

Štěpán Jurajda and Tomáš Jelínek

Statistical Analyses of Theresienstadt Prisoners

Examples and Future Possibilities¹

Abstract

This article uses a near-complete database of prisoners in the Theresienstadt Ghetto to provide statistical comparisons of death risks according to country of residence and gender, conditional on age, social status proxies, and the timing of the prisoners' arrival in the ghetto. We also estimate conditional Holocaust survival differences for Theresienstadt prisoners on transports to Auschwitz. Our aim is to complement the existing historical research on Theresienstadt and to illustrate the possibilities of statistical analysis of the Holocaust in the present-day Czech Republic. To this end, we also discuss other available data.

Introduction

The statistical study of historical data provides a natural complement to traditional historical analysis based on qualitative research and on the descriptive use of quantitative information. At their best, statistical models adopted from the social sciences and applied to individual-level historical databases can measure the causal effects of policies or of individual characteristics on outcomes, such as survival of the Holocaust. At a minimum, there is a broad scope for multivariate conditional comparisons to help illuminate and assess historical narratives.

The possibility of enriching existing knowledge by using statistical modelling is relevant for the large body of literature examining the Holocaust.² First, the use of quantitative (often perpetrator-generated) data in the literature is typically limited to aggregate and univariate descriptions, while multivariate comparisons can be tailored to test historical narratives. Second, where research relies primarily on survivor testimonies, it is not possible to interpret these as applicable to victim popula-

1 This research has been supported by a grant from the Czech Science Foundation (GAČR, no. 19-05523S). The authors would like to thank Michal Frankl, Tomáš Fedorovič, Benjamin Frommer, Tatjana Lichtenstein, and Anna Hájková for their comments, Tereza Štěpková and Aneta Plzáková for their support and assistance, Alena Jindrová for sharing the data on prisoners at the Lipa camp, Jana Vobecká for sharing the demographic data on Czech Jews, and the Theresienstadt Initiative Institute for providing access to its database.

Address: CERGE-EI, a joint workplace of Charles University and the Economics Institute of the Czech Academy of Sciences, Politických vězňů 7, 111 21 Prague, Czech Republic. MVSO, Moravian Business College Olomouc, tř. Kosmonautů 1288/1, 779 00 Olomouc, Czech Republic.

2 Elmer Luchterhand, Prisoner Behavior and Social System in the Nazi Concentration Camps, in: *International Journal of Social Psychiatry*, 13 (1967) 4, 245-264; Joel E. Dimsdale, The Coping Behavior of Nazi Concentration Camp Survivors, in: *American Journal of Psychiatry* 131 (1974) 7, 792-797; Sofsky Wolfgang, *The Order of Terror. The Concentration Camp*, Princeton 1999.

tions,³ but statistical methods can help deal with survival biases. Third, to the extent that diaries, letters, and other accounts are available from those who did not survive the Holocaust, these rarely provide systematic coverage, so that statistical data may again help underpin the generalisability of such accounts.

In this paper, we provide two simple illustrations of the use of multivariate statistical analysis to complement the historical literature devoted to the Theresienstadt Ghetto.⁴ Theresienstadt (Terezín) was a transit ghetto established by the SS during the Second World War in the garrison city of the same name in German-occupied Czechoslovakia. Below, we examine the survival chances faced by the almost 140,000 prisoners of the ghetto. Our analysis is based on the near-complete database of individual persecution histories (including the ultimate Holocaust survival indicator) of the Theresienstadt prisoners. Over 33,000 of them died in the ghetto, almost all of whom were elderly, while over 88,000 were sent from Theresienstadt mainly to extermination camps in occupied Poland. The survival rates of those on transports to the East grew towards the end of the war from near-zero levels prevailing in 1942/1943. The survival chances of Theresienstadt prisoners was thus based on 1) avoiding death through starvation and disease in the ghetto, 2) avoiding or at least postponing deportation out of the ghetto, and, for those on transports to the East, on 3) attempting to survive incarceration in labour or extermination camps.

This article analyses the death rates associated with strategies 1) and 3) and relates them to the observable characteristics of the prisoners. We refer to death rates conditional on several prisoner characteristics and contextual variables as death risks. While analysing these death risks, we statistically assess some of the historical narratives presented in the literature on Theresienstadt.⁵ By analysing a specific setting of the Holocaust from the territory of the present-day Czech Republic, we extend the growing body of statistical and econometric research based on individual-level data from the Holocaust, which presently covers mostly Western European countries.⁶ We will conclude by discussing data sources available in the Czech Republic and future potential statistical research of the Holocaust that could be conducted in this context.

3 See e.g.: Michael Pollak, *L'expérience concentrationnaire. Essai sur le Maintien de l'identité sociale* [The Concentration Camp Experience. Essay on Maintaining Social Identity], Paris 1990. For example, the small minority of surviving prisoners of a concentration camp may highlight in their post-war testimonies the importance of a particular strategy or practice that helped them survive. However, it may be that the majority of prisoners who did not survive incarceration made use of the same practice, which therefore in fact had little effect on the chances of survival.

4 See e.g.: Hans Günther Adler/Jeremy Adler, *Theresienstadt 1941–1945. The Face of a Coerced Community*, Cambridge 2017; Miroslav Kárný, *Terezínská zpráva Otto Zukera* [The Theresienstadt Report of Otto Zuker], in: *Terezínské studie a dokumenty*, Prague 2000, 97–102; Karel Lagus/Josef Polák, *Město za mřížemi* [City behind Bars], Prague 2006.

5 We are not the first to use administrative data from Theresienstadt or to present survival comparisons. See e.g.: Tomáš Fedorovič, *Židovské evidenční karty. Opomíjený pramen k historii perzekuce židovského obyvatelstva* [Jewish Record Cards. A Neglected Source on the History of the Persecution of the Jewish Population], in: *Terezínské listy* 36, Prague 2008, 140–162; Anna Hájková, *Poor Devils of the Camps. Dutch Jews in the Terezín Ghetto, 1943–1945*, in: *Yad Vashem Studies* 43 (2015) 1, 77–111. We do appear, however, to be the first to use a multivariate statistical analysis on the complete database of prisoners.

6 Two simple analyses are closely related to ours: Andreas Kranebitter, *Zahlen als Zeugen. Soziologische Analysen zur Häftlingsgesellschaft des KZ Mauthausen*, in: *Mauthausen-Studien*, Vol. 9, Vienna 2014; Peter Tammes, *Surviving the Holocaust. Socio-Demographic Differences among Amsterdam Jews*, in: *European Journal of Population* 33 (2017) 3, 293–318. Kranebitter relied on data from the Mauthausen concentration camp to quantify how survival depended on the prisoners' nationality and reason for imprisonment. Tammes measured the socio-demographic differences in the survival of Amsterdam Jews during the Holocaust. For a general discussion of applying social science identification strategies to historical data, see: Davide Cantoni/Noam Yuchtman, *Historical Natural Experiments. Bridging Economics and Economic History*, in: NBER Working Paper, No. 26754, 2020.

The Theresienstadt Ghetto and the Data

The ghetto in the garrison city (Great Fortress) of Theresienstadt was established in November 1941 as a concentration and transit camp⁷ for Czech Jews who had been deported from their homes in the Protectorate of Bohemia and Moravia. From June 1942, the SS also started sending mainly elderly Jews from Germany and Austria to the ghetto. Czechs, Germans, and Austrians were the largest country-of-residence groups in the ghetto, but there were also small groups of Dutch, Danish, Slovak, Hungarian, and Polish prisoners arriving from April 1943. The ghetto was run by its SS headquarters, but Adolf Eichmann's department in the Reich Security Main Office in Berlin was responsible for setting up the demographic categories for selection on all transports out of Theresienstadt. The ghetto also had its self-administration, represented by an Elder of the Jews (*Judenältester*) and a Council of Elders (*Judenrat*). The self-administration implemented directives of the SS, but it could carry out its own agenda within the constraints outlined by the SS and, as a result, was able to lower the death rate in the ghetto.⁸ Unlike other ghettos such as the one in Łódź, Theresienstadt was not primarily a labour ghetto, as almost all of the labour conducted in Theresienstadt served to maintain the town's infrastructure.⁹ The individual-level data we used in this paper correspond to the database of Theresienstadt prisoners compiled by the Terezín Initiative Institute (TII), a non-profit organisation founded by an international association of surviving prisoners of the ghetto. The database was created from records kept by the Nazi administration, primarily transport lists and lists of the deceased in the camp, as well as lists of those who survived in the ghetto. The TII extended these records by coding a Holocaust survival indicator and various other life history indicators for almost all the victims. The data covers the names, gender, age, academic titles,¹⁰ and 'prominent' status of prisoners.¹¹ Unlike German and Austrian prisoners, Czech (and Dutch) prisoners typically arrived in family units and so it is important that the data allows us to approximate family linkages.¹² The data also covers information on the arrival in and deportation from Theresienstadt of each prisoner, including their transport numbers as well as their pre-deportation country of residence, based approximated on the city of deportation. (We therefore do not have direct information on citizenship or nationality.) The data also includes information on the date of death of those prisoners who died in Theresienstadt. We compared the monthly transports into Theresienstadt in the TII

7 Theresienstadt shares some features with other Nazi ghettos (such as its 'self-administration' under Nazi control) as well as with other Nazi concentration camps. See: Peter Klein, *Terezín. Ghetto, nebo koncentrační tábor? [Theresienstadt. A Ghetto or a Concentration Camp?]*, in: *Terezínské studie a dokumenty*, Prague 2005, 100-111. We here use the terms interchangeably as this issue is outside of the scope of our analysis.

8 Kárný, *Terezínská zpráva*. Finkel also discussed how Judenräte in ghettos generally tried to help the communities they led. Evgeny Finkel, *Ordinary Jews*, Princeton 2017, 70.

9 Miroslav Kárný, 'Pracovní' či 'zaopatřovací' Terezín? Iluze a reality tzv. produktivního ghetta ['Labour' or 'Supplying' Theresienstadt? Illusions and Realities of the So-Called Productive Ghetto.], in: *Litomeřicko 25 (1989)*, 95-107.

10 The prisoners of the ghetto were typically middle-class urban Jews. Although the ghetto's infrastructure was built and maintained by the prisoners themselves, there was a relative shortage of crafts and an abundance of white-collar prisoners. In total, three per cent of the prisoners in Theresienstadt held an academic title. There were about 1,000 engineers, 1,000 doctors of medicine, 400 lawyers, and 46 professors. The rest of the 5,000 prisoners with an academic title held the generic "Dr" title in the data.

11 The TII data identifies 223 prisoners (mainly scientists and politicians) who were given the status of 'prominent' prisoners, lived under better conditions, and were generally protected from transports.

12 Family members typically came on the same transport, where they were assigned consecutive transport IDs. Having identified as members of the same family those sharing the same surname and holding consecutive transport numbers, we estimated that 82,000 prisoners arrived with family members, making up about 28,000 (mostly Czech) families.

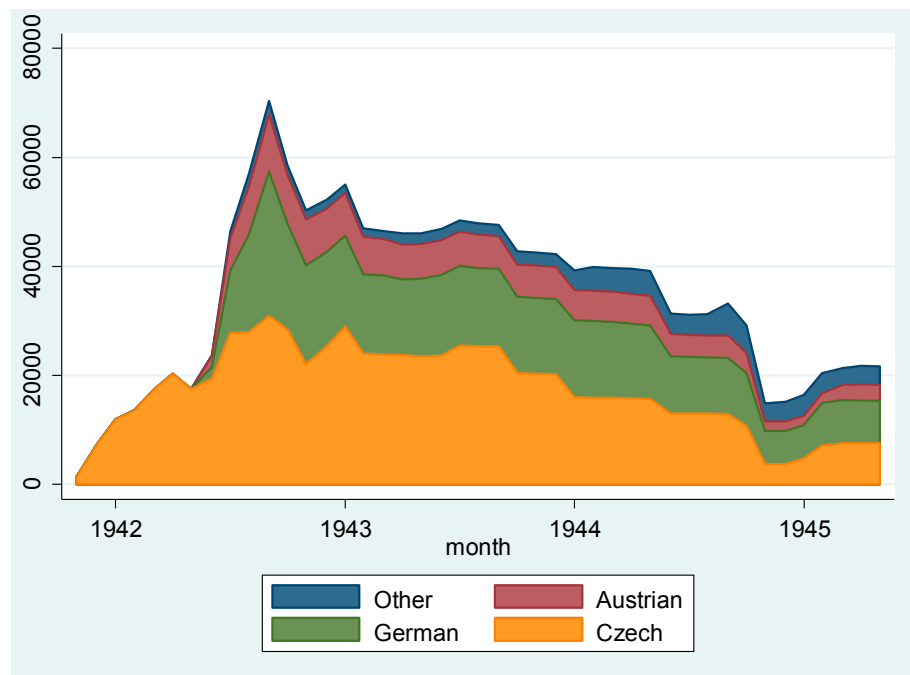


Figure 1: Theresienstadt Ghetto population by country of residence.

data to those reported by Lagus and Polák¹³ and they were nearly identical, confirming that the database indeed corresponds to historical records and covers essentially all prisoners arriving on organised transports.

The data allows us to show the evolution of the country-of-residence structure of the camp's population (Figure 1) and of the (monthly) death rates and deportation-from-Theresienstadt (i.e., out-transport) rates by country-of-residence groups (Figure 2). We denote as 'Czech' those prisoners who arrived on transports from cities located in today's Czech Republic; the same goes for 'German' and 'Austrian' prisoners. Based on the TII data, over half of the prisoners arrived on transports originating in Czech cities (25 per cent of all the prisoners arrived from Prague), 28 per cent came from Germany, and twelve per cent came from Austria. Monthly inflows into Theresienstadt grew from roughly 5,000 in the initial, mostly Czech-populated period to about 20,000 a month between June and September 1942, when most of the elderly and most of the German prisoners arrived. Subsequently, inflows dropped back down to about 5,000 a month and generally stayed below 2,000 after January 1943. The population peaked in September 1942, followed by a steady decline. Two large drops in the ghetto population, each amounting to about 20,000 prisoners, occurred from September to November 1942 and September to November 1944, due primarily to a series of large transports out of the ghetto. The 1944 drop occurred when the camp's population was at about half the 1942 size and thus exposed prisoners at that time to a higher (percentage) risk of being deported out of the ghetto. Figure 2 visualises these risks.

In Figure 2, both the monthly death rates and monthly deportation rates are expressed in terms of the total number of prisoners *at risk* of dying or being transferred to the east *in a given month*. There are dramatic spikes in the deportation risks that prisoners faced, with particularly high chances of being placed on a transport out of Theresienstadt in early and late 1942 as well as in late 1944. Monthly death rates

¹³ Lagus/Polák, *Město za mřížemi*.

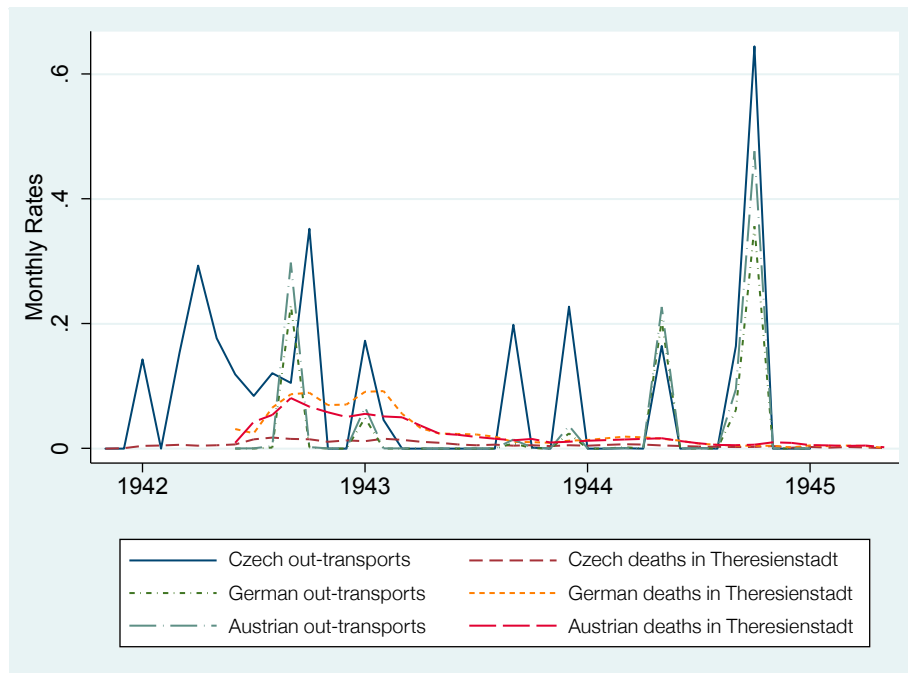


Figure 2: Death and out-of-Theresienstadt deportation rates by country of residence.

peaked in the second half of 1942 at about five per cent. The death rates were substantially higher for German and Austrian prisoners than for Czech prisoners during the most deadly period from late 1942 to early 1943. On the other hand, the deportation risks were much higher for Czechs during 1943. (This was also the case among prisoners aged over 65.) Czechs faced high deportation risks in 1942 in part because large portions of the more than thirty incoming transports originating in Czech cities were dispatched almost immediately (within a few days) onto out-going transports. For example, 73 per cent of prisoners arriving on the transport 'Ao' in April 1942 were put on a transport leaving Theresienstadt that same month. Overall, 28,000 Czech prisoners, but almost no German and no Austrian prisoners, faced chances above one-third that they would be assigned to an outgoing transport within a few days of arriving in Theresienstadt.

Czechs formed the majority of the camp's population until mid-1942 and represented close to half the camp's population until the end of 1943. However, they accounted for only a quarter of the population from the end of 1944. This decline was driven by the higher deportation rates for Czechs, of whom 82 per cent ended up on transports out of Theresienstadt, compared to less than half of the German and Austrian prisoners. On the other hand, about 40 per cent of German and Austrian prisoners died in the camp, compared to less than ten per cent of Czech prisoners. This is mainly due to the age structure of each group, but the historical literature hypothesised that Czech prisoners had a survival advantage due to power structures within the camp (Czechs being the majority) and to the variable availability of family support.¹⁴ We will return to this issue in the next section.

Theresienstadt was by far the most frequent initial imprisonment destination for Czech and Moravian Jews. One can assess the degree to which different demographic groups were deported to Theresienstadt by comparing the pre-war demographic

14 Anna Hájková, *Prisoner Society in the Theresienstadt Ghetto, 1941–1945*, Toronto 2013.

structure of Czech Jews to that of the Czech prisoners.¹⁵ When we compared the population structure of Czechs entering Theresienstadt to that of Czech Jewry in 1939 (based on the Nazi registry according to the Nuremberg Laws¹⁶), we found that about 60 per cent of both men and women under 18 who were in the registry entered Theresienstadt. The share was similar for women aged 18 to 44 and for men aged 45 to 59 and was lower (at below 50 per cent) for men aged 18 to 44. This might correspond to the ability of men in their prime age to avoid deportation to Theresienstadt by emigrating or escaping. By contrast, the share of registered Czech Jews entering the ghetto was over 70 per cent for women aged 45 to 59 and men over 60 and it was even higher for women over 60. Figure 3 shows these statistics.¹⁷

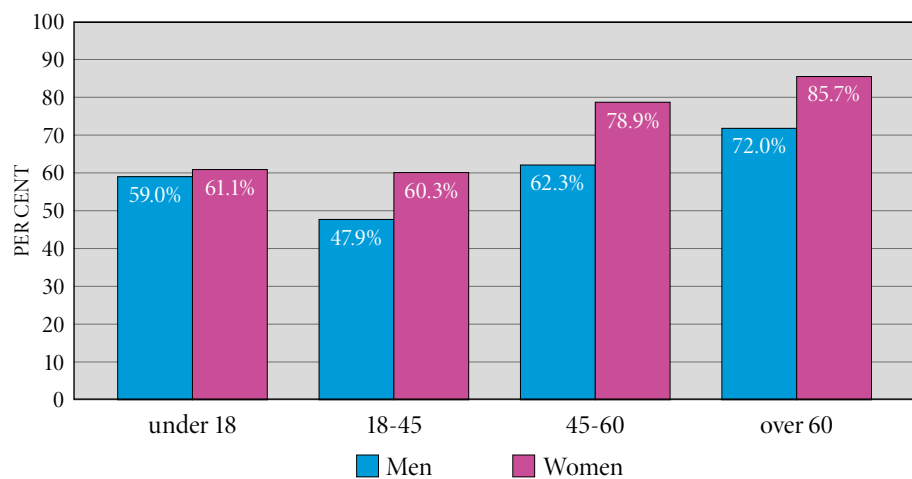


Figure 3: Share of the 1939 Czech Jewish population entering Theresienstadt.

Death Risks in Theresienstadt

Since 95 per cent of the prisoners who died in Theresienstadt were aged over 55, we focussed our analysis of death risks in the ghetto on this group of older prisoners. We studied differences in death rates across country of residence and gender whilst conditioning on the timing of the prisoners' arrival in Theresienstadt (by conditioning in our regression analysis on in-transport-month indicators). Prisoners arriving in the ghetto in different months faced different group-level survival conditions (related, for example, to the weather, epidemic situation or ghetto overpopulation) irrespective of their individual characteristics. Our analysis removed these group-level differences from the comparisons concerning gender and country of residence. For example, if survival conditions were better for prisoners of any type arriving in a

15 Mariot and Zalc performed a similar analysis for a cohort of 1,000 Jews from the Lens area in France. Nicolas Mariot/Claire Zalc, *Reconstructing Trajectories of Persecution*, in: Claire Zalc/Tal Bruttman (ed.), *Microhistories of the Holocaust*, New York 2017.

16 The data, which was compiled gradually, is available in *Věstník Židovské obce náboženské v Praze* [Newsletter of the Prague Jewish Religious Community], 9 (14 November 1947) 23, 330. See also: Miroslav Kárný, *Konečné řešení. Genocida českých židů v německé protektorátní politice* [Final Solution. The Genocide of Czech Jews in the Politics of the German Protectorate], Prague 1991.

17 We were able to conduct a similar comparison based on the 1930 census, albeit based only on population counts corresponding to Bohemia (thus not covering Moravia). We obtained a very similar pattern of results with the share of Jewish men at prime age entering Theresienstadt being the lowest out of all the compared demographic categories.

given month, and if the prisoners arriving in that month were disproportionately arriving from Czech cities, then our analysis would not assign higher probabilities of survival to prisoners deported from Czech cities because they happened to arrive in the ghetto at a relatively less dangerous moment. Our analysis compared the death risks faced by prisoners of different characteristics within groups defined by month of arrival in the ghetto. We measured death-risk differences corresponding to the inner functioning of the ghetto and thus removed the influence of external factors, such as the prisoners' time of arrival.

If two prisoners arrived in Theresienstadt on the same transport and one was shortly assigned to an outbound transport while the other was never assigned to an outbound transport, then the first prisoner faced a much lower exposure to the risk of dying in Theresienstadt. In order to avoid such variation in the at-risk exposure, we focused our death-in-Theresienstadt analysis on a specific group of prisoners who faced no outbound transport risks during an extended time period and we only studied their death rates during this period when they could not have been on transports. Specifically, prisoners arriving from February to August 1943 were at zero risk of being deported until September 1943 and so during this period they were only exposed to the risk of dying in Theresienstadt. There were 8,291 Czech, German, or Austrian prisoners arriving in Theresienstadt from February to August 1943, of whom 2,643 were 55 or older and none of whom left Theresienstadt on a transport before September 1943. Almost 18 per cent of these older prisoners died between February and August 1943. In Table 1 (see page 66), we used the statistical method of least squares to regress an indicator of their death between February and August 1943 on their characteristics whilst conditioning on the month in which they arrived, which accounts for their length of exposure to the risk of dying in the ghetto as well as for ghetto-wide living conditions upon arrival. The estimated regression equation simultaneously quantifies the explanatory power of several prisoner characteristics for their survival during this period.

Adler and Hájková argued that ethnicity of Theresienstadt prisoners was a key factor in the structure of the prisoner society as well as in the prisoners' strategy for adaptation to life in the ghetto.¹⁸ Furthermore, unconditional age-specific death rates were higher for Germans and Austrians than for Czechs.¹⁹ In Column 1 of Table 1, we find that older Austrian and German prisoners were not more likely to die in the ghetto from February to August 1943 than Czech prisoners, conditional on the timing of their arrival, their age, gender, and social status as captured by their academic titles and by their prominent-prisoner status.²⁰ Our simple analysis of a specific group of prisoners suggests that there were no country-of-residence-related differences in age-specific death rates during this seven-month period when the ghetto's self-administration was headed by Paul Eppstein from Germany (starting in January 1943), when average death rates were still high (Figure 2) and when overpopulation was still significant, with Theresienstadt holding under 50,000 prisoners (Figure 1). In future work, we plan to model the deportation and death risks simultaneously (by estimating a survival model and censoring the death hazard at the time of deportation) in order to cover the entire duration of the ghetto and to ask whether

18 Adler/Adler, Theresienstadt; Hájková, Prisoner Society; Hájková, Poor Devils.

19 See: Hájková, Prisoner Society.

20 The country-of-residence coefficients are not sensitive to alternatively controlling for age using a 3rd degree polynomial in age, to additionally controlling for the presence of family members, and to estimating the same specification using the Logit model.

country-of-residence gaps in death risks varied with the nationality²¹ of the head of the ghetto's self-administration.²²

The estimates presented in Column 1 of Table 1 further imply that prominent prisoners and engineers were less likely to die.²³ In Columns 2, 3, and 4 of Table 1 we re-estimated the same specification for the sub-set of Czech, German, and Austrian prisoners respectively, where we found similar coefficient estimates, suggesting a similar survival structure within country-of-residence groups. This is again in line with country of residence not playing a major role in determining death risks.²⁴

Death Risks of Theresienstadt Prisoners on Transports to Auschwitz

Next, we examined the death risks of the almost 45,000 Theresienstadt prisoners who were deported to Auschwitz (64 per cent of whom were Czech). The other most frequent destinations of transports from Theresienstadt were Treblinka and Maly Trostinec, with 18,000 and 5,000 prisoners respectively.²⁵ The group of prisoners on transports to Auschwitz is sufficiently large to allow for a precise measurement of the association between the personal characteristics of the prisoners and their survival of the Holocaust in an important setting. Furthermore, while the transport-wide probability of survival was below 0.3 per cent on all transports to Treblinka and Maly Trostinec, most of the transports to Auschwitz faced non-zero survival chances, which allows for an examination of whether prisoner characteristics were related to survival. There was in fact tremendous variation in the survival rates faced by Theresienstadt prisoners on transports to Auschwitz, with survival chances improving towards the end of the war. Of the 27 transports from Theresienstadt to Auschwitz, two small transports had zero survival rates (Dn/a and Dx) and five large transports had survival rates of under two per cent (Cq, Cr, Dl, Dm in 1943, and Ea in 1944), meaning that almost all prisoners deported on these transports perished. At the other extreme, three transports (Ds in 1943 and Ek and Em in 1944) had survival rates of about 20 per cent.

We studied the nearly 41,000 Czech, German, and Austrian prisoners on the 27 transports from Theresienstadt to Auschwitz (we thus omitted the small groups of

21 Unlike with most prisoners, where we can only ascertain their city of deportation, the nationalities of the heads of the self-administration are well known.

22 Hájková pointed out that women achieved some degree of representation only during the tenure of the third self-administration headed by Benjamin Murrelstein. See: Anna Hájková, Women as Citizens in the Theresienstadt Prisoner Community, in: Online Encyclopaedia of Mass Violence (27 June 2016), <https://www.sciencespo.fr/mass-violence-war-massacre-resistance/en/document/women-citizens-theresienstadt-prisoner-community.html> (20 October 2020). In future work, we plan to investigate whether this representation corresponded to any change in the gender gaps in transport and death risks (conditional on all other observed determinants of both risks).

23 The large negative coefficient for professors is based on only five cases and so should be interpreted with caution.

24 In related research, Frankl suggested that elderly Jews from Germany and Austria often died shortly after arrival. Michal Frankl, Österreichische Jüdinnen und Juden in der Theresienstädter Zwangsgemeinschaft. Statistik, Demographie, Schicksale, in: Theresienstädter Gedenkbuch, Prague 2005, 71-86. We partially confirm this pattern in our analysis: 14 per cent of deaths in Theresienstadt occurred within three weeks of arrival. Focussing on the 60,796 Czech, German, and Austrian prisoners aged over 55 as of 1941 who were not on outbound transports within three weeks of arrival, and conditioning on the month of their arrival as well as on all personal characteristics used in Table 1, we find a statistically significant two-per cent higher probability of dying in the ghetto within three weeks of arrival for prisoners arriving from Germany relative to comparable Czech prisoners, but no such gap for Austrian prisoners.

25 There were under 3,000 Theresienstadt prisoners on transports to other destinations.

Table 1: Death risks in Theresienstadt during February–August 1943 for prisoners aged over 55 arriving during February–August 1943 (who are at no risk of out-transports)

	(1)	(2)	(3)	(4)
Nationality	All	Czech	German	Austrian
Average death rate	0.18	0.12	0.17	0.3
German (relative to Czech)	-0.044 (0.031)			
Austrian (relative to Czech)	0.018 (0.047)			
Male (relative to female)	0.004 (0.018)	-0.014 (0.034)	0.014 (0.017)	-0.055 (0.081)
Age 60-69 (relative to 55-59)	0.050 (0.016)	0.025 (0.017)	0.053 (0.015)	0.062 (0.058)
Age over 70 (relative to 55-59)	0.269 (0.038)	0.315 (0.072)	0.252 (0.034)	0.299 (0.068)
Prominent prisoner status in Theresienstadt	-0.136 (0.034)	-0.039 (0.087)	-0.112 (0.034)	-0.074 (0.038)
Dr. title	0.051 (0.049)	0.120 (0.049)	0.026 (0.078)	0.014 (0.135)
Engineer (Ing.)	-0.134 (0.047)	-0.062 (0.042)	-0.069 (0.030)	-0.181 (0.103)
Doctor (MUDr.)	0.078 (0.014)	0.026 (0.166)	0.408 (0.298)	
Lawyer (JUDr.)	-0.033 (0.064)	-0.006 (0.065)	-0.009 (0.064)	
Professor (Prof.)	0.401 (0.183)	0.424 (0.328)	0.283 (0.298)	
N	2,643	492	1,875	276

Note: Standard errors in parentheses. Bolded coefficients are statistically significant at the five per cent level based on clustering at the in-transport level. All specifications control for month-of-arrival fixed effects. The table shows linear probability model coefficients, i.e., marginal effects. Probability derivatives (marginal effects) based on the Logit model and based on the GLM Binomial Complementary Log-Log model were almost identical.

Dutch and Polish prisoners).²⁶ Since we did not attempt to explain why specific transports to Auschwitz faced a relatively high or low death rate, we conditioned our regression analysis on transport indicators. In other words, we compared the individual probabilities of survival to the average probability of survival on a given transport. All of our conclusions are thus based on within-transport comparisons across individual prisoners, not on comparing prisoners across transports.

Table 2 (see page 68) investigates whether the survival chances of the 40,881 Czech, German, and Austrian prisoners on transports to Auschwitz can be predicted on the basis of their characteristics, conditional on the overall survival rates of their trans-

²⁶ Since individual characteristics could not have had any effect on survival when the entire transport perished, the results reported in Table 2 essentially correspond to regressions performed on the 19 transports with nearly 30,000 Czech, German, and Austrian prisoners, where the transport-level survival rate was at least two per cent. These results are available upon request.

ports. Compared to the Czech prisoners, German and Austrian prisoners were less likely to survive by a three to six-per cent difference, conditional on their age, gender, and other characteristics controlled for in the first column of Table 2.²⁷ This is a large effect considering the average survival chances of the entire group was about eight per cent. Prisoners aged 10 to 30 had survival chances about 20 per cent higher than prisoners aged under 10 (the comparison group) or over 50 (a group whose survival did not differ from that of the under 10 comparison group). The status of a prominent Theresienstadt prisoner was not associated with any difference in survival chances, similar to the status of holding an academic title, with the exception of medical doctors, who had about a four-per cent survival advantage over other prisoners.

In Column 2, we repeated the regression from Column 1 for the subset of Czech prisoners on these transports. The coefficients are similar to those estimated in Column 1.²⁸ The prominent prisoner status had a large positive survival effect here, but it is very imprecisely estimated. In Column 3, we re-estimated the same specification for the subset of 8,000 German prisoners in Theresienstadt who were deported on transports to Auschwitz and who overall faced a low survival probability of two per cent. We uncovered somewhat smaller survival gaps across age groups compared to Czech prisoners and a large, ten-per cent negative effect on survival of being a prominent Theresienstadt prisoners. There were no medical doctors in this group, but professors had a three-per cent survival advantage conditional on their age, gender, and transport.²⁹ Within the smaller group of Austrian prisoners, males faced a statistically significant survival disadvantage of about three per cent in Column 4. Age gaps in the survival rates were similar to those of the Czech prisoners, as was the effect of having a medical degree.

Overall, we found that German and Austrian prisoners were more likely to perish after entering Auschwitz. It is possible that they were generally in poorer health or that social linkages, which were less abundant for the smaller groups of German and Austrian prisoners compared to Czech prisoners, were important in determining survival. Future work can explore these hypotheses. We also found that gender was not a major determinant of survival for the Theresienstadt prisoners arriving in Auschwitz, while age was the main explanatory factor. Holding a medical degree was valuable in Auschwitz. In unreported specifications, we found the survival advantage associated with medical degrees to be stronger within transports that faced higher overall survival chances.

Discussion and Future Research Possibilities

In this study, we provided several new multivariate statistical comparisons to complement the existing historical work on the Theresienstadt Ghetto. We pointed out that the higher deportation risk faced by the Czech prisoners corresponded in significant measure to a higher risk of being deported within a few days of arrival in the ghetto. We contrasted the demographic structure of Czech Jewry with that of the

27 Hájková compared the survival rates of young male Czech, Dutch, and German prisoners in the autumn of 1944. See: Hájková, *Poor Devils*.

28 The survival advantage associated with medical degrees was twice as high, namely eight per cent for female Czech prisoners (a statistically significant point) compared to a four-per cent advantage for male Czech prisoners.

29 Testimonies from concentration camps suggest that prisoners treated older professors with deference. See: Maja Suderland, *Inside Concentration Camps*, Cambridge 2013.

Czech prisoners in the ghetto to highlight the lower probability of deportation to Theresienstadt for younger males. Based on age and the timing of arrival in the ghetto, we found no country-of-residence-related differences in death rates faced by a group of older prisoners during 1943. Gender appears to have been unrelated to survival both in Theresienstadt and Auschwitz, where holding a medical degree (MUDr.)

Table 2: Survival probability in Auschwitz of Theresienstadt prisoners

	(1)	(2)	(3)	(4)
Nationality	All	Czech	German	Austrian
Average survival rate	0.082	0.103	0.022	0.061
German (relative to Czech)	-0.062 (0.012)			
Austrian (relative to Czech)	-0.033 (0.0100)			
Male (relative to female)	-0.022 (0.013)	-0.026 (0.0160)	-0.005 (0.0070)	-0.0290 (0.0090)
Age 10-19 (relative to under 10)	0.238 (0.038)	0.246 (0.044)	0.165 (0.023)	0.289 (0.015)
Age 20-29 (relative to under 10)	0.209 (0.032)	0.220 (0.035)	0.126 (0.031)	0.216 (0.041)
Age 30-39 (relative to under 10)	0.110 (0.019)	0.123 (0.023)	0.052 (0.010)	0.065 (0.016)
Age 40-49 (relative to under 10)	0.040 (0.011)	0.051 (0.015)	0.012 (0.004)	-0.002 (0.012)
Age 50-59 (relative to under 10)	0.022 (0.011)	0.028 (0.015)	0.005 (0.005)	-0.027 (0.017)
Age 60-69 (relative to under 10)	-0.010 (0.016)	-0.011 (0.024)	-0.001 (0.005)	-0.039 (0.019)
Age over 70 (relative to under 10)	-0.035 (0.023)	-0.032 (0.031)	-0.003 (0.006)	-0.051 (0.024)
Prominent prisoner status in Theresienstadt	0.010 (0.086)	0.104 (0.136)	-0.103 (0.016)	-0.011 (0.012)
Dr. title	0.020 (0.022)	0.018 (0.031)	0.022 (0.018)	0.016 (0.019)
Engineer (Ing.)	-0.009 (0.016)	-0.012 (0.017)	-0.002 (0.006)	0.035 (0.023)
Doctor (MUDr.)	0.038 (0.013)	0.036 (0.014)		0.038 (0.007)
Lawyer (JUDr.)	0.046 (0.045)	0.044 (0.046)	-0.008 (0.008)	
Professor (Prof.)	-0.080 (0.064)	-0.075 (0.086)	0.032 (0.008)	-0.166 (0.076)
N	40,881	28,343	8,229	4,310

Note: Standard errors in parentheses. Bolded coefficients are statistically significant at the five per cent level based on clustering at the transport-to-Auschwitz level. All specifications control for transport fixed effects. The table shows linear probability model coefficients, i.e., marginal effects. Probability derivatives based on the Logit model and based on the GLM Binomial Complementary Log-Log model were almost identical.

entailed a significant survival advantage. In future work, we will study the death risks jointly with deportation risks using a duration statistical model that closely reflects the nature of the data.

This paper aimed to provide examples of the use of individual-level data from the Holocaust, using the case of the Theresienstadt Ghetto, for the purposes of statistical analysis. While there clearly is a solid foundation of descriptive statistical evidence in Czech Holocaust research,³⁰ the case for a more intensive use of Holocaust databases from the Czech Republic was recently made by Jelínek.³¹ We will conclude the paper by further discussing the rationale for statistical analyses of the Holocaust and by suggesting potential data sources to be employed in future analyses of the Holocaust in the Czech Republic.

Statistical analyses are helpful for historical research in two basic ways: First, one can in some cases use data to illuminate or assess historical narratives originating in testimonies. For example, one can provide quantitative evidence for the hypothesis that German prisoners were discriminated against in Theresienstadt, which caused their higher death rate. Similarly, one can statistically explore the conventional wisdom of many Holocaust survivors that survival was a matter of chance. If the data suggested systematic regularities in survival, or if survival turned out to be predictable based on characteristics available in databases, then such statistical understandings of the Holocaust, which were not available to any one victim, constitute potentially important evidence that complements individual experiences. Second, one can use data to uncover new, previously unrecognised patterns and relationships that can be further examined using standard tools of historical analysis. For example, one can enquire whether restitution of Jewish property after the war was easier for Jews who survived concentration camps than for those who returned from emigration.

Most statistical analyses presented in Czech Holocaust research constitute simple comparisons of means and other basic descriptive statistics. Yet the contemporary social sciences offer historians a rich set of statistical and econometric models that allow historians to inquire into the (potentially causal) relationships between characteristics of Holocaust victims and their outcomes, whilst controlling for several factors simultaneously. At a basic level, it is perhaps useful to stress that while statistical tendencies uncovered in data-driven research can always be 'contradicted' by a historian with a specific counterexample, this, in fact, may not imply a contradiction. In much social science research based on individual-level data, regression-type analyses uncover significant regularities, typical relationships in the data without explaining all of the outcome variation. When we inquire into the impact of particular factors observed in the data on survival, we are aware that there were many independent processes essential for survival, about which the data offer no information. This can nevertheless still allow us to use data to perform the two roles outlined above. Finally, relying primarily on testimonies provided by the small minority of Holocaust survivors may result in a non-representative view of the Holocaust. Statistical comparisons can provide a perspective that accounts for all experiences; they provide a limited but powerful representation of the experiences and the fates of those who perished. Ideal research strategies, in our view, recognise the limitations of

30 See as a prime example: Lagus/Polák, *Město*. See also: Michal Frankl, *Free of Controversy? Recent Research on the Holocaust in the Bohemian Lands*, in: Dapim. Studies on the Holocaust 31 (2017) 3, 262-270 for a discussion.

31 See: Tomáš Jelínek, *Bílá místa ve výzkumu holokaustu [Blind Spots in Holocaust Research]*, in: Tomáš Jelínek/Blanka Soukupová (ed.), *Bílá místa ve výzkumu holokaustu*, Prague 2014, 11-20.

quantitative databases in terms of the available information while recognising the generalisable validity of the comparisons they offer. Both quantitative and qualitative research have specific advantages that together may provide a fuller, deeper picture of history.

Other than the TII database, what under-utilised data sources could be employed in statistical analyses of the Holocaust in the Czech Republic? Several databases were compiled during the 1990s within the (international as well as Czech-based) movement for compensation of Nazi prisoners and their heirs that contain information on the pre-war property and economic conditions of Czech Jews.³² For example, the Czech Endowment Fund for Holocaust Victims accepted hundreds of applications that provide detailed information about owners and their property.³³ Information on small and medium-sized Jewish property can also be obtained from the database compiled by Jančík and Kubů³⁴ of “loans for Aryanisation” issued by the Kreditanstalt der Deutschen during the war. Furthermore, the Czech Ministry of Culture, acting under the government’s Decree No. 773 from November 1998, established a database of artworks owned by the state that used to belong or might have belonged to Holocaust victims.³⁵ On the international front, the International Commission on Holocaust Era Insurance Claims identified over 10,000 insurance policies of more than 5,000 Czech Holocaust victims and survivors. This dataset also provides information on Jews who managed to emigrate or escape from the Protectorate.³⁶ One could combine these types of data³⁷ on the pre-war economic status of Czech Jews with the existing TII database of about 176,000 individuals that covers not only Theresienstadt prisoners, but also Czech Jews on transports to other destinations during the Holocaust.³⁸ Instead of only presenting simple descriptive summaries of the property data, one could then enquire, for example, into the statistical relationship between the pre-war economic status of individuals and their experiences of and survival during the Holocaust.

In our paper “Surviving Auschwitz with Pre-Existing Social Ties”, we provided another example of data combination: We merged the complete list of prisoners of the low-security Nazi agricultural labour camp in Lípa located in the Czech Republic with the database of Theresienstadt prisoners.³⁹ Based on survival testimonies, prior incarceration in the Lípa camp served as a proxy for pre-existing social ties among Theresienstadt prisoners. We then studied the survival chances of Lípa pris-

32 The Swiss Banks Settlement (1998) as well as the work of the International Commission on Holocaust Era Insurance Claims (1998) and of the Foundation Remembrance, Responsibility and Future (2000) all covered victims from the Czech Republic. Within the Czech Republic, the work of the Czech-German Future Fund (1998), the Endowment Fund for Holocaust Victims (2000), and the Czech Committee for Nazi Victims (2000) also generated valuable data.

33 For more information, see: <http://www.fondholocaust.cz> (9 September 2020).

34 Drahomír Jančík/Eduard Kubů, ‘Arizace’ a arizátoři. Drobný a střední židovský majetek v úvěrech Kreditanstalt der Deutschen (1939–1945) [‘Aryanisation’ and Aryanisers. Small and Medium-Size Jewish Property in the Loans of the Kreditanstalt der Deutschen], Prague 2005.

35 The Documentation Centre for Property Transfers of the Cultural Assets of WW II Victims has information on individual assets and in some cases also on their original owners. See: <http://www.cdmp.cz> (9 September 2020).

36 See e.g.: Frank Draschke/Tomáš Jelínek, Arizované životní pojistky v protektorátu Čechy a Morava [The Aryanisation of Life Insurance in the Protectorate of Bohemia and Moravia], in: Jelínek/Soukupová (ed.), *Bílá místa ve výzkumu holokaustu*, 66; Tomáš Jelínek, *Pojišťovny ve službách hákové kříže* [Insurance Companies in the Service of the Swastika], Prague 2015.

37 In statistical analyses of such data, it is important to deal with the potentially selective nature of these samples.

38 In order to merge data sources and conduct statistical analyses, databases such as the TII typically first have to be transformed into statistical data formats.

39 Štěpán Jurajda/Tomáš Jelínek, *Surviving Auschwitz with Pre-Existing Social Ties*, CERGE-EI Working Paper 646, 2019.

oners entering Auschwitz on transports from Theresienstadt. Specifically, we enquired whether their chances of surviving the Holocaust depended on how many of their former co-labourers from the agricultural camp were present on their transports to Auschwitz, which included another 9,000 Czech male prisoners. We uncovered a large, ten-per cent survival advantage among those who arrived in Auschwitz with at least fifty former co-labourers from the agricultural labour camp, which is consistent with the importance of the availability of social ties including friendships for survival.

Štěpán Jurajda is a full professor of economics at CERGE-EI, the joint workplace of Charles University and of the Economics Institute of the Czech Academy of Sciences, Politických vězňů 7, Prague, Czech Republic. His main expertise is in empirical labor economics. He served as member of the Executive Committee of the European Association of Labour Economists and, currently, he is a member of the Research, Development and Innovation Council of the Government of the Czech Republic and a member of the National Economic Council of the Government of the Czech Republic. Other than his research in labor economics, he has also studied inter-generational transmission of nationalist values in Croatia as a mechanism generating a link between the Second World War there and Croatia's 1991–1995 war for independence. He has held fellowships at the University of Princeton and at the European University Institute.
E-mail: stepan.jurajda@cerge-ei.cz

Tomáš Jelínek is a senior researcher at the Moravian Business College Olomouc. He focuses on modern Jewish history in the Czech lands and economic aspects of the Holocaust. As Czech civil servant, he participated in the Nazi victims compensation negotiations in 1990s. He published a book *Insurance Companies in the Service of the Swastika* and promotes the use of econometric models on Holocaust era data. Recently he received a grant from The Endowment of Josef, Marie, and Zdeňka Hlávka to write a study on Jewish entrepreneurs in Czech lands before the World War II.
E-mail: tomas.jelinek@mvsoc.cz

Quotation: Štěpán Jurajda, Tomáš Jelínek, Statistical Analyses of Theresienstadt Prisoners. Examples and Future Possibilities, in: S.I.M.O.N. – Shoah: Intervention. Methods. Documentation. 8 (2021) 2, 58-71.

DOI: https://doi.org/10.23777/SN.0221/ART_SJTJ01

S.I.M.O.N. – Shoah: Intervention. Methods. DocumentatiON. is the semi-annual open access e-journal of the Vienna Wiesenthal Institute for Holocaust Studies (VWI) in English and German.

This special issue devoted to research in the history of the Holocaust in Bohemian Lands was prepared in cooperation with the Terezín Initiative Institute in Prague and the Masaryk Institute and Archives of the Czech Academy of Sciences. It represents the continuation of the "Terezín Studies and Documents", a scholarly yearbook founded by Holocaust survivors Miroslav Kárný and Margita Kárná which significantly contributed to the research in the history of the Holocaust in the Bohemian Lands. The preparation was supported by the Czech Foundation for the Holocaust Victims.

ISSN 2408-9192 | 8 (2021) 2 | <https://doi.org/10.23777/SN.0221>

This article is licensed under the following Creative Commons License: CC-BY-NC-ND (Attribution-Non Commercial-No Derivatives)