

# Impact of COVID-19 on participation and barriers in nonformal adult education in the Czech Republic

Jan Kalenda<sup>1</sup> | Ilona Kočvarová<sup>1</sup> | Ellen Boeren<sup>2</sup>

<sup>1</sup>Research Centre of the Faculty of Humanities, Tomas Bata University, Zlín, Czech Republic

<sup>2</sup>School of Education, University of Glasgow, Glasgow, UK

## Correspondence

Jan Kalenda, Research Centre of the Faculty of Humanities, Tomas Bata University, nám. T. G. Masaryka 5555, Zlín 760 01, Czech Republic.

Email: [kalenda@utb.cz](mailto:kalenda@utb.cz)

## Abstract

The impact that the COVID-19 pandemic has had on nonformal adult education has become a frequently discussed issue in lifelong learning. Nonformal adult education is understood here as all organised adult learning outside formal education that usually does not result in official certification. Many scholars have considered the pandemic as the leading cause of both decreased participation in nonformal adult education and increased inequality among adults. Nevertheless, it has not yet been empirically established how profound this outcome has been for participation patterns, inequality and perceived barriers to involvement in nonformal adult education. Accordingly, this study explored how much the pandemic contributed to a decrease in overall participation, changes in participation patterns, as well as contributed to an increase in related inequalities in the Czech Republic. This article reports on results from a national representative survey in June 2020 ( $N=1013$ ) conducted between the first and second wave of the pandemic. Trends in participation in nonformal adult education along with barriers were mapped for the 12 months preceding the survey. To establish trends, we compared our results with data from the Adult Education Survey conducted in 2011 and 2016, respectively. Our analytical approach is primarily based on descriptive statistics and modelling factors influencing the involvement of adults

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in nonformal adult education. We found that overall participation in nonformal adult education decreased from June 2019 to June 2020 to its lowest recorded level. Furthermore, the results indicate that inequality based on educational attainment, as well as the perception of substantial institutional and situational barriers have significantly increased.

#### KEYWORDS

adult education and learning, barriers to participation, COVID-19 pandemic, Czech Republic, inequality, nonformal education, participation

## 1 | INTRODUCTION

The consequences of the COVID-19 pandemic, as understood today, are worse than anyone could have imagined in the fall of 2019. The reported number of cases reached over 460 million worldwide, with over 6 million deaths registered (Hopkins, 2021). The global economy suffered an estimated medium-term economic loss of approximately sixteen trillion dollars (Cutler & Summers, 2020).

Whether the COVID-19 pandemic is considered a *disjuncture* (Bjursell, 2020), a *catalyst* (Käpplinger & Lichte, 2020), a *disruption* (Paciorek et al., 2021), or as something that exposed the “*fragility of education systems*” (Milana et al., 2021, p. 111), it has profoundly changed the landscape of adult education and learning. As a leading international expert noted in an interview for an ongoing international Delphi project investigating the outcomes of the pandemics, “*the lockdown of physical cooperation touches the heart of adult education*” (Käpplinger & Lichte, 2020, p. 782). The worldwide spread of the disease has led to an interruption of long-standing practices of adult education and training based on in person interaction of instructors and learners in classroom settings, with tuition often provided at the workplace itself.

The effects of the COVID-19 pandemic represent a topic that is increasingly discussed in the context of lifelong learning. Yet, relatively little direct empirical evidence has been accumulated on how it has shaped the immediate pattern of participation in nonformal adult education as well as barriers to this type of adult education. Accordingly, the main purpose of this study was to explore how governmental health measures and restrictions put in place during the first wave of the pandemic in the Czech Republic affected participation in nonformal adult education.

In this article, nonformal adult education is understood as learning activities conducted outside the formal education system that usually do not result in official certification. Nonformal adult education includes all organised and planned development learning opportunities for adults, such as courses, workshops, private tuition as well as guided training in the workplace or at an offsite location. From a content point of view, this includes both job-oriented or vocational as well as non-job-oriented learning, e.g., civic, community, or leisure activities (Eurostat, 2016; UNESCO, 2020).

The results of many policy papers (EC, 2021; OECD, 2019; UNESCO, 2020) and scholars (e.g., Boeren, 2016; Field, 2012; Iñiguez-Berrozpe et al., 2020; Van Nieuwenhove & De Wever, 2021) agree that nonformal adult education helps individuals to develop the skills and qualifications needed for a particular job, as well as to adapt to real or potential difficulties on the labour market, e.g. worker obsolescence. Furthermore, nonformal adult education also increases opportunities for civic participation and improves overall health and well-being.

Understanding changes in the pattern of participation is important given the transformational significance of these patterns on the micro-social characteristics of adults' access to nonformal adult education. The lack of access is considered the most pertinent factor of educational inequality in adult education and training

(see e.g., Allmendinger et al., 2011; Boeren, 2016, 2017; Cincinnato et al., 2016; Dämmrich et al., 2014; Hovdhaugen & Opheim, 2018; Lee & Desjardins, 2019).

Current research about the impacts of the COVID-19 pandemic on nonformal adult education has produced evidence on how educators have applied new types of pedagogies for social solidarity (Smythe et al., 2021); new modes of community learning has emerged in cities (Webb et al., 2020); and the issue of exclusion of certain social groups from learning activities. Exclusion is an issue especially for those who before COVID had already been highly or at least partially excluded (Milana et al., 2021; Waller et al., 2020). A recent OECD report titled *Adult Learning and COVID-19: How much informal and non-formal learning are workers missing?* (Paciorek et al., 2021) provides estimates for the consequences of COVID-19 restrictions on the involvement of adults in informal and non-formal learning. The only other recent large-scale data on relationships between pandemics and the participation of adults in nonformal adult education can be found in Eurostat's *Labour Force Survey* (LFS). This EU monitoring tool traditionally maps participation rates in both formal and nonformal education and training, in the 4 weeks preceding the survey, among adults aged 25–64 years. Table 1. summarises the development across the last few years along with crucial changes from 2019 to 2020.

The table shows that some countries in Europe experienced a higher decline during the first two waves of the pandemic than did other nations. The participation rate in adult education fell at an especially high rate in France, Czech Republic, Poland, and Austria, with all these countries undergoing a relative decrease in participation of higher than 20 percent. Interestingly, these countries do not fall into the same categories with regard to participation rate, or skill-formation regime (Busemeyer, 2015), welfare-state model (Rubenson & Desjardins, 2009), or adult education system (Desjardins et al., 2006; Desjardins & Ioannidou, 2020). The pandemic also hit hard in the Scandinavian countries of Denmark, Sweden, and Norway, where a decrease in participation of between 15 and 17 percent was noted. In contrast, participation rates in other states decreased significantly less; a number of countries experienced stagnation or even modest growth in 2020—Spain, Portugal, Greece and Lithuania (see Table 1.).

Statistics from the Labour Force Survey can provide a general overview of COVID-19 related trends throughout Europe. However, these data cannot tell the whole story of how the pandemic impacted the participation patterns in nonformal adult education; that is, the significance of micro-social factors influencing the involvement of adults in this kind of organised learning and the barriers that they face. Such patterns subsequently determine the involvement of different social groups in nonformal adult education, with the result being a further deepening of already existing inequalities. Data from the Labour Force Survey also cover a shorter time frame (4 weeks) compared to other international surveys measuring participation in adult education and training such as the *Adult Education Survey* (AES) and the *Programme for the International Assessment of Adult Competencies* (PIAAC). Both AES and PIAAC are carried out over the course of 12 months. Additionally, these surveys collect extra information on barriers preventing participation.

## 1.1 | Context and aims of the study

There are significant differences among European countries regarding the impact of the COVID-19 pandemic on nonformal adult education from late 2019 to 2020. For this reason, we begin by briefly describing the context of the spread of the virus in the Czech Republic and the concomitant governmental reactions.

Since February 2020, the COVID-19 pandemic has affected adults and their families in many ways in the Czech Republic. The main part of the first wave lasted only 4 months (March to June). There was a low number of casualties compared to other countries in Europe (e.g., Italy or Spain). Still, the Czech government introduced many social contact restrictions also typical for other Central European countries such as Germany, Austria, Slovakia, and Poland (Barberia et al., 2021).

The main directives took effect on 12 March 2020, when the government declared a 30-day state of emergency that was later extended until 30 April 2020. From 12 March, all formal and official non-formal adult educational facilities such as private language schools and reskilling organisations were closed, with events organised

TABLE 1 Development of participation in adult education in Europe from 2015 to 2020.

	2015	2016	2017	2018	2019	2020	Diff. 2015–2019 <sup>a</sup>	Relative Diff. 2015–2019	Diff. 2019–2020 <sup>a</sup>	Relative Diff. 2019–2020
EU 27 countries	10.1	10.3	10.4	10.6	10.8	9.4	0.7	6.0	-1.4	-13.0
Countries with high participation rates (over 15% in 2015)										
Denmark	31.5	28.0	26.9	23.5	25.3	20.4	-6.2	-25.0	-4.9	-19.0
Sweden	29.4	29.6	30.4	31.4	34.3	28.6	4.9	14.0	-5.7	-17.0
Norway	20.1	19.6	19.9	19.7	19.3	16.4	-0.8	-4.0	-2.9	-15.0
Finland	25.4	26.4	27.4	28.5	29.0	27.3	3.6	12.0	-1.7	-6.0
Netherlands	18.9	18.8	19.1	19.1	19.5	18.8	0.6	3.0	-0.7	-4.0
France	18.6	18.8	18.7	18.6	19.5	13.0	0.9	5.0	-6.5	-33.0
Countries with medium participation rates (8%–15% in 2015)										
Austria	14.4	14.9	15.8	15.1	14.7	11.7	0.3	2.0	-3.0	-20.0
Estonia	12.4	15.7	17.2	19.7	20.2	17.1	7.8	3.0	-3.1	-15.0
Spain	9.9	9.4	9.9	10.5	10.6	11.0	0.7	7.0	0.4	4.0
Portugal	9.7	9.6	9.8	10.3	10.5	10.5	0.8	8.0	0	0.0
Germany	8.1	8.5	8.4	8.2	8.2	7.7	0.1	1.0	-0.5	-6.0
Czech Republic	8.5	8.8	9.8	8.5	8.1	5.5	-0.4	-5.0	-2.6	-32.0
Countries with low participation rates (under 8% in 2015)										
Lithuania	5.8	6.0	5.9	6.6	7.0	7.2	1.2	11.0	0.2	3.0
Hungary	7.1	6.3	6.2	6.0	5.8	5.1	-1.3	-22.0	-0.7	-12.0
Italy	7.3	8.3	7.9	8.1	8.1	7.2	0.8	10.0	-0.9	-11.0
Latvia	5.7	7.3	7.5	6.7	7.4	6.6	1.7	23.0	-0.8	-11.0
Serbia	4.8	5.1	4.4	4.1	4.3	3.7	-0.5	-12.0	-0.6	-14.0
Poland	3.5	3.7	4.0	5.7	4.8	3.7	1.3	27.0	-1.1	-23.0
Greece	3.3	4.0	4.5	4.5	3.9	4.1	0.6	15.0	0.2	5.0

Note: Data provided as percentages; participation measured as involvement in all adult education activities as of 4 weeks prior to survey.

<sup>a</sup>Difference in percentage points. Participation of adults aged 25–64 years calculated together in both formal and non-formal education.

Source: Table constructed by authors using 2021 data from Eurostat (LFS, 2021).

by these institutions prohibited. Furthermore, the governmental measures also included stringent restrictions for brick-and-mortar business establishments involved in retail sales and other services, with physical premises generally ordered to close or their activities strictly regulated (Czech Government, 2021). In an attempt to alleviate the negative social and economic effects of these directives, the government quickly developed and instituted support programs for companies and workers, e.g., by compensating workers for lost wages and implementing online learning initiatives across the formal education system.

Only after 30 April, when the first round of protective measures began to be relaxed, were businesses gradually permitted to re-open their brick-and-mortar locations and other institutional activities were allowed to resume. For example, in mid-May pupils in the last year of primary education were permitted to return to school as well as students in the last year of secondary schools and conservatories. The slow re-opening of universities and other educational institutions soon followed. Despite the gradual easing of restrictions, many measures remained in place until the end of July, when government officials declared that the Czech Republic had overcome the first wave of COVID-19 (Czech Government, 2021).

The aim of this study was to contribute to an assessment of the direct impact of the COVID-19 pandemic on participation patterns in nonformal adult education in a more detailed way. This article presents our analysis of findings from a nationally representative questionnaire survey among adults in the Czech Republic ( $N = 1013$ ). It is important to note that the survey was carried out from June 2019 to June 2020. This was before the surge of the second wave of the COVID-19 pandemic in August 2020. The twelve-month period leading up to the survey was in the study used as a reference period for participation in nonformal adult education. Based on the data from this survey along with data from AES 2011 and 2016, the article describes and analyses the effects of governmental health measures and restrictions during the first wave of the pandemic in terms of three key interrelated phenomena:

1. level of participation in nonformal adult education
2. pattern of participation in terms of those who participated and who did not (inequality in participation based on crucial micro-social variables)
3. pattern of perceived barriers to involvement among nonparticipants

We propose that by targeting these three interrelated topics, our findings will contribute to understanding how the COVID-19 pandemic has reshaped participation patterns as well as obstacles connected with involvement in nonformal adult education. The data from the analysis can help institutions formulate effective education policy and practices for dealing with the adverse outcomes of the pandemic. In the context of international comparative research (e.g., Cabus et al., 2020; Cincinnato et al., 2016; Dämmrich et al., 2014; Lee & Desjardins, 2019), our results show the impact of the first wave of pandemic on the adult education system in one of the most negatively affected European countries in terms of the participation in nonformal adult education as well as how responses to the pandemic reinforced the inequality already existing in the system.

Used here as in the AES and PIAAC survey, the term *participation* denominates involvement, during 12 months leading up to the survey, in any nonformal adult education activities as defined above. This operationalisation enabled us to cover a broader period than the LFS. This allowed us to compare the level of inequality and perceived barriers based on data from AES 2016 as well as data from before the outbreak of the COVID-19 pandemic.

## 2 | REVIEW OF THE IMPACT OF THE COVID-19 PANDEMIC ON PARTICIPATION AND BARRIERS TO NONFORMAL ADULT EDUCATION

The lockdown restrictions for physical interactions, and other social distancing restrictions, in combination with the rapid proliferation of digital learning resulted in more negative outcomes for nonformal adult education than was the case for the formal (higher) education system. The reason for this seems to be that universities

were able to adapt to the new digital learning circumstances more quickly, effectively and efficiently (Aguilera-Hermida, 2020; Bacher-Hicks et al., 2021). The change to online learning has intensified the ongoing decline in nonformal adult education participation since 2019. Remarkably, according to some authors (Milana et al., 2021), it has also increased inequality between prospective participants in formal education and those who could take part in nonformal adult education. Those in the second category may face more constraints as well in terms of a reduced supply of educational opportunities (Paciorek et al., 2021). Drawing on these circumstances, we formulate a first hypothesis:

**Hypothesis 1.** Governmental measures related to the COVID-19 pandemic led to a greater decrease in participation in nonformal adult education than in formal adult education.

The COVID-19 pandemic affected negatively the participation rates in nonformal adult education. But it also affected the pattern of participation, i.e., how groups of adults participate, or do not participate. According to numerous studies (e.g., Bonal & González, 2020; Milana et al., 2021; Stanistreet et al., 2021; Waller et al., 2020), the pandemic situation has profoundly increased social inequality in nonformal adult education as well as in other adult educational areas.

First, overall inequality has expanded. Those already disadvantaged before the onset of the pandemic have been hit the hardest. These are low-educated adults, low-skilled workers, older adults, immigrants, people from rural or peripheral areas, and women (Boeren et al., 2020; Käpplinger & Lichte, 2020; Waller et al., 2020). Most of these adults were already in a difficult position within the labour market; others were completely outside the market, with even fewer opportunities for learning and development. The 2021 OECD report (Paciorek et al., 2021, p. 3–4) details how much informal and non-formal learning workers have missed. The report estimates that low-educated employees (with schooling up to ISCED level 3c) have experienced a reduction in nonformal adult education learning opportunities at a rate of over twice as much as is the case for tertiary-educated adults (ISCED 5–8).

Second, the previous trend was made even worse by the proliferation of digital inequality (Stanistreet et al., 2021). In practice, already disadvantaged social groups were often not sufficiently equipped with adequate digital technology or access to the internet, or they lacked the skills to use these tools. As a result, those with a lower participation rate also tended to have lower skills with regard to using digital tools to find, evaluate and compose information on digital platforms (see Milana et al., 2021, p. 112).

In light of the previous examples, we conclude that the pandemic represents a chain of compound effects increasing an existing pattern of inequality. A pattern that draws on occupation status, education level, and age of the adults. Based on this summary, we propose three additional hypotheses.

**Hypothesis 2.** Governmental measures related to the COVID-19 pandemic led to an increased inequality in nonformal adult education participation by labour status.

**Hypothesis 3.** Governmental measures related to the COVID-19 pandemic led to an increased inequality in nonformal adult education participation by highest attained education.

**Hypothesis 4.** Governmental measures related to the COVID-19 pandemic led to an increased inequality in nonformal adult education participation by the age of the adults.

Following the Chain-of-Response model created by Cross (1981) adult education research has traditionally distinguished three types of perceived barriers that hinder participation in nonformal adult education (e.g. Hovdhaugen & Opheim, 2018; Rubenson & Desjardins, 2009; Van Nieuwenhove & De Wever, 2021): (1) dispositional, (2) institutional and (3) situational barriers. The first type of barrier is associated with the negative attitudes of

adults to education and low levels of self-efficacy regarding organised learning (Cross, 1981). In contrast, institutional barriers are obstacles associated with the supply of adult education (e.g., Cross, 1981; Hovdhaugen & Opheim, 2018). These usually include lack of educational opportunities within or outside the workplace, lack of information about learning opportunities, and perceptions regarding the quality of the education and training quality offered. According to Cross (1981), situational barriers are directly connected with obstacles found in the everyday lives of adults, for example a person's health status, family responsibilities (e.g., care for children), available economic resources, and the amount of time the adult has for learning.

It is evident that the COVID-19 pandemic has impacted both the overall structure of the barriers and the strength of several of them. In many countries, including the Czech Republic, the initial implementation of governmental restrictions directly influenced *institutional barriers*—mainly adult learning opportunities in the workplace and community settings. When the supply of such opportunities becomes more limited, perceptions of institutional barriers increase.

In addition, a number of previously described adverse outcomes of COVID-19 for adults with comparatively fewer years of schooling may negatively impact the perception of institutional barriers in segments of this population. Generally, because of the nature of their work, lack of digital skills, and typically less investment in their training from employers (Brunello et al., 2007; Paciorek et al., 2021; UNESCO, 2020), we can expect that institutional barriers to participation would show more significantly increases in this group. We thus formulate the following hypotheses:

**Hypothesis 5.** Governmental measures related to the COVID-19 pandemic led to an increased perception of institutional barriers to nonformal adult education among adults, especially among those with comparatively fewer years of education.

Furthermore, governmental restrictions have changed the day-to-day lives of adults, a factor inseparably linked to situational constraints. For example, many parents were forced to take more responsibility for their children's education during the lockdown, transforming the family responsibilities of parents. Additionally, the pandemic increased the importance of situational barriers related to health. Human contact was restricted. There was fear of infection, and rising distrust in institutions—possibly one of the most significant sets of situational barriers (Adolph et al., 2021; Kubinec et al., 2020). Therefore, a marked increase in the perception of *situational barriers*—especially barriers related to health as well as to family responsibilities and concerns—was expected.

To make matters worse, these barriers tend to be more robust in two groups who are already disadvantaged—older adults and adults who have family responsibilities, usually women. In this context, Lewis and Duch (2021) reported that according to their mate-analysis, men consistently express a lower perceived risk of contracting COVID-19 and less concern about the potential health consequences compared to women. Consequently, we would expect a higher perception of health-related barriers among women.

Recent studies (Andersen et al., 2022; Del Boca et al., 2020) have also found that women were forced to personally take on more duties for childcare and housework in their own household than they had before the COVID-19 pandemic. Due to school lockdowns and the distribution of many women in sectors of the economy that enable remote work, women were put into a situation in which they had to fulfil two demanding roles at the same time. On the one hand, women had to help their children cope with learning in the home, while on the other, they were still responsible for completing their employment tasks and duties. Such a situation made the involvement of women in nonformal adult education more difficult.

Based on this discussion, we have formulated the following, and final, three research hypotheses.

**Hypothesis 6.** Governmental measures related to the COVID-19 pandemic led to an increase in the perception of situational barriers to nonformal adult education across all sociodemographic groups.

**Hypothesis 7.** Governmental measures related to the COVID-19 pandemic led to an increase in the perception of situational barriers to nonformal adult education related to health, especially among older learners.

**Hypothesis 8.** Governmental measures related to the COVID-19 pandemic led to an increase in the perception of situational barriers to nonformal adult education related to family responsibilities, most significantly among women.

### 3 | METHOD

The analysis draws on a stratified random sample ( $n=1013$ ) that represents the age range 18–69 years, as well as the gender and education ratios of the Czech population. Data collection was financed by The Czech Science Foundation (GACR), with research for this study financed by an internal university fund. Data collection was conducted in the Czech Republic during June 2020, between the first and second wave of the COVID-19 pandemic. Data was collected by a professional agency using the Computer Assisted Personal Interviewing (CAPI) method. The questionnaire included basic socio-demographic characteristics (gender, age, highest education level, and regional affiliation based on *level 2* in the Nomenclature of Units for Territorial Statistics, etc.). Questions on information about participation in nonformal adult education and other types of education were included. A battery of 29 scale items covering different barriers to participation in nonformal adult education was also included (Kočvarová et al., 2022); and other items not used in the present study. In all phases of the survey process, emphasis was placed on the ethical principles of research, especially anonymity respecting the ICC/ESOMAR International Code (ESOMAR, 2016).

For comparison, we also worked with Czech data from AES 2011 and 2016, which we formally obtained for research purposes from the Czech Statistical Office. We included in the analysis only respondents who showed no missing values within the monitored variables ( $n=10,168$  for 2011;  $n=12,245$  for 2016).

In 2020, the perception of barriers towards participation in further adult education was measured only among nonparticipants in nonformal adult education. To acquire similar results for this part of our investigation, we utilised data from AES 2011 and 2016 only for nonparticipants with no missing values within the monitored variables. As a result, we included the following number of respondents for the testing of hypotheses five and eight ( $n=7009$  for 2011;  $n=2017$  for 2016;  $n=761$  for 2020).

The socio-demographic distribution of the three samples (each for 1 year of investigation) can be found in [Table 2](#).

For the purposes of the analysis, it was first necessary to bring together the three datasets to compare the results. For this, we carried out a harmonisation of the data, or *unification*, in three steps: (1) setting unit parameters across datasets (age 18–69, no missing values for investigated variables); (2) choice of questionnaire items with the same focus (gender, age, highest level of education, participation in education, items representing barriers to participation); (3) unification of alternative answers to questions related to items measuring barriers to participation. The answers *yes* or *no* were used for responses in AES 2011 and 2016 questionnaires. Meanwhile, in our survey from 2020 answers on a 6-point scale of three positive and three negative options were used—these were recoded into *yes* or *no* answers. Nevertheless, even after unification of the data files, it was not possible to merge files. The files were for this reason analysed separately.

To assess the first hypothesis, on participation in education, we compared descriptive statistics (frequencies, percentages) over time. The second and fourth hypotheses, both related to inequality in participation in nonformal adult education, were assessed using three models of binary logistic regression (each for one dataset). We used participation in nonformal adult education as a dependent variable. Employment status, highest educational attainment, and age were used as independent variables. The models were evaluated using statistical parameters



TABLE 2 Socio-demographic distribution of the three samples.

	Year of investigation					
	2011		2016		2020	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender						
Male	4861	47.8	5845	47.7	480	47.4
Female	5307	52.2	6400	52.3	533	52.6
Age						
18–29	1945	19.1	1887	15.4	184	18.2
30–50	4118	40.5	4863	39.7	439	43.3
51–69	4105	40.4	5495	44.9	390	38.5
Highest education level						
ISCED 3c or lower	4851	47.7	5769	47.1	494	48.8
ISCED 3ab	3640	35.8	4369	35.7	358	35.3
ISCED 5–8	1677	16.5	2107	17.2	161	15.9
<i>Reduced samples<sup>a</sup></i>						
Gender						
Male	3348	47.8	773	38.3	359	47.2
Female	3661	52.2	1244	61.7	402	52.8
Age						
18–29	1276	18.2	475	23.5	126	16.6
30–50	2428	34.6	830	41.2	318	41.8
51–69	3305	47.2	712	35.3	317	41.7
Highest education level						
ISCED 3c or lower	3961	56.5	975	48.3	416	54.7
ISCED 3ab	2287	32.6	720	35.7	251	33.0
ISCED 5–8	761	10.9	322	16.0	94	12.4

<sup>a</sup>Samples used for testing perception of barriers to nonformal adult education.

Source: Authors.

related to their quality, by following their factual results, and a comparison of the parameters over time. The fifth and eight hypotheses, which relate to barriers of non-participation in nonformal adult education, were evaluated using descriptive statistics and a comparison of results over time.

## 4 | RESULTS

### 4.1 | Overall participation

The results are presented by three themes that correspond with the three main aims of the study. We start by presenting, in Table 3, results for the first hypothesis relating to participation rates. In the context of developments to date, a rapid decline in participation in nonformal adult education in 2020 is revealed. In contrast, participation in formal education appears to be higher than in previous years. Based on this, we can confirm our first hypothesis

TABLE 3 Overall rates of adult participation in nonformal adult education and formal education.

Year	Participation in nonformal adult education		95% CL		Participation in formal education		95% CL	
	<i>n</i>	%	Lower	Upper	<i>n</i>	%	Lower	Upper
2011	3268	32.1	31.2	33.1	1053	10.3	9.8	10.9
2016	4840	39.4	38.7	40.4	1033	8.4	8.0	8.9
2020	252	24.9	22.3	27.6	128	12.6	10.7	14.8

Note: Participation measured as involvement of adults aged 18–69 years in all nonformal adult education or formal education activities in the 12 months prior to the survey.

Abbreviations: CL, confidence level; N, total sample population in the survey.

Source: Authors.

TABLE 4 Quality parameters for models of binary logistic regression.

Model	<i>n</i>	$\chi^2$	df	Sig.	Cox and Snell $R^2$	Nagelkerke $R^2$	Correctly classified cases	
							Step 0	Step 1
AES 2011	10,168	1759.160	5	≤.0005	.159	.222	67.8	71.4
AES 2016	12,245	2370.552	5	≤.0005	.176	.238	60.5	69.1
GACR 2020	1013	77.189	5	≤.0005	.073	.109	75.1	74.9

Source: Authors.

that governmental measures related to the COVID-19 pandemic led to a greater decrease in participation in nonformal adult education than in formal adult education.

## 4.2 | Participation pattern

Next, we present results for the second and fourth hypotheses related to inequality in participation in nonformal adult education. The quality parameters of the regression models are described in Table 4, with the substantial results comprising a part of Table 5 below.

All the models are statistically significant. The model for 2016 achieves the highest quality, and the model for 2020 shows the lowest quality in terms of pseudo-coefficients of explained variance (Cox and Snell  $R^2$ , Nagelkerke  $R^2$ ). We can also see that the percentage of correctly classified cases is improved with the use of the model within the datasets of AES 2011 and AES 2016, but it stagnates with the use of the more recent data from 2020.

In 2011, employed or self-employed persons had a 3.9 times higher chance of participating in nonformal adult education compared to those not actively involved in the labour market. In 2016, the likelihood of this group participating was even higher (EXP(B) = 5.3), while in 2020 it rapidly decreased (EXP(B) = 2.0). This result leads us to reject our second hypothesis, as an increase in participation according to labour status was not found. This demonstrates that government measures did not contribute to an increase in inequality in participation.

In all the periods under investigation, the likelihood of involvement in nonformal adult education increased conjointly with increasing levels of educational attainment. For this reason, adults with the lowest level of education showed the lowest probabilities to participate in nonformal adult education. The values of the coefficients

TABLE 5 Substantial results from models of binary logistic regression.

Year of investigation/ variables	B	S.E.	Wald	Df	Sig.	Exp (B)	95% CI For EXP(B)	
							Lower	Upper
<b>2011</b>								
Labour status: (self)employed (vs. other)	1.370	0.058	553.857	1	.000	3.934	3.510	4.410
Highest education level			581.728	2	.000			
ISCED3ab (vs. ISCED3c or lower)	0.882	0.052	287.938	1	.000	2.415	2.181	2.674
ISCED 5–8 (vs. ISCED3c or lower)	1.469	0.065	515.011	1	.000	4.345	3.827	4.933
Age			92.820	2	.000			
30–50 (vs. 18–29)	–0.078	0.061	1.646	1	.200	0.925	0.821	1.042
51–69 (vs. 18–29)	–0.568	0.067	71.566	1	.000	0.567	0.497	0.647
Constant	–2.112	0.069	926.742	1	.000	0.121		
<b>2016</b>								
Labour status: (self)employed (vs. other)	1.662	0.052	1029.851	1	.000	5.269	4.761	5.832
Highest education level			489.925	2	.000			
ISCED3ab (vs. ISCED3c or lower)	0.663	0.046	206.470	1	.000	1.940	1.772	2.123
ISCED 5–8 (vs. ISCED3c or lower)	1.176	0.055	454.528	1	.000	3.241	2.909	3.611
Age			106.962	2	.000			
30–50 (vs. 18–29)	–0.068	0.057	1.422	1	.233	0.935	0.836	1.044
51–69 (vs. 18–29)	–0.513	0.060	72.787	1	.000	0.598	0.532	0.673
Constant	–1.909	0.064	882.268	1	.000	0.148		
<b>2020</b>								
Labour status: (self)employed (vs. other)	0.707	0.196	13.034	1	.000	2.028	1.382	2.978
Highest education level			40.587	2	.000			
ISCED3ab (vs. ISCED3c or lower)	0.764	0.172	19.780	1	.000	2.148	1.534	3.008
ISCED 5–8 (vs. ISCED3c or lower)	1.254	0.206	36.911	1	.000	3.504	2.338	5.252
Age			11.550	2	.003			
30–50 (vs. 18–29)	–0.519	0.207	6.277	1	.012	0.595	0.397	0.893
51–69 (vs. 18–29)	–0.717	0.213	11.279	1	.001	0.488	0.321	0.742
Constant	–1.673	0.222	56.651	1	.000	0.188		

Source: Authors.

indicate that the differences among the three educational groups were the most significant ( $EXP(B)=2.4; 4.3$ ) in 2011. In contrast, for 2016 the results show a reduction in these inequalities ( $EXP(B)=1.9; 3.2$ ), although they were reinforced again in 2020 ( $EXP(B)=2.1; 3.5$ ). Based on these findings, we can confirm our third hypothesis related to the level of education; this confirms an increase in inequality in nonformal education participation according to highest attained education.

The probability of the three age cohorts to participate in nonformal adult education were relatively constant in 2011 ( $\text{EXP}(B)=0.9; 0.6$ ) as well as in 2016 ( $\text{EXP}(B)=0.9; 0.6$ ), although a significant decline in participation was shown for people over the age of 50. Conversely, we recorded a steep decline in the chances of participating in nonformal adult education for middle-aged (30–50 years) and older (51–69 years) people ( $\text{EXP}(B)=0.6; 0.5$ ) in 2020, which aligns with our fourth hypothesis.

### 4.3 | Perceived barriers

Our third set of results concern perceived barriers of nonparticipation in nonformal adult education. These results draw on four individual items directly related to our fifth and eighth hypotheses. The first pair of these is about the *offer* available, and the *prerequisites*,<sup>1</sup> for nonformal education and measure the effects of institutional barriers articulated in the fifth hypothesis. The other two items related to *health* and family *responsibilities*<sup>2</sup> monitor the impact of situational barriers identified in hypotheses six and eight. In line with the theoretical background presented above, we understand these four items as crucial in the context of the COVID-19 pandemic and its potential impact on the perception of barriers to education. Table 6 presents the results related to institutional barriers.

The data suggest that in 2020 there was a rapid increase in the perception of institutional barriers (for the items *Offer* and *Prerequisites*) by tens of percent points. For 2020, it is also evident that institutional barriers were more strongly perceived by the group of low-educated nonparticipants of the nonformal adult education, although in previous years this group had more strongly perceived only the second of the monitored barriers (*Prerequisites*). Therefore, we can confirm our fifth hypothesis about the perception of an increase in situational barriers for participation in nonformal adult education—that coincided with governmental measures for managing the COVID-19 pandemic.

Table 7 below presents our findings on situational barriers. For situational barriers (*Health, Family*) the data shows a rapid increase for 2020. For the item *Health*, in all the years monitored, we see that this situational barrier is more frequently perceived by older people (51–69 years). While the same is true for 2020, a significant increase in the perception of this barrier is now also shown for the younger age category (18–50 years). This increase may well be related to the growth of health concerns among all age groups during the pandemic. (This barrier seems to have taken on a new dimension, i.e., not only concerning the current state of public health, but also a fear for a future decline in public and personal health conditions due to COVID-19 or other strains of disease.)

The factor *Family* was significantly more frequently perceived as a barrier by women compared to men for all the years monitored. This is also the case for 2020, although it should be noted that a significant increase in reporting this barrier was observed for men. This increase can be linked to the COVID-19 pandemic, i.e., in 2020 men expressed more concern about their family, and they had to devote more time and effort to caring for family.

In summary, taking into consideration all of the above results, we can confirm all the hypotheses related to situational barriers.

## 5 | DISCUSSION

The findings presented here draw a comprehensive empirical picture of the immediate impact of the first wave of COVID-19 on nonformal adult education in a country that implemented moderate restrictions (Barberia et al., 2021). The first aim of our article was to identify the foremost changes in the level of participation in nonformal adult education and compare them with the involvement of adults in formal adult education. The results reveal that participation of adults in nonformal adult education significantly dropped to levels much lower than they had been in the pre-COVID-19 period, while participation in formal adult education remained at the same level.

TABLE 6 Perception of institutional barriers.

Year	Groups of respondents	Offer		95% CL		Prerequisites		95% CL	
		n	%	Lower	Upper	n	%	Lower	Upper
2011	All	403	5.7	5.2	6.3	121	1.7	2.1	3.1
	Highest education	182	4.6	4.0	5.3	102	2.6	2.1	3.1
	ISCED 3ab or higher	221	7.3	6.4	8.2	19	0.6	0.4	1.0
2016	All	128	6.3	5.3	7.5	68	3.4	2.6	4.2
	Highest education	55	5.6	4.3	7.2	56	5.7	4.4	7.3
	ISCED 3ab or higher	73	7.0	5.6	8.7	12	1.2	0.6	1.9
2020	All	332	43.6	40.1	47.2	328	43.1	39.6	46.6
	Highest education	189	45.4	40.7	50.2	207	49.8	45.0	54.6
	ISCED 3ab or higher	143	41.4	36.3	46.7	121	35.1	30.2	40.2

Abbreviation: CL, confidence level.

Source: Authors.

TABLE 7 Perception of situational barriers.

Year	Groups of respondents		Health <sup>a</sup>		95% CL		Family		95% CL	
			<i>n</i>	%	Lower	Upper	<i>n</i>	%	Lower	Upper
2011	All		838	11.9	11.2	12.7	1201	17.1	16.3	18.0
	Age	18–50	115	3.1	2.6	3.7	965	26.1	24.7	27.5
		51–69	723	21.9	20.5	23.3	236	7.1	6.3	8.1
	Gender	Male	344	10.3	9.3	11.3	333	9.9	9.0	11.0
		Female	494	13.5	12.4	14.6	868	23.7	22.4	25.1
2016	All		297	14.7	13.2	16.3	529	26.2	24.3	28.2
	Age	18–50	115	8.8	7.4	10.4	423	32.4	29.9	35.0
		51–69	182	25.6	22.5	28.9	106	14.9	12.4	17.6
	Gender	Male	118	15.3	12.9	17.9	72	9.3	7.4	11.5
		Female	179	14.4	12.5	16.4	457	36.7	34.1	39.4
2020	All		209	27.5	24.4	30.7	345	45.3	41.8	48.9
	Age	18–50	86	19.4	15.9	23.2	215	48.4	43.8	53.1
		51–69	123	38.8	33.6	44.2	130	41.0	35.7	46.5
	Gender	Male	102	28.4	23.9	33.2	153	42.6	37.6	47.8
		Female	107	26.6	22.5	31.3	192	47.8	42.9	52.6

Abbreviation: CL, confidence level.

<sup>a</sup>In 2011 “Health or age”.

Source: Authors.

Furthermore, using the twelve-month reference period, participation in nonformal adult education was shown to have declined to its lowest level since the 1990s, when measurement in the Czech Republic began with the International Adult Literacy Survey (Desjardins et al., 2006). The findings confirm empirically the impact of the pandemic on participation levels in nonformal adult education found by other researchers (Boeren et al., 2020; Milana et al., 2021; Paciorek et al., 2021; Stanistreet et al., 2021; Waller et al., 2020). In this context, the declines were even greater than the results from previous years as determined in the LFS (Eurostat, 2021). From a comparative perspective, we should note that this drop in participation rates had a higher impact on adult education and training in the Czech Republic than was the case in many Western European countries. For example, in Scandinavia many adults attend formal education in higher education institutions. Meanwhile, adults in the Czech Republic, like in other Central and Eastern European countries, participate mainly in nonformal education and training (Saar et al., 2013).

The second aim of our empirical investigation was to explore recent changes in the pattern of participation in terms of those who participate and those who do not. For 2020, we observed rising inequality in the highest level of education and age. We traced a declining gap in the chances of participating in the nonformal adult education by labour status. Nevertheless, this trend does not represent a democratisation of access to nonformal adult education. Instead, a sharp decline can be seen in the participation of working individuals, mainly employees. This trend was most likely caused by the widespread closing of physical workplaces as well as restrictions limiting training organised and supported by employers (Käpplinger & Lichte, 2020; Milana et al., 2021; Paciorek et al., 2021).

The decline in participation in this area of nonformal adult education is particularly important, as the Czech Republic, similarly to many other contemporary countries (Desjardins & Ioannidou, 2020; Rubenson, 2018), shows the highest number of learners are from the population of working adults. The increased inequality related to the pandemic measures was likely higher in the Czech Republic and other Central and Eastern European countries

(e.g., Slovakia, Poland, Hungary, Serbia, Slovenia) than in Western Europe (e.g., Belgium, Germany, France, UK). The reason for this is that former Eastern Bloc countries and regions in Europe generally have a much higher proportion of adults employed in industry, an economic sphere for which it is more challenging to establish remote work and digital learning (Paciorek et al., 2021). Moreover, governments in these countries generally applied stricter governmental measures (Barberia et al., 2021).

For education level, we can corroborate an increasing significance of participation inequality in nonformal adult education based on the highest education attainment. This confirms results from previous studies (Boeren, 2016, 2017; Cabus et al., 2020; Cincinnato et al., 2016). In our data, this micro-social factor of adult involvement in organised learning has become more significant in the recent two decades (Kalenda et al., 2020). We can draw a similar conclusion for the age-related factor of participation in nonformal adult education, which was also shown as much more significant than in the pre-COVID-19 period. In summary, our data reveal that adults with comparatively few years of education and adults over 50 years in 2020 faced the highest level of inequality regarding participation in nonformal adult education, since participation was first measured. This finding has particular significance since before the pandemic period the Czech Republic had shown one of the lowest levels of age-related inequality among European countries.

Our last research aim focused on changes in the pattern of perceived barriers to involvement among non-participants. On this theme, the data support each of the stated hypotheses, from hypothesis five to hypothesis eight. The data corroborate the increasing significance of both institutional and situational barriers as the main reasons for non-involvement in further organised learning and training for adults. The presented results align with the most recent studies (Andersen et al., 2022; Lewis & Duch, 2021) mapping an increase in family responsibilities and health-related worries regarding the pandemic. These likely influenced the perception of barriers, and led to a decrease in participation, especially among social groups already affected by inequality in participation before the pandemic.

The increase in strength of the situational and institutional barriers in the Czech Republic most likely had a high impact on the involvement of adults in education and training activities. Like in other Central and Eastern European countries, adults in Czech Republic perceived these barriers markedly already before the outset of COVID-19 (Roosmaa & Saar, 2017). Therefore, the pandemic deepened institutional and situational constraints more than in Scandinavian and Western European countries, where the perception of barriers among adults had been lower.

Overall, we can conclude that our findings support institutional theories of participation in adult education (Desjardins & Ioannidou, 2020; Rubenson & Desjardins, 2009; Saar et al., 2013) that highlight the role of welfare state institutions and the openness of the formal education system for promoting adult learning participation. The support of learners through active labour policy and formal adult education institutions was weak before the pandemic in Eastern Europe. The Czech Republic is an example that illustrates this. Challenges brought on by the pandemic made participation more difficult, thus participation rates have decreased.

## 5.1 | Limitations

Our findings are accompanied by several limitations based mainly on data availability and the mapped period of participation.

While the survey was conducted in June 2020, the study period began in June 2019. This was months before February 2020, when the first government measures for the COVID-19 pandemic were taken in the Czech Republic. Therefore, more than half of the period under review falls into a time when no government restrictions against the spread of COVID-19 were in place. A much lower frequency of participation and a higher frequency of barriers would maybe have been documented if the data had been collected later—e.g., in or before February 2021 when the situation had become worse.

Another limitation is the fact that the analysis focusing on the participation pattern is based on three different datasets. Although it was possible to merge the data from AES (2011 and 2016), we do not consider this connection to be apposite with the dataset from 2020. Merging the data from all three surveys would have had a negative impact on the results of statistical inference. Therefore, all comparative results are only indicative and cannot be unambiguously generalised. The same can be said for the measurement of perceived barriers, for which response items had to be recoded.

Despite these study limitations, we believe that our empirical results present substantial new evidence of how much and how deeply the first phase (2019–2020) of the COVID-19 pandemic has affected the participation pattern in nonformal adult education in the Czech Republic. Based on our methodology and these results, we anticipate revisiting the recovery of this type of lifelong learning in of our next research project.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

## ENDNOTES

<sup>1</sup> The item *Offer* was defined as “no suitable education or training activity available”; the item *Prerequisites* was defined as: “respondent not qualified for participation due to prerequisites”.

<sup>2</sup> The item *Health* was articulated as “health reasons”; the item *Family* was articulated as “family responsibilities”.

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