorities. Those reports count natural

[17] Elder 1974; Elder & Giele 2009, 4–6, 9.

[18] E.g. OSF VI:41;3, 72–73.

[19] E.g. in 1881–1890, a total of 10 girls under the age of 15 gave birth to a child. Three of them were married. OSF VI:41;3, 116.

births, forceps deliveries, and other ways of assisting deliveries.[20] These differing practices can be analysed as structures of experiencing. The path from a natural birth at home, assisted by a neighbour or a midwife, to forceps delivery, performed by a medical doctor in a hospital, formed a long chain of experiencing motherhood and giving birth.

Mortality rates indicate structures of experiencing. In previous research, mortality has been used as evidence of past experiences, emotions, and world views. One of the most provocative examples is psychohistorian Lloyd deMause's study on the history of childhood in which he argues that, due to high infant mortality rates, people avoided forming emotional bonds with their babies.[21] This conclusion has been questioned several times; there is evidence that parents cared about their children, and they mourned their death.[22] However, from the perspective of experience, it is possible to take another angle and compare whether certain experiences were common and likely to happen or if they were highly unlikely. How was the loss of a baby experienced in a society where almost all families shared similar experiences, and how was it experienced in a society where 99.8 per cent of infants survived their first year?

In all age groups, the mortality of men was higher compared to women. Therefore, we can read from the population statistics that the experience of being an old woman was much more common than being an old man. The Official Statistics of Finland gives the following figures for 1865: in the age group of 20–25 years, there were 1030 women to 1000 men, but the share of women increased steadily. In the age group of 60–65 years, the share of women was 1211 to 1000 men, and in the oldest age groups—that is, those over 80—there were twice as many women as men.[23] Similar experiences are suggested by the data showing, for instance, the share of widows and widowers: 125 vs 58 per 1000 in Finland in 1865. Compared to men, women were more likely to experience the loss of their spouse; moreover, widowed men were more likely

[20] Markkola 2012.

[21] deMause 1974.

[22] E.g. Hanawelt 1986; Krötzl 1989.

[23] OSF VI:1, 30; Mikkonen 2025, 12.

to remarry.[24] These notions are relevant for the history of old age and longevity, as Heikki Mikkonen has recently pointed out.[25]

In general, population statistics hint at several structures of experiencing. For example, figures on population density indicate varying experiences of neighbourhood, as some rural areas were extremely sparsely populated whereas some other regions were closer to urban municipalities in their population density. Some rural villages may even have had more inhabitants than small towns.[26] However, statistical indicators only give a rough indication of differing experiences: more research is needed to understand how neighbourhood and surroundings were experienced in a rural society, and, correspondingly, how experiences of neighbourhood and surroundings were constituted in a rural setting. This can, however, be completed by looking at other volumes of the official statistics, such as labour statistics, agricultural statistics, and household statistics, asking new questions, and applying triangulation and mixed methods to interpret the data.

Asking new research questions is in line with Katrina Navickas' reflection on British histories of poverty. She notices a clear shift from descriptive narratives following the model of Victorian social investigators or from economic analyses that reduced paupers into numbers towards social historians' attempts "to reconstruct the experiences of the poor as individuals as well as groups".[27] However, those studies focusing on "pauper agency" often utilise other sources, such as letters or appeals to authorities, whereas our primary aim is not to change the sources. We suggest re-reading the old ones to reach the ways in which quantitative data can be turned into the sources of the history of experience.

Furthermore, the advantage of population statistics is their social representativeness. They are gathered in a systematic manner to reflect people's lives without considering their background. Oral historical and autobiographical archives, on the other hand, tend to be heavily distorted. They are created through voluntary donations, and they reflect what people want to remember and can put into words. With some exceptions, archived letters and diaries typically portray the experiences of the

[24] OSF VI:1, 33.

[25] Mikkonen 2025.

[26] OSF VI:1, 16–17, 22.

[27] Navickas 2018, 93.

educated classes who were accustomed to writing and valued the preservation of family writings. Reminiscences are likewise donated by a limited group of interested individuals.[28] These archives also tend to illustrate mostly the positive aspects of human lives because many people do not wish to remember or preserve evidence of their troublesome experiences.

Individual-Level Databases

In addition to using institutional statistics, historians produce their own quantitative data. These come in various sizes ranging from simple excel spreadsheets to databases containing millions of entities. In contrast to the aggregated data of institutional statistics, these datasets are usually based on individual-level data. They allow historians to inspect how people's lives unfolded in the course of time and over a broad context.

Social and economic historians originally studied vital population statistics produced by national institutions. This fitted into the perspective of social history, which focused on nations or broad social categories like class, but it was also a necessity due to the difficulty of gathering data in the early days of computing. One of the pioneering projects using individual-level data was the so-called Muuli project in 1970s Finland. The project aimed at combining macro- and microhistories by using statistical and quantitative methods to explain migration and social change. Historians from three universities sampled data from population registers. However, only one university succeeded in coding the data and applying some basic statistical methods to analyse it. In Tampere, the longitudinal data of ca. 2,000 individuals was extracted from church-based population registers. People were followed from birth to death and their family members were included in the data. The data consisted of four age cohorts from 1850 to 1910. By using a tailored statistical programme, scholars could cross-tabulate the coded data; calculate averages, means, and medians; and construct life histories and family histories. Class (occupation), gender, residence, family status, and age were key categories available in the data set.[29] However, the ambitions of the large

[28] Roper 2009, 28; Teo 2005, 343.

[29] *Muuttoliikkeiden ja sosiaalisen kehityksen väliset yhteydet* 1982; Rasila 1983; Haapala 1986, 346–348; Markkola 1994, 250–251.

project were ahead of its time and computing potential, and its utilisation remained limited.

Gathering data has become much easier since the days of the Muuli project. Today historians routinely analyse thousands or even millions of records with a personal computer. These data come typically from individual-level databases that historians have constructed themselves from sources such as church registers and censuses. These databases include information on basic demographic events like births, marriages, and deaths, but also people's health, wealth, and experiences, such as service in a war. The largest of these databases consists of information on millions of individual people and many more include tens of thousands of past lives. The Swedish Scanian Economic Demographic Database (SEDD), for example, includes the demographic, wealth, and health information of 215,000 unique individuals from the period 1646–1967, while the Historical Sample of the Netherlands (HSN) covers information on, for example, demographic events, religion, and social networks for 85,500 people born in the Netherlands during 1812–1922.[30]

Individual-level data has transformed the perspective of demographic history. Whereas the older generation studied demographic regimes, the new generation examines individual lives. This has made possible the novel, fine-grained analysis of individual life paths and lifted life-course approach, developed already since the 1960s and 1970s by Glen Elder Jr and others, to such a central status of the discipline that the "life course paradigm" has been said to have taken over it. Moving the level of analysis to individual people has brought people and their experiences to a much more prominent position in analysis. For example, the demographic historian Jan Kok has stressed that the life-course approach highlights people's agency. Individual lives are not predetermined but guided by the aspirations and choices of individuals.[31] Edvinsson et al., on the other hand, emphasise that it is now possible to study much smaller groups of people than before. While many databases are sampled on the national level, their grand size allows the researcher to focus the analysis on a smaller group based on its social background, such as gender, cohort, class, or shared experiences. This helps us to understand individual lives

[30] Ruggles 2014; Alter et al. 2023.

[31] Kok 2007, 205.

with much greater precision than before. At the same time, the decisions of individuals can be efficiently put into greater context.[32]

For an example of the changing perspective of demographic history, we will next look at the article "Dimensions of Rational Decision-Making during the Demographic Transition: Aranjuez (Spain) Revisited", written by David Reher and Glenn Sandström. The study examines people's reproductive behaviour during a demographic transition, namely the historical shift from high birth rates and high death rates to low birth rates and low death rates. When this phenomenon was originally studied through population statistics, scholars could demonstrate its existence from fertility and mortality data but only speculate on people's choices to have or decide against having children based on great patterns, like the decline of cultural constraints. When individual data are added to the research, much more elaborate analysis is possible. In their article, Reher and Sandström use the data of 900 families whose entire reproductive history, including births, deaths, and sex composition of children, has been collected from civil registration records. By applying event history analysis to the data, the researchers show that child deaths and sex composition affected couples' reproductive behaviour. Couples were more likely to have more children if they had lost a child or did not have a boy. Reher and Sandström see this to be evidence of people's rational decision-making and agency in shaping the composition of the central unit of their lives, the family, in times when easy contraception methods were not yet available. This is valuable information to historians of experience studying how the people of the era experienced their position and power to alter social family norms.[33]

The above example illustrates how demographic historians use individual level micro-data to study how specific events in life influenced people's behaviour in the past. In doing so, they inevitably need to question the reasons behind these choices—what people thought and felt in deciding the course of their lives. Experiences are most visibly present in these analyses when they focus on specific events in history like wars or famines. Analysing individuals during these events with data was previously possible only at a crude level, but individual-level datasets with rich

[32] Edvinsson et al. 2023, 188–189.

[33] Reher & Sandström 2015.

information on people's backgrounds make it possible to examine their rationale and the motivations behind their decisions.

One of the great examples of utilising a large database to study individual experiences is Dora Costa and Matthew Khan's study "Heroes and Cowards: The Social Face of War". It examines American Civil War soldiers' war experiences using the "Union Army Data Set", which contains detailed longitudinal information of 40,000 men who fought in the war. Costa and Khan's focus is on the impact of peer relationships, morale, and ideology on soldiers' wartime behaviour and especially desertion. With their vast data they could conduct statistical analyses, which showed that the soldiers' commitment to the war effort was linked most firmly to their peers. Men who served in demographically and socioeconomically homogenous companies fulfilled their duties more often than those who served with men from different racial or socioeconomic backgrounds or were of different ages. Having similar kinds of people nearby also increased one's survival in a prisoner-of-war camp. The study demonstrated in an intriguing manner a phenomenon claimed also in many cultural historical studies of war: soldiers fight for their friends, not for ideology. Although Costa and Khan's analysis of course does not cover the whole spectrum of soldiers' experiences in the war, it provides valuable evidence about soldiers' behaviour that, arguably, also informs us about their thoughts and feelings. They are not entirely wrong to claim that their study reveals "the underlying physiological and psychological mechanisms of the human being".[34] These mechanisms are vital in analysing soldiers' war experiences. They provide statistical evidence for cultural historical scholarship that has shown social relationships, compassion, and, indeed, love dictated how a man fought, endured, and thought about his place in the conflict.[35]

An important motivation for the historian of experience to produce one's own statistical data is that they can reveal experiences that cannot be accessed with autobiographical sources. These are typically difficult or shameful experiences that people are unable to deal with or wish to keep silent. Traumas, experiences that in their nature evade language and meanings, are an illustrative example. For example, when studying

[34] Costa & Kahn 2008, xxi. On studying war experiences through large databases, see also Taskinen 2023; Kivimäki, Liski, & Taskinen 2025.

[35] Kivimäki & Tepora 2009.

war traumas in World War II Finland, Ville Kivimäki found the psychiatric understanding of the era did not acknowledge that exposure to violence could break a man's mind. Mental wounding in battle was a sign of personal weakness and unmanliness, meaning men experiencing this fate kept silent about their experiences. Studying these experiences is impossible through autobiographical writing and memoirs. There is secondhand information on them in the written descriptions of medical records, but in order to understand the experiences that led to these devastating conditions, Kivimäki had to construct a numerical dataset that provided hard numerical evidence of the traumatised men's backgrounds and wartime conditions. For this, Kivimäki took a cluster sample of 341 soldiers treated for psychological wounding in three military hospitals and collected information on these men's social backgrounds and war service into a database. By comparing these data to a database of soldiers killed in the war, Kivimäki could find evidence of factors affecting men's coping with stress in battle. He could show, for example, that old and married men suffered more mental woundings than the young and unmarried. This indicated that a soldiers' experience in war was linked to his stage of life and social relations, with the young and commitment-free men enduring it better than those who had a family and responsibilities at home to worry about.[36]

It is not unreasonable to suggest that demographic historians are these days deeply embedded in the study of experiences. While their language typically stresses processes and causality between events, at the core of the study are people and their choices and fates in the upheaval of events and structures. Experience is not a word often encountered in their writing due to the traditions of the discipline, but as research evolves with ever more complex databases and finer analysis techniques, the core issues of experience like agency, motivations, and relations between individuals and structures become increasingly topical.[37]

Historians of experience with a qualitative methodological background should also look at the opportunities of big data. Many of the large individual-level databases are freely available for research in data repositories. For the qualitative study of experiences to evolve, there is not only a need for data but also for people who can ask the right questions.

[36] Kivimäki 2013, 101–190.

[37] Cf. Elder & Giele 2009.

Text Mining Personal Experiences

The latest reason for historians of experience to consider quantitative methods is the advancements in text mining research. For a long time, the work of the historian was to visit an archive and physically examine old texts. Today this is not always a necessity. The historian can view sources from the comfort of a personal computer and let it do the analysis. In many other fields, like linguistics, computers have been used to analyse textual data already for decades, but the methodology has become particularly relevant in the 2000s with the accumulation of ever-increasing amounts of digitally derived data and advancements in digitisation and analysis technologies. In recent years, many historians have also adopted this perspective, giving birth to the field called digital history.[38]

The central concept of digital history is *distance reading*, the automatic analysis of large sets of textual data. This is a fundamental change of perspective, as distant reading already in its name positions itself in contrast with the most traditional methodology of history, *close reading*.[39] Distant reading means typically the utilisation of text mining methodologies originating from corpus linguistics. These include various techniques such as the basic counting of word frequencies, wherein changes can be analysed over time or in different contexts. Other methodologies examine the relationships and significance of words in textual datasets. Topic modelling detects and classifies central topics of corpora, while collocation analysis examines which words occur frequently in proximity to each other. A step further is text network analysis, which considers connections between multiple different concepts. The basic outcome of this analysis is a graph that visualises relationships between words. Lately, the techniques have become increasingly more complex as digital historians have begun to utilise machine learning in their analysis.[40]

The utilisation of text mining methodologies has become common among historians in recent years. They have been central to the spread of digital history. Text mining has been particularly popular among conceptual historians, for whom the study of language and meanings through statistical methods is a natural fit.[41] Historians of experience have utilised

[38] Salmi 2020; Fridlund, Oiva, & Paju (eds) 2020.

[39] Moretti 2013.

[40] Baker 2006.

[41] Turunen 2021.

them rarely so far. One reason for this might be the fundamental nature of the field: historians of experience have always been more interested in inspecting the past from below, from the perspective of individuals, rather than above, the perspective stressed by distant reading. It is reasonable to ask what is left of experiences when meanings are aggregated into numbers, and we will return to this question at the end of the chapter. For other fields of history, the benefits of distant reading have been more obvious. Digital methodologies have been particularly common among conceptual historians who examine how values and ideas are formed in the interaction of people. However, the recent developments in digitisation and digital methodologies have meant that text mining has become a more potent option also for the history of experience.

First is the advancement in the digitisation of historical sources. Until recently most digitised historical texts were public writings like newspapers and parliamentary texts. These were digitised early because they are printed texts whose digitisation has been possible since the early 2000s. Although newspapers and books of various kinds can be used in the study of experiences,[42] the problem was that the backbones of the analysis of historical experiences have been handwritten personal texts like letters and diaries. Their statistical analysis was for a long time impossible, or at least extremely laborious, because turning handwritten texts automatically into digital form, the precondition of their automatic study, provided inaccurate results.

Automatic handwritten text recognition (HTR) technology has taken great leaps in the last few years. The introduction of powerful machine learning models has improved recognition models drastically, which has enabled archives and libraries to begin digitising letters and diaries into digitally readable form. An important help for historians has been the introduction of *Transkribus*, a browser-based platform developed by the EU-funded READ project, which turns handwritten texts into digital data (Fig. 8.1). Using machine learning HTR models requires technical expertise few historians possess, but *Transkribus* is useable by any scholar after a few minutes of learning. The platform has been used to digitise historical texts in hundreds of projects by historians and archives.[43] A digitisation project "First-Hand Accounts of War: War Letters (1935–1950)"

[42] See Marjanen 2021.

[43] Nockels et al. 2022. Transkribus can be accessed at https://www.transkribus.org/

conducted by the NIOD Institute for War, Holocaust, and Genocide Studies in the Netherlands, for example, digitised over 160,000 pages of handwritten personal correspondence using *Transkribus*.[44]

Methodological innovations of text mining are the second reason to be interested. Text mining involves quantifying language, and does not often create an obvious link with the lived reality of people that is typically at the centre of the historical inquiry of experiences. Intriguingly, digital humanists have recently also adopted text mining methodologies that have gained influence from human sciences and consider not just text but also the thoughts and feelings of people behind their expressions. These approaches are called "sentiment analysis", which itself is part of the larger study of "affective computing", an interdisciplinary field that studies the recognition and generation of human affects with technology. Sentiment analysis can be divided into two branches: opinion mining and emotion mining. Opinion mining means analysing the personality and subjectivity of a text. It entails recognising, dividing, and classifying

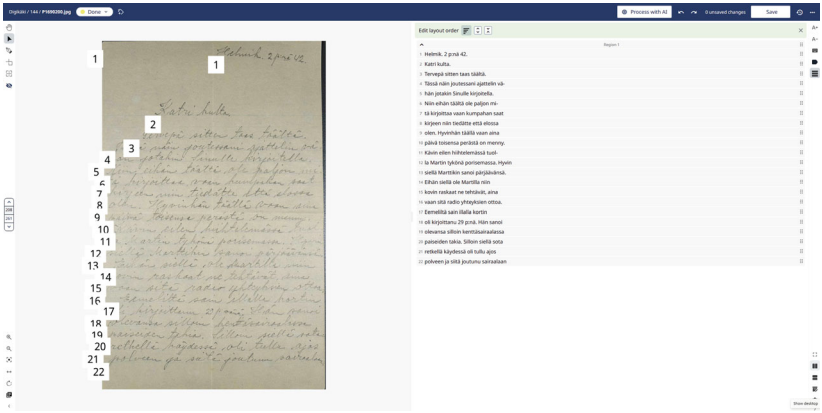

Fig. 8.1 The browser-based Transkribus platform can automatically recognise text from handwritten documents like personal letters. *Photo* Ilari Taskinen. Tampere University Culture and Research Archive, Wartime letter collection. https://www.transkribus.org

[44] Keijzer & van Lange 2025. Wartime letters have also been digitised and studied in the project "Digital History and Handwritten Sources" (Digikäki) at Tampere University, Finland. See Taskinen et al. 2022.

expressions containing personal evaluations and appraisals from those that state objective facts.[45]

Emotion mining is the automatic analysis of emotions in a text. In its most basic form, this means labelling whether a text has a positive or a negative sentiment. In recent years, the approach has developed more complex forms, such as the detection of individual emotions, like anger and sadness, and the intensity of their expression. A simple way to conduct emotion mining is using an emotion lexicon. These lexicons have been produced in several projects and can contain thousands of words, which have been given an emotion label and other qualities, such as an intensity rating. These classifications are typically based on psychological theories of basic emotions, such as those of Paul Ekman and Robert Plutchik.[46]

Text mining historical experiences offers intriguing opportunities for the history of experience in the coming years with the ever-increasing amounts of digitised historical data becoming available. They make it possible to quantify phenomena that have previously been possible to analyse only qualitatively, opening opportunities for more elaborate and accurate analyses and totally new research set-ups. At the same time, it is evident that historians of experience need to adjust text mining methodologies to the core principles of their discipline. One problematic issue of using large textual datasets can be the opacity of data. This concerns particularly massive datasets, like Google books, which contains millions of books about which scholars only have superficial knowledge. It is highly problematic to make far-reaching interpretations from data one does not know, as was done in a study that claimed to reveal the history of subjective well-being in the past two centuries using a universal emotion lexicon and Google books.[47] The danger in these analyses is that observed phenomena are not based on changes in people's behaviour but on changes in the underlying, invisible data. Rob Boddice, a leading scholar of the history of experience and emotions, was so dismayed by this study that he declared that the study of historical emotions is "inherently qualitative work".[48]

[45] Yadollahi et al. 2017; Liu 2020.

[46] Mohammad & Turney 2013; Chen & Skiena 2014; Öhman 2021.

[47] Hills et al. 2019.

[48] Boddice 2020.

Boddice is right in emphasising that contextual knowledge is a vital part of the historical analysis of experiences. However, to us this does not exclude the utilisation of quantitative methods. The challenges of data are much smaller when historians have participated themselves in the digitisation of their data.[49] Historians also need to approach text mining methodologies with historical sensitivity. Much of the research on digital humanities has been conducted by scholars from other fields, and they often approach their analyses without considering historically changing notions in their data. This is seen, for example, in the straightforward adoption of psychological theories of basic emotions to all historical and cultural contexts, which of course contradicts the core principles under scrutiny in historical analysis of emotions—their timely and contextual nature.[50] When text mining emotions from historical material, the historian is wise to adjust emotion lexicons and models with contextual knowledge on the linguistic and cultural expressions of the era in question.[51] When text mining is utilised reasonably, historians utilise them in a way that is based on their vast previous expertise on the topic under scrutiny.

The issue is also the interpretative framework—what kind of conclusions and connections are made from analyses. For conceptual historians, working on the level of texts and discourse is sufficient. For historians of experience, more attention needs to be paid to the world outside the text. If one wishes to make claims about the ways individual people experienced their lives, they need to ponder how a text informs, reflects, and creates the understandings, meanings, and ideals that constituted the lived reality of people. This might require in the end also traditional hands-on analysis, but before this, quantitative text mining can be a beneficial starting point. Its prospect is that it can help the historian to uncover great patterns from vast amounts of data that are not easily discernible through close reading.

[49] See, e.g. Taskinen et al. 2022.

[50] Turunen & Taskinen 2024.

[51] Turunen et al. 2022.

Conclusion

The connection between individuals and structures—be they social, cultural, or institutional—is the most important reason for the historian of experience to turn to quantitative data. When analysing the lived reality of individuals, considering their surroundings is vital. This contextualisation is the bread and butter of the historian's work and is often done through secondary literature. However, the historian is often interested in phenomena where a clear picture is missing. In these cases, the historian can turn to original statistics or produce them themselves.

Using quantitative data or methods does not mean abandoning qualitative sources or traditional close reading methods. The study of historical experiences is conducted best when both the big picture of structures and their individual interpretations are taken into account. Official statistics are prime mediums for building the social and cultural frames—the structures of experience—in which people navigate their lives, and the progressive gathering of detailed life course and autobiographical data is also making the quantitative examination of people's specific life events possible. To derive valuable insights on historical experiences, relying solely on quantitative data is, however, rarely enough. Unlike demographic researchers and scholars of other purely quantitative disciplines, historians of experience need to produce more than just evidence of a causal connection between a few factors from numbers. They need to explain how historical contexts influenced the ways people conducted and interpreted their lives. This usually requires historians to also examine their cases closely with textual sources after the initial inspection of quantitative data.

Quantitative data do not force historians of experience to abandon the best practices of their own field. Many doubts about quantitative data probably arise from examples of their usage in other disciplines where the research aims are different. In demographic history, the goal of a study can be to prove a simple causal relationship between two factors, while an information scientist working with historical text data may only wish to demonstrate a novel way to classify data. Historians do not need to follow their research set-up. Even if historians use similar data, they do not need to adopt others' methodology. They can ask questions of the sources arising from the interests of their own field. The scholar, not the data, dictates the research. Justin Grimmer, Margaret Roberts, and Brandon Stewart discuss this topic well in their book on the usage of

machine learning in the social sciences. They remind us that the goals of digital humanists and social scientists are different. Digital humanists' interest is typically limited to making inferences about a text that is being studied, rather than using a text to make claims about other larger processes. Social scientists, as well as scholars in the humanities, on the other hand, use texts precisely to make these bigger claims, which makes importing practices from one field to another suboptimal. The writers wisely stress that "text as data methods should not displace the careful and thoughtful humanist".[52] Historians of experience should follow this advice and utilise quantitative data and methods, critically following the principles of their field.

Acknowledgements The writing of the article was supported by the Research Council of Finland's Centre of Excellence in the History of Experiences (HEX) and the Research Council of Finland's research project "Unequal War: Vulnerability, Stress, and Survival in the Finnish Army during World War II" (356618).

Sources and Bibliography

Statistical Sources

Official Statistics of Finland (OSF) VI. Population statistics.

Literature

Alter, George, Kees Mandemakers, and Hélène Vézina. 'Introduction: Content, Design and Structure of Major Databases with Historical Longitudinal Population Data'. *Historical Life Course Studies* 13 (2023): 228–34. https://doi.org/10.51964/hlcs15759.

Anderson, Michael. *Approaches to the History of the Western Family, 1500–1914*. Cambridge University Press, 1980.

Annola, Johanna, Hanna Lindberg, and Pirjo Markkola, eds. *Lived Institutions as History of Experience*. Palgrave Macmillan, 2023. https://doi.org/10.1007/978-3-031-38956-6.

Baker, Paul. *Using Corpora in Discourse Analysis*. Continuum, 2006.

[52] Grimmer et al. 2022, 8–9.

Bertaux, Daniel, ed. *Biography and Society. The Life History Approach in the Social Sciences*. Sage Publications, 1981.

Boddice, Rob. 'The Happy Emotions Are Not Necessarily What They Appear'. *Aeon*, January 1, 2020.

Boddice, Rob, and Mark Smith. *Emotion, Sense, Experience*. Cambridge University Press, 2020. https://doi.org/10.1017/9781108884952.

Caine, Barbara. *Biography and History*. Palgrave Macmillan, 2010.

Chen, Yanqing, and Steven Skiena. 'Building Sentiment Lexicons for All Major Languages'. In *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (Volume 2: Short Papers)*. Association for Computational Linguistics, 2014.

Costa, Dora L., and Matthew E. Kahn. *Heroes and Cowards: The Social Face of War*. Princeton University Press, 2008.

Crymble, Adam. *Technology and the Historian. Transformations in the Digital Age*. University of Illinois Press, 2021. https://doi.org/10.5622/illinois/9780252043710.001.0001.

deMause, Lloyd. *The History of Childhood*. Psychohistory Press, 1974.

Edvinsson, Sören, Kees Mandemakers, and Ken R. Smith. 'Introduction: Major Databases with Historical Longitudinal Population Data: Development, Impact and Results'. *Historical Life Course Studies* 13 (2023): 186–190. https://doi.org/10.51964/hlcs14840.

Elder, Glen H. Jr. *The Children of the Great Depression. Social Change in Life Experience*. The University of Chicago Press, 1974.

Elder, Glen H., Jr., and Janet Z. Giele, eds. *The Craft of Life Course Research*. Guilford Publications, 2009. ProQuest Ebook Central, https://ebookcentral.proquest.com/lib/tampere/detail.action?docID=460406.

Fridlund, Mats, Mila Oiva, and Petri Paju, eds. *Digital Histories. Emergent Approaches within the New Digital History*. Helsinki University Press, 2020. https://doi.org/10.33134/HUP-5.

Grimmer, Justin, Margaret E. Roberts, and Brandon M. Stewart. *Text as Data: A New Framework for Machine Learning and the Social Sciences*. Princeton University Press, 2022.

Haapala, Pertti. *Tehtaan valossa. Teollistuminen ja työväestön muodostuminen Tampereella 1820–1920*. Vastapaino, 1986.

Haapala, Pertti. *Kun yhteiskunta hajosi. Suomi 1914–1920*. Edita, 1995.

Haapala, Pertti, and Jarmo Peltola. 'Elinkeinorakenne 1750–2000'. In *Suomen rakennehistoria. Näkökulmia muutokseen ja jatkuvuuteen (1400–2000)*, edited by Pertti Haapala. Vastapaino, 2018.

Haapala, Pertti, Minna Harjula, and Heikki Kokko, eds. *Experiencing Society and the Lived Welfare State*. Palgrave Macmillan, 2023. https://doi.org/10.1007/978-3-031-21663-3.

Hanawalt, B. A. *The Ties that Bound. Peasant Families in Medieval England*. Oxford University Press, 1986.

Handbook on Management and Organization of National Statistical Systems. 4th Edition. United Nations: Department of Economic and Social Affairs. https://unstats.un.org/capacity-development/handbook/index.cshtml. Accessed 30 September 2024.

Hills, Thomas T., Eugenio Proto, Daniel Sgroi, and Chanuki Illushka Seresinhe. 'Historical Analysis of National Subjective Wellbeing Using Millions of Digitized Books'. *Nature Human Behavior* 3 (2019): 1271–1275. https://doi.org/10.1038/s41562-019-0750-z.

Hoegaerts, Josephine, and Stephanie Olsen. 'The History of Experience: Afterword'. In *Lived Nation as the History of Experiences and Emotions in Finland, 1800 –2000*, edited by Ville Kivimäki, Sami Suodenjoki and Tanja Vahtikari. Palgrave Macmillan, 2021. https://doi.org/10.1007/978-3-030-69882-9_15.

Katajala-Peltomaa, Sari, and Raisa Maria Toivo. 'Introduction: Religion as Historical Experience'. In *Histories of Experience in the World of Lived Religion*, edited by Sari Katajala-Peltomaa and Raisa Maria Toivo. Palgrave Macmillan, 2022. https://doi.org/10.1007/978-3-030-92140-8_1.

Keijzer, Carlijn, and Milan van Lange. 'Dutch War Letters (1935–1950) to Digital Data'. *Journal of Open Humanities Data* 11, no. 17 (2025): 1–6. https://doi.org/10.5334/johd.259.

Kettunen, Pauli, and Klaus Petersen. 'Introduction: rethinking welfare state models'. In *Beyond Welfare State Models. Transnational Historical Perspectives on Social Policy*, edited by Pauli Kettunen and Klaus Petersen. Edvard Elgar, 2011.

Kettunen, Pauli. 'The Power of International Comparison – A Perspective on the Making and Challenging the Nordic Welfare State'. In *The Nordic Model of Welfare. A Historical Reappraisal*, edited by Niels Finn Christiansen, Klaus Petersen, Nils Edling and Per Haave. Museum Tusculanum Press, 2006.

Kinnunen, Merja. *Luokiteltu sukupuoli*. Vastapaino, 2001.

Kivimäki, Ville, Sami Suodenjoki, and Tanja Vahtikari, eds. *Lived Nation as the History of Experiences and Emotions in Finland, 1800 –2000*. Palgrave Macmillan, 2021. https://doi.org/10.1007/978-3-030-69882-9.

Kivimäki, Ville, and Tuomas Tepora. 'War of Hearts: Love and Collective Attachment as Integrating Factors in Finland during World War II'. *Journal of Social History* 43 no. 2 (2009): 285–305.

Kivimäki, Ville. *Battled Nerves. Finnish Soldiers' War Experience, Trauma, and Military Psychiatry, 1941–44*. PhD dissertation, Åbo Akademi University, 2013.

Kivimäki Ville, Virva Liski, and Ilari Taskinen. 'Predisposed vulnerabilities and survival among the Finnish soldiers of World War II: historical life course

approach'. *Front. Sociol.* 9 (2025): 1495009. https://doi.org/10.3389/fsoc.2024.1495009.

Kok, Jan. 'Principles and Prospects of the Life Course Paradigm'. *Annales de Démographie Historique* 113, no. 1 (2007): 203–30.

Koselleck, Reinhart. *Futures Past. On the Semantics of Historical Time*. The MIT Press, 1985.

Krötzl, Christian. 'Parent-Child Relations in Medieval Scandinavia According to Scandinavian Miracle Collections'. *Scandinavian Journal of History* 14 (1989), 21–37.

Laslett, Peter. *Household and Family in Past Time*. Cambridge University Press, 1974.

Liu, Bing. *Sentiment Analysis. Mining Opinions, Sentiments, and Emotions*. Second Edition. Cambridge University Press, 2020. https://doi.org/10.1017/CBO9781139084789.

Luther, Georg. *Suomen tilastotoimen historia vuoteen 1970*. Tilastokeskus, 1993.

Marjanen, Jani. 'National Sentiment: Nation Building and Emotional Language in Nineteenth-Century Finland'. In *Lived Nation as the History of Experiences and Emotions in Finland, 1800 –2000*, edited by Ville Kivimäki, Sami Suodenjoki and Tanja Vahtikari. Palgrave Macmillan, 2021. https://doi.org/10.1007/978-3-030-69882-9_3.

Markkola, Pirjo, and Ann-Catrin Östman. 'Ei vain ahkeruudesta: naiset, työ ja tasa-arvo'. In *Nälkämaasta hyvinvointivaltioksi. Suomi kehityksen kiinniottajana*, edited by Juhani Koponen and Sakari Saaritsa. Gaudeamus, 2019.

Markkola, Pirjo. *Työläiskodin synty. Tamperelaiset työläisperheet ja yhteiskunnallinen kysymys 1870-luvlta 1910-luvulle*. Suomen Historiallinen Seura, 1994.

Markkola, Pirjo. 'Työläislapsen matka maailmaan'. In *Lapsi matkalla maailmaan. Historiallisia ja kulttuurisia näkökulmia syntymään*, edited by Pasi Saarimäki, Kirsi-Maria Hytönen and Heli Niskanen. SKS, 2012.

Markkola, Pirjo. 'Working-Class Women Living Religion in Finland at the Turn of the Twentieth Century'. In *Histories of Experience in the World of Lived Religion*, edited by Sari Katajala-Peltomaa and Raisa Maria Toivo. Palgrave Macmillan, 2022. https://doi.org/10.1007/978-3-030-92140-8_9.

Mikkonen, Heikki. 'Ikäännyttiinpä ennenkin. Erittäin vanhaksi eläneiden tilastointi Suomessa Taulustolaitoksen perustamisesta ensimmäiseen väestölaskentaan'. *Historiallinen Aikakauskirja* 123, no.1 (2025): 4–16.

Mohammad, Saif, and Peter Turney. 'Crowdsourcing a Word-Emotion Association Lexicon'. *Computational Intelligence* 29, no. 3 (2013): 436–65.

Moretti, Franco. *Distant Reading*. Verso, 2013.

Muuttoliikkeiden ja sosiaalisen kehityksen väliset yhteydet Suomen teollistumisen alusta maan itsenäistymiseen. Suomen Akatemian tutkimusprojektin numero 29 loppuraportti I. Department of History, University of Turku, 1982.

Navickas, Katrina. 'A return to materialism? Putting social history back into place'. In *New Directions in Social and Cultural History*, edited by Sasha Handley, Rohan McWilliam and Lucy Noakes. Bloomsbury, 2018. https://doi.org/10.5040/9781474204835.ch-004.

Nieminen, Mauri. *Väestötilastoja 250 vuotta. Katsaus väestötilaston historiaan vuosina 1749–1999*. Tilastokeskus, 1999.

Nockels, Joe, Paul Gooding, Sarah Ames, and Melissa Terras. 'Understanding the Application of Handwritten Text Recognition Technology in Heritage Contexts: A Systematic Review of Transkribus in Published Research'. *Archival Science* 22, no. 3 (2022): 367–92. https://doi.org/10.1007/s10502-022-09397-0.

Öhman, Emily S. *The Language of Emotions: Building and Applying Resources for Computational Approaches to Emotion Detection for English and Beyond*. PhD Thesis, University of Helsinki, 2021.

Pitkänen, Kari. 'Viime vuosisadan vaihteen väestötilasto ja suomalaisten miesten kuolleisuus'. *Sosiaalilääketieteellinen Aikakauslehti* 23 (1986): 375–382.

Porter, Theodore M. *The Rise of Statistical Thinking 1820–1900*. Princeton University Press, 1986.

Rasila, Viljo. *Teollistumiskauden muuttoliikkeet. Mikrohistoriallinen tutkimus Tampereen seudulta*. Tampereen yliopisto, 1983.

Reher, David, and Glenn Sandström. 'Dimensions of Rational Decision-Making during the Demographic Transition; Aranjuez (Spain) Revisited'. *Historical Life Course Studies* 2 (2015): 20–36. https://doi.org/10.51964/hlcs9356.

Roper, Michael. *Secret Battle. Emotional Survival in the Great War*. Manchester University Press, 2009.

Ruggles, Steven. 'Big Microdata for Population Research'. *Demography* 51, no. 1 (2014): 287–97. https://doi.org/10.1007/s13524-013-0240-2.

Salmi, Hannu. *What Is Digital History?* Polity Press, 2020.

Scott, Joan. 'The Evidence of Experience'. *Critical Inquiry* 17 (1991): 773–797.

Tala, Yrjö. *Kirkon vai valtion kirjat? Uskontokuntasidonnaisuuden ongelma Suomen väestökirjanpidossa 1839–1904*. Helsingin Yliopisto, 2008.

Taskinen, Ilari, Risto Turunen, Lauri Uusitalo, and Ville Kivimäki. 'Religion, Patriotism and War Experience in Digitized Wartime Letters in Finland, 1939–44'. *Journal of Contemporary History* 57, no. 3 (2022): 577–96. https://doi.org/10.1177/00220094211066006.

Taskinen, Ilari. 'Construction of the Finnish Army in World War II Database'. *Historical Life Course Studies* 13 (2023): 44–60. https://doi.org/10.51964/hlcs13565.

Teo, Hsu-Ming. 'Love Writes: Gender and Romantic Love in Australian Love Letters, 1860–1960'. *Australian Feminist Studies* 20, no. 48 (2005): 343–361.

Tilasto-opas 1978. Tilastokeskus, 1978.

Turunen, Risto, and Ilari Taskinen. 'Mining Historical Emotions'. In *Digital Handbook of the History of Experience*. Tampere University, 2024. https://doi.org/10.58077/55bz-wj46.

Turunen, Risto, Ilari Taskinen, Lauri Uusitalo, and Ville Kivimäki. 'Mining Emotions from the Finnish War Letter Collection, 1939–1944'. *Digital Humanities in the Nordic and Baltic Countries Publications*, 2022.

Turunen, Risto. *Shades of Red. Evolution of the Political Language of Finnish Socialism from the 19th Century until the Civil War of 1918*. Työväen historian ja perinteen tutkimuksen seura, 2021.

van der Zande, Johan. 'Statistik and History in the German Enlightenment'. *Journal of the History of Ideas* 71, no. 3 (2010): 411–432.

Wilke, Jürgen. 'From parish register to the "historical table": The Prussian population statistics in the 17th and 18th centuries'. *History of the Family* 9 (2004), 63–79.

Yadollahi, Ali, Ameneh Gholipour Shahraki, and Osmar R. Zaiane. 'Current State of Text Sentiment Analysis from Opinion to Emotion Mining'. *ACM Computing Surveys* 50, no. 2 (2017): 1–33. https://doi.org/10.1145/3057270.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits any noncommercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if you modified the licensed material. You do not have permission under this license to share adapted material derived from this chapter or parts of it.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.