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**Prevalence and Probability to Telework - A case study of Estonia.**

Master's Thesis

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## ABSTRACT

The sudden shift in the manner in which the economy is operating, particularly following the COVID-19 lockdown, raises questions about the number of jobs that may practically be completed from the comfort of one's own home. For many individuals, teleworking is just a temporary solution to the pandemic; yet, for others, this move may serve as the motivation for an entirely new way of working that will last for years to come. This study examines how COVID-19 impacted the rate of teleworking of employees, and established factors that influenced employees' probability to telework. To this end, it uses Estonian cross-sectional yearly Labour Force Survey (LFS). By examining the extent of employee's teleworking, the study highlights that the share of male that teleworked are higher than the female. The results suggest that being a male increased the probability to telework. The study found that employees the probability to telework by employees above 49 years reduced during the pandemic when compared with other age categories.

*Keywords: Telework; COVID-19; Labour Force Survey;*

*JEL codes: J21, J81*

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In response to social transformations, particularly changes in technology brought about by globalization, digitalization, and automation, and global disruptions like the COVID-19 pandemic telework agreements have arisen as a viable option. On March 9, with the official count of COVID-19-positive persons at 7,985 and fatalities by COVID-19 at 463, Italy was the first European country to enter into a thorough, nationwide lockdown (OECD 2020). Containment measures were tightened further on March 22, when a Prime Minister's Decree forced the stoppage of any unessential productive activity, de facto bringing to a halt a substantial section of the Italian economy. Other European nations promptly followed: Austria on March 16, France and Germany on March 17, and the UK on March 23 (OECD 2020).

The government of the Republic of Estonia proclaimed a state of emergency on March 12, 2020, to take preventative measures against the development of the Covid-19 illness inside Estonia. In the beginning, the following steps were taken to prevent the spread of the coronavirus: all public gatherings were banned; (ii) all educational institutions (primary, basic, secondary, vocational, and hobby schools as well as higher education establishments and universities) switched to remote and home studying; (iii) all performances, concerts, conferences, and sports competitions were banned; museums and cinemas were closed; and (iv) all places of entertainment, such as theatres and concert halls, were (Erikson, 2020).

In the absence of vaccinations, diagnostics, or treatments, social distance is the major tactic for countering the coronavirus pandemic (Solidary Research Network 2020). To increase social alienation, teleworking was adopted in many organizations. Physical distancing measures to halt the spread of COVID-19 have resulted in a high number of people working from home, many for the first time. This abrupt transformation in how the economy is running raises issues about how many jobs may realistically be performed from home. While working from home is a transitory solution to the pandemic for many people, for others this change may serve as the impetus for a new way of conducting business for years to come.

The purpose of these unusual measures was to slow down the spread of the coronavirus, to control strain on the national health system and, of course, to contain the death toll. The specific type and scope of containment strategies differed greatly among nations (OECD, 2020). Non-pharmaceutical measures included school closures, cessation of non-essential corporate activity and institutions, restrictions on public transport, banning of big meetings, quarantine of persons entering the country and border closures. Moreover, individuals were urged (or

compelled) to take health and physical distancing measures, such as working from home. Early investigations (Open COVID-19 Data Working Group, 2020) demonstrate that these measures were effective in limiting COVID-19 spread in the province of Hubei in China. However, these restrictive measures also produce economic and psychological costs for the restricted persons (Brooks et al., 2020) and have productivity ramifications on employees.

This study aims to find out how COVID-19 impact the rate of teleworking of workers, and the extent of teleworking before and after the lockdown in Estonia. To this end, it uses the Estonian Labour Force Survey (LFS), which covers employment, unemployment, and job conditions of all the working-age population in Estonia. The study also established the effect of commuting distance, socio-economic status and education on employees' probability to work from home.

Teleworking according to Sensis (2005) has been primarily defined as working away from an individual's usual workplace during normal business hours aided by some form of technology. Telework is a form of organizing and/or performing work, using information technology, in the context of an employment contract/relationship, where work which could be performed at the employer's premises, is carried out away from those premises regularly. This definition is adopted by this study. A teleworker is any person carrying out telework as defined above (CEC, 2001).

Telework capacity varies greatly between sectors. Most jobs in finance and insurance, educational services, and professional, scientific, and technical services can potentially be performed from home while those in accommodation and food services and agriculture, forestry, fishing and hunting have almost no telework capacity (Deng, Morissette and Messacar 2020). Financially disadvantaged employees tend to have the lowest telework capabilities, including those who are under the age of 25 and who have a high school education or less than a high school diploma. Since these qualities are commonly linked with minimum-wage and low-income employees, the pandemic could be limiting work hours to a higher amount among them than among other workers (Deng, Morissette and Messacar 2020).

Working from home (sometimes termed telecommuting or telework) is becoming an increasingly prevalent activity. In affluent nations, the share of employees who predominantly telework has expanded dramatically over the years (Bloom, Liang, Roberts and Ying 2015). Teleworkers today encompass a vast spectrum of employment, ranging from sales assistants and realtors to managers and software engineers, with a similarly large variety of wages (Autor, Katz, and Kearney 2006). Among developed countries, teleworking appears to be prevalent.

A study done by Bloom et al. (2014) in a comprehensive telephone survey conducted on over 3,000 medium-sized manufacturing enterprises between 2012 and 2013, indicated that the percentage of managers authorized to telework during regular working hours is greater among industrialized nations than in developing ones.

It was claimed by Bloom et al. (2014) that fifty per cent of managers in developed countries such as the United States, the United Kingdom, and Germany were authorized to telework during normal hours, which demonstrates that this is now standard practice. In addition, they found that the proportion of managers in several emerging countries such as Kenya, Tanzania, and Zambia is about 20 per cent. This was due to an increase in the number of people working from home in developing countries as a result of greater traffic congestion and improvements in technology.

This study will contribute to the existent literature by analyzing the extent of teleworking before and after the pandemic lockdown among the sampled households, and changes in job characteristics during the period under study. Studies established employees' probability of telework, and how it is influenced by employees' level of education, socio-economic status, and commuting distance. Hence, teleworking as influenced by COVID-19 and its effect on employees' probability to telework are the main research questions addressed in this study. Furthermore, Logit Regression was used in examining the employee's probability of telework.

Following the introductory chapter, the research is organized in the following manner: The second section provides a review of the most recent and relevant literature under the scope of the current research (teleworking). The third section presents the empirical data. The fourth section will provide quantitative data analysis, results/findings, and discussions, while the fifth section summarizes the major results from the analysis of the data collected, concludes, and offer recommendations for future research study.

CERCS: S196, S212

## **LITERATURE REVIEW**

### **2.1 Introduction**

The literature discussing the overall impact of COVID-19 on workplace is quite exhaustive. Since the early lockdown measures, there has been a major discussion on the economic impact on the labour market of physical separation measures (Koren and Peto, 2020; Barrot, Grassi and Sauvagnat, 2020) and obligatory lockdowns (Brouard, 2020). Some studies have sought to offer an estimate of the occupations that can be done with little risk of getting COVID-19 (Basso et al., 2020) or that can be conducted directly from home (Dingel and Neiman, 2020). Others have focused on the growth in unemployment (Coibion, Gorodnichenko and Weber, 2020). Some authors suggested a possible trade-off between public health and economic motives (Glover et al., 2020): lock-down measures reduce contagion and deaths (with important social and economic benefits), but at the risk of a complete shutdown of the economy – with important effects on economic growth.

Other studies considered the distribution effects and argued that COVID-19 will likely increase income inequality, due to a stronger negative effect on more vulnerable categories of individuals, such as young (Bell et al., 2020), women (Alon et al., 2020), low educated (Adams-Prassl et al., 2020), gig economy workers (Stabile, Apouey and Solal, 2020). Despite these discoveries, few studies focus on how COVID-19 will influence employees' commuting time, which could influence employees' level of productivity. This research implies that employees' productivity can be improved if they spend less commuting time to work as supported by Barrero, Bloom and Davis (2021).

### **2.2 COVID-19 and Teleworking**

The pandemic of COVID-19 has resulted in a variety of workplace adjustments/decentralization. Millions of employees worldwide were at risk of contracting COVID-19 and needing workplace modifications. Workplace adaptations are modifications to work practices, procedures, and the physical environment that allows employees to complete assigned duties successfully, on time, and securely from home, if practicable.

Teleworking is described as a method of arranging and/or conducting work via the use of information technology in which work may be completed routinely away from the employer's facilities (Sols, 2017). Nilles (1997) used the word 'telecommuting' to refer to 'working from home.' There has been no agreement on the precise meaning of teleworking since the 1970s.



This fact is further supported by the concept's widespread adoption. Telecommuting, "working from home," "virtual work," "distance working," and "flexible working" are all terms used to describe teleworking. Teleworking is defined by two factors: a) distance, as the teleworker works from a location other than the employer's facilities; and b) communication between the parties, which requires the use of information technology-computer tools nowadays (Baruch, 2000).

Since the COVID-19 outbreak, the number of employees whom telework has grown dramatically. Teleworking is an organizational innovation that allows employees to conduct part or all of their official duties from home or another place (de Vries, Tummers & Bekkers, 2019; Caillier, 2012). Before the COVID-19 outbreak, one research found that 70% of the worldwide workforce can work from home or remotely at least once a week (Browne, 2018). A 2019 LinkedIn poll found that 82% of employees prefer a flexible work environment and practice that enables them to work from home at least one day each week. While 57% said they work from home at least three days a week (Gilbert, 2020). Due to the COVID-19 pandemic, employees are prohibited from coming to work by the outbreak and organizational decisions. In this time of worldwide public health crises, teleworking has become the New Normal. The COVID-19 epidemic means that more employees than ever are teleworking – using information and communications technology to work from home (ILO, 2020). Teleworking is expected to enhance working conditions for civil/public officials, according to de Vries, Tummers, and Bekkers (2019). The findings of this group's empirical investigation suggest the opposite: teleworking causes professional isolation and a lack of organizational commitment and devotion for public/civil officials. Despite these results, many people still support teleworking, particularly in light of the COVID-19 epidemic. The White House Office of Management and Budget has pushed agencies in Washington, D.C. to increase teleworking flexibility for its employees (Loh & Fishbane, 2020).

The COVID-19 pandemic showed how technology may help managers and the government control workplace dangers. Loh & Fishbane (2020) state that working from home reduces the risk of production loss due to frequent or catastrophic traffic disruptions, especially in Tallinn. Offering telework as a reward may help firms finance high-skill labour while keeping employees linked to the workplace and each other. Employers can reach a bigger pool of prospective employees, while employees have more employment possibilities.

Teleworking helps both firms and workers, according to Loh and Fishbane (2020). Teleworking, they claim, may help reduce traffic congestion by allowing people to work from home. Commuters in Baltimore, USA, spend between 50 and 70 hours a year stuck in rush hour traffic, according to a 2011 survey (Pyles, 2011). Despite the aforesaid advantages, Loh and Fishbane (2020) state that telework does not replace face-to-face work or social connection but increases job happiness. According to Fonner and Roloff (2010), teleworking improves job satisfaction by reducing workplace politics, work-life conflict, and stress caused by extended meetings, interruptions, and diversions. They further say that teleworking is beneficial since it allows for increased information sharing between teleworkers and their coworkers due to prolonged connection.

### **2.3 Teleworking in Estonia**

Significant efforts toward an information society have already been achieved by Estonia. Internet connectivity, high-quality IT solutions, and electronic services have become more widespread in Estonia during the last decade. A creative mentality in both the public and commercial sectors has led to a successful development of ICT infrastructure (Angove, 2007). For the implementation of sectoral policies, the development of Estonia's ICT infrastructure and systems has been a major focus of the country's Information Society Strategy 2013, a sectoral development plan.

For the 45,000 square kilometers of Estonia's surface area, over 900 Wi-Fi hotspots provide access to the Internet. Many public areas, including commuter trains, have Wi-Fi, and it's generally free. Additionally, the government has launched a goal initiative, Village Road 3, which aims to boost broadband Internet access in remote and sparsely inhabited regions where the private sector has little interest in investing. Ending the program, distant locations will have internet penetration as high as heavily inhabited areas. Work-Life Barometer 2005 found that Estonian businesses are heavily reliant on information technology. Workers utilized personal computers (42%), email (35%), the internet (38%), and cell phones (46%) in 2005. The most current Global Information Technology Report (2007) puts Estonia 20th on the Networked Readiness Index.

Based on Estonia's ICT-related successes, it may be claimed that the country is well-suited for flexible work arrangements, such as telework, to be implemented there. Teleworking, it is generally accepted, may be an effective tool for attaining economic and social growth that is

both balanced and sustainable. People who reside in rural locations or in distant places with few local job possibilities may find it difficult to commute to and work in a local office, but they may be able to find employment through telework. Research shows that telework allows individuals to spend more time at home, which allows them to participate in more local activities (Angove, 2007).

## **2.4 Teleworking and Employee's Performance**

For many firms, their biggest concern is whether their personnel working from home will be more productive than when they work from the office. Productivity is challenging to quantify and to compare across different types of labor. Knowledge work in particular – the sort of job most typically done from home – is complicated and intangible, meaning that there are no objective evidence on the relative productivity of knowledge workers based at home or in the office (Gratton 2020). As indicated below, the evidence is better for the productivity of more regular, transactional sorts of labor, although this is by no means universal (Lippe and Lippenyi 2020), and there is also research showing that this may alter over the longer term. Employers may now utilize applications to monitor the productivity of remote employees (tracking reaction times, job completion, time spent on different windows, or amount of keystrokes), however they are just incomplete measures and present some disturbing problems concerning management style and ethics (Skillcast 2020). A survey of financial services professionals performed by Deloitte (2021) indicated that three-quarters assessed themselves ‘as productive’ or ‘more productive’ when working from home during lockdown.

Employers’ perceptions of the productivity of teleworkers during lockdown are more mixed: a Chartered Institute of Personnel and Development (CIPD) survey conducted in 2021 showed that 28 percent of employers believe that teleworking during lockdown has increased productivity or efficiency, compared with 28 percent of organisations that report the opposite effect and 37 percent that see no effect. In another company poll, slightly over 50 percent stated that their knowledge employees were more productive from home (Gratton 2020). The overall association between productivity and teleworking has consequently been difficult to quantify objectively (Allen, Golden and Shockley 2015), hence this study will investigate the influence of teleworking on employee's performance.

### **2.4.1 Work intensification**

Work intensification is a regularly observed side effect of telework: persons increase effort while working, putting in more discretionary effort (beyond job requirements), taking fewer

breaks and in some cases working longer hours when teleworking (Felstead and Henseke 2017). One possible explanation, proven in multiple research, is that employees feel glad for the chance to telework, and therefore expend extra effort (Kelliher and Anderson 2010) however this impact may fade with time. Employers who employ teleworking will need to manage the long-term repercussions of behavior changes, and specifically their influence on workers' wellness and work-life balance.

#### **2.4.2 Office distractions and disruptions**

The avoidance of workplace distractions and interruptions (chatty co-workers, office noise) is a well-documented benefit of teleworking. At a research done by Meulen (2017), in a Dutch government workplace, a one-point reduction in distractions (on a five-point scale) resulted in an 11 percent performance boost every day. There is also plenty of self-reported data that workers credit their higher productivity at home to less interruptions. A poll of 501 financial services professionals revealed that, among those who indicated they were as productive, or more productive, working from home during lockdown, 54 percent noted less interruptions and 52 percent a calmer working environment (Deloitte 2021).

Also, Chung, Seo, Forbes and Birkett (2020) found that more than a third (36 percent) of another sample of teleworkers said that, during lockdown, they could get more work done in a shorter amount of time at home, although parents (with no schools or nurseries open), not surprisingly, found it much harder than non-parents to secure a stable block of time to focus on work. However, it nearly goes without saying that productivity improvements will only materialise if: (a) protocols are in place to guarantee that teleworkers can still communicate successfully with colleagues when needed; and (b) one's home environment is acceptable and free from distractions. Safety is also a key worry, with occurrences of domestic abuse growing in the lockdown and pandemic era (CIPD 2020).

#### **2.4.3 Social isolation**

Another influence of teleworking on employee's performance is connected to the issue of team connections, which includes social isolation and exclusion encountered by teleworkers. Research findings indicates that this can be a concern. A London Business School study of 3,000 participants during lockdown indicated that by far the largest issue regarding teleworking (identified by 46 percent of participants) was missing the social connection of the workplace (Sloan 2021). Also, sixty-two per cent of respondents in a global poll of 11,000 workers in 24 countries felt that telecommuting was socially isolating according to Rockmann and Pratt

(2011). One study in a large multi-site tech company observed that workers in the office could also feel isolated if they didn't casually bump into their remote-working colleagues when they anticipated doing so: the authors suggest that a more appropriate focus of interest than office versus home might therefore be to identify people's 'expectations for social interactions' and promote ways to create such interaction in teams that are not co-located (Rockmann and Pratt 2011).

In studies done on the effects of teleworking, eliminating the commute always appears high on the list. A poll of 501 financial industry professionals (in south-east England, where commutes tend to be lengthier) revealed that more than three-quarters listed not having to commute as the main benefit of teleworking (Deloitte 2020). In another survey that included many parents (Chung et al. 2020), 70 percent claimed they would prefer teleworking post-lockdown expressly to avoid commuting.

#### **2.4.4 Work-Life boundaries**

The research concerning the influence of teleworking on work-life balance is mainly, but not fully, favorable - possibly because it depends on a multiplicity of factors, including the individual's home circumstances and personality, as well as their work position. Workers report increased wellbeing on days when they telework (Anderson et al. 2015) and 'leisure satisfaction' is connected with teleworking in a large-scale study of UK workers. Workers may be more likely to stop their professional activities to deal with home needs during work hours when teleworking – but also more likely to disrupt their home life after hours to deal with business demands (Delanoeije, Verbruggen and Germeys 2019).

A more useful method of conceptualising work-life balance for teleworkers may be to focus on how people handle boundaries between work and home: individuals have varied preferences about whether and how to integrate or separate the two (Kossek et al. 2006). One good aspect of commuting is that it creates a physical, temporal and psychological separation of the work and home realms for individuals who desire to separate. On the other hand, teleworking during lockdown has provided several examples of integration, with video conferences – and some high-profile media appearances – improved by children, dogs, housemates or discussion of colleagues' home furnishings.

Of course, boundary management is not simply a teleworking issue: technology may prolong working hours, and workers could feel they are 'always on', even when not formally working (Mullan and Wajcman 2017). Managers and professionals are particularly sensitive to this

phenomenon, having a psychological obsession with work that might interfere with the capacity to shut off (McDowell and Kinman 2017). Some investigations have revealed that distant employees (many of them teleworkers) could find it tougher to shut off and unwind after work (Felstead and Henseke 2017). However, on a more positive note, another research revealed that individuals who had been teleworking for more than a year experienced less work–family conflict: perhaps it gets easier to manage such boundaries with experience (Gajendran and Harrison 2007).

## 2.5 Teleworking and COVID-19 pandemic

Telework facilitates flexibility and a strong work–family balance while reducing the environmental impacts of mobility. Although it has benefits, the implementation of teleworking practices across Europe (Figure 1 shows the level of teleworking across Europe), and in particular, in the case of home-based telework, is moving more slowly than expected (Baruch et al., 1997; Aguiléra et al., 2016). The economic crisis is considered a reason that justifies this delay, although teleworking was originally attributed to the oil crisis of the 1970s (Tavares, 2015). In this context, telework has suddenly experienced a rebound, as a result of the measures to protect citizens from the coronavirus disease (Covid-19). Governments began recommending in early 2020 that businesses make teleworking easier so that workers don't have to congregate in the same spot. Mr. Illa encouraged firms to promote telework in Spain in March 2020, and numerous protocols were produced for enterprises in their adoption of telework (Belzunegui-Eraso and Erro-Garcés, 2020).

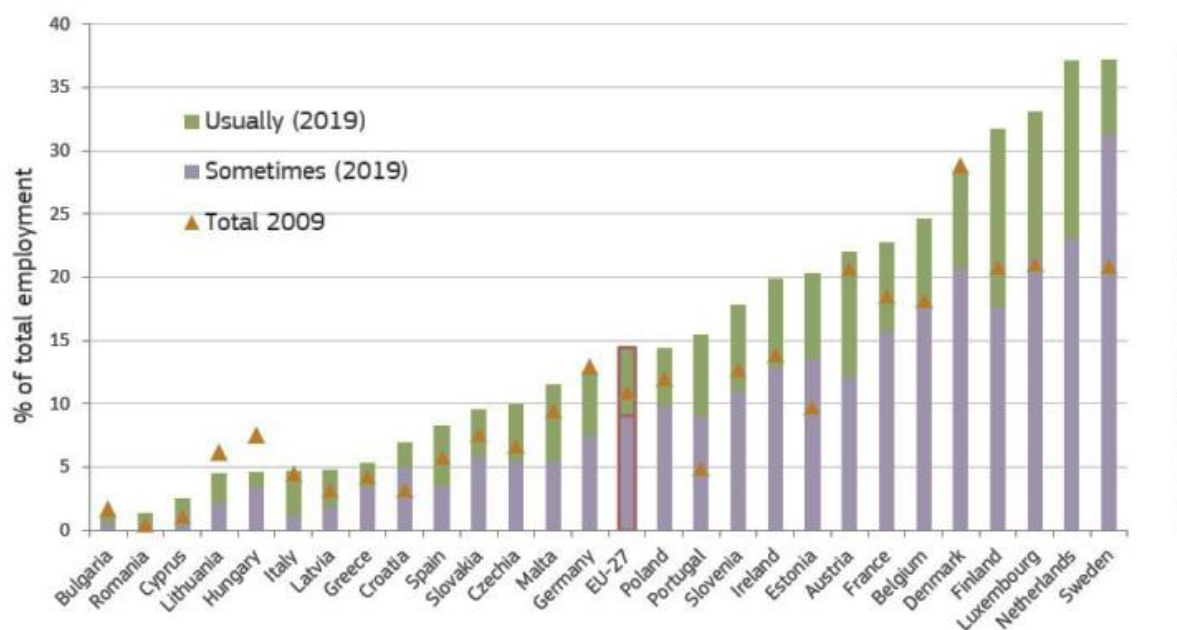


Figure 1: Prevalence of telework across EU Member States (Source: Eurostat, LFS)

During and after the COVID-19 epidemic, successful and productive teleworking requires self-motivation and discipline; strict work routine, protection of teleworking devices via full-disk encryption; log out when not working, strong password policy, etc (Anscombe, 2020). A dependable and regular electrical source is also required to power teleworking equipment and gadgets. To make teleworking work, successful, and productive during the COVID-19 epidemic, according to Jon Messenger (ILO working time expert), the following five variables are critical:

- i. Top-down managerial assistance for frontline supervisors: Workplace study indicates that management opposition to telework innovation is a key hindrance to its implementation. Teleworker management requires a results-based management technique/approach. Monitoring, measuring, and discussing progress is done without too cumbersome reporting obligations.
- ii. Teleworker and manager tools and training: This involves providing sufficient working equipment including PCs, laptops, apps/software for teleworking, and timely technical assistance, as well as educating managers and teleworkers. Because full-time teleworking may lead to social isolation, it is critical to help teleworkers remain connected with coworkers, technical team, supervisors, and the business as a whole.
- iii. Setting clear expectations and communicating them to all parties: Setting explicit expectations helps to compare actual performance to expectations. Conditions of employment, methods of tracking progress and reporting outcomes must be well understood by all parties. Managers and teleworkers must be guided by explicit guidelines.
- iv. Teleworkers' time sovereignty: Telework allows to employees temporal flexibility. Flexibility is essential for efficient telework. Teleworkers may balance paid employment with personal duties like childcare and other family obligations.
- v. A border management plan: Teleworkers must devise their own ways for managing paid job and personal life. A dedicated workstation free of distractions is required, as is the capacity and flexibility to withdraw from work at designated periods for rest and personal life.
- vi. Trust: Trust is emphasized thrice. Management, teleworkers, and their peers must trust one other. Telework isn't productive or successful without it.

## **METHODS AND DATA**

### **3.1 Methodological Choice and Methods of Data Analysis**

The research design methodology choice will be mono-method quantitative, which involves the use of one research approach for a given study. It also involves the use of quantitative data collection approaches and analytic procedures. A survey research design could either be a longitudinal or cross-sectional design. This study will adopt the longitudinal design, which is used when studying a population over a period of time. It could be in form of trend, cohort, or panel studies. The study will use the Estonian Labour Survey (LFS) data over a period of eleven (11) years (2010 – 2020). This panel data covers employment, unemployment, job conditions, teleworking conditions, and household demographics of all the working-age population in Estonia. The LFS panel data will be analyzed and presented using statistical tools such as measures of central tendencies, and Logit regression. The analysis will be based on the research questions generated. STATA, a statistical software, will be used in carrying out the aforementioned statistical analyses.

Since 2000 the survey has been organised quarterly as a rotating panel sample: each individual is surveyed 2 quarters, then not observed sequent 2 quarters, and thereafter again surveyed for 2 quarters. The sample comprises the permanent residents of Estonia at the age of 15-74 years, but information on all household members is collected. Till 1999 about 12 thousand adults were surveyed annually since 2000 in each quarter about 4,000 people are surveyed. However, this sample is not very large but still sufficient for this study.

### **3.2 Measurement of Variables and Model Specification**

Independent factors such as gender, age, educational attainment, job status, and the size of a company have been demonstrated in earlier studies (López-Igual and Rodríguez-Modroo, 2020) to have a substantial impact on teleworking. A variety of employment-related criteria were also considered, such as the International Standard Classification of Occupations



(ISCO)'s classification of occupations. The next section contains definitions for each of the independent variables. The study's variables (both independent and dependent variables) are measured using the constructs highlighted below:

The probability of telework is, conditional on the inputs  $x_i$ , is assumed to be:

$$P(y_i = 1 | x_i) = S(x_i\beta)$$

where

$$S(t) = \frac{1}{1 + \exp^{-t}}$$

is the logistic function and  $\beta$  is a  $K \times 1$  vector of coefficients.

It is immediate to see that the logistic function  $S(t)$  is always positive. Furthermore, it is increasing and

$$\begin{aligned} \lim_{t \rightarrow -\infty} S(t) &= 0 \\ \lim_{t \rightarrow \infty} S(t) &= 1 \end{aligned}$$

so that it satisfies

$$0 < S(t) < 1$$

Then

$$P(y_i = 0 | x_i) = 1 - P(y_i = 1 | x_i) = 1 - S(x_i\beta)$$

The first logit model was carried out using logit regression to estimate the marginal effects. The dependent variable (probability to telework) is a dummy variable, which takes 1 for those that teleworked and 0 otherwise. The regressors include age, gender, education, and employment status. These regressors are to predict the probability to telework by an employee. These variables were adopted from the study of López-Igual and Rodríguez-Modroño (2020), as determinants of teleworking in Europe. The logistic regression model is presented below.

$$\text{Probability to telework} = K + \beta_1(\text{age}) + \beta_2(\text{gender}) + \beta_3(\text{education}) + \beta_4(\text{employment status}) \quad (i)$$

The second logit model estimates whether the types of occupation of an employee could increase the probability to telework, in addition to gender, age, education, and employment status. This also is similar to the study of López-Igual and Rodríguez-Modroño (2020). The logistic regression model is presented below.

$$\text{Probability to telework} = K + \beta_1(\text{age}) + \beta_2(\text{gender}) + \beta_3(\text{education}) + \beta_4(\text{employment status}) + \beta_5(\text{occupation}) \quad (ii)$$

The third logits model further estimates whether the size of the firm could influence an employee's probability of telework. The logistic regression model is presented below.

$$\text{Probability to telework} = K + \beta_1(\text{age}) + \beta_2(\text{gender}) + \beta_3(\text{education}) + \beta_4(\text{employment status}) + \beta_5(\text{occupation}) + \beta_6(\text{firm size}) \quad (\text{iii})$$

### 3.3 Definitions of Variables

- i. **Gender:** Dummy that takes the value 1 for men and 0 otherwise.
- ii. **Age:** Age declared by respondents, classified in 3 intervals: 0–24 years (ref.), 25– 49 years, 50 – 75 years
- iii. **Level of education:** The highest level of education or training completed declared by respondents, classified in 3 intervals: 1: low education: ISCED 0–2, max. the lower secondary or second stage of basic education; 2: medium education: ISCED 3–4, (upper) secondary education and post-secondary non-tertiary education; 3: high education: ISCED 5–8, all stages of tertiary education.
- iv. **Employment status:** Variable that takes value 1 if the respondent is on a permanent contract and 2 if the respondent is on a temporary contract
- v. **Firm sizes:** Number of employees in the current firm as declared by respondents, classified in 5 intervals: 1 – 10 employees, 11-49 employees; 50-199 employees; 200-499 employees; and 500 employees and above
- vi. **ISCO:** The International Standard Classification of Occupation (ISCO), at the 1-digit level, the variable that takes the following values when respondents declare to work: 1 as managers; 2 as professionals; 3 as technicians and associate professionals; 4 as clerical support workers; 5 as service and sales workers; 6 as skilled agricultural, forestry and fishery workers; 7 as craft and related trades workers; 8 as plant and machine operators and assemblers; and 9 as elementary occupations.
- vii. **Probability to Telework:** Dummy that takes the value of 1 for teleworking and 0 otherwise.

## RESULTS AND DISCUSSIONS

### 4.1 Descriptive Analysis

Results shown in Table 1 show that out of the total observations of 221,317, the majority of the respondents are female as shown by a percentage share of 52.1%, while the male respondents represented a share of 47.9%. These results also infer that females represented a larger population (52.1%) of the Estonian labour workforce. Findings from the World Bank (2022) on life expectancy in Estonia show that the life expectancy at birth of a female is higher than that of a male. This shows that the female lives longer than the male, which could have contributed to the larger percentage of women in Estonia. The results also show that

Results from the study also reflect that Estonians form the larger percentage of the Estonian labour force. Table 1 shows that out of total observation, Estonians represented about 74.5% of the total Estonian labour force. Non-Estonians constituted also a significant part of the labour force (25.5%).

Table 1 shows that over the period under study, the rate of teleworkers grew constantly, having about 25.7% of the survey respondents in 2020. In 2019, the results show that about 23.05% of the respondents teleworked, while 15.2%, 11.6%, and 8.73% teleworked in 2018, 2017, and 2015 respectively. These results confirmed that the rate of teleworkers grew over the years, with the highest proportion of teleworkers in 2020, which is after the coronavirus outbreak.

Furthermore, Table 1 shows the share of different categories of teleworkers over the period. In 2010, 13.23% teleworked all the time, 9.08% teleworked all the time in 2011, and 11.75% teleworked all the time in 201. Also, about 9.49% teleworked all the time in 2013, 7.71% teleworked all the time in 2014, while 9.59%, 9.53%, 8.77%, 7.69%, 10.36%, and 27.97% teleworked all the time in 2015, 2016, 2017, 2018, 2019, and 2020 respectively. These results show that the largest share of those that teleworked all the time was in 2020. This is largely due to the outbreak of the pandemic when most organisations switched to working remotely.

The results in Table 2 show the age categories represented in the Estonian labour force between 2000 and 2020, shortly after the pandemic. The results show that workers within the age range of 25 years and 49 years represented the largest proportion of the total Estonian labour force during the period under study, 42.3%, of the total observations. Next, are the workers between the age range of 50 years and 75 years, who represented about 41.4% of the total observations while workers less than 25 years of age represented the least proportion, 16.3%.

The results are shown in Table 2 highlight the marital status of the Estonian labour force. The majority of the respondents declared to be married, representing 62.8% of the total observations. While 25.9% and 11.2% of the total respondents indicated that they were single or widowed respectively. This result infers that the majority of the Estonian labour force had the responsibilities of taking care of their dependents (family members), and would have to remain in their respective jobs to earn a living and also take care of their dependents. In another way, it can also be argued that many stayed away from their jobs to take care of their dependents, this is most common among women with kids. This is supported by the study of López-Igual and Rodríguez-Modroño (2020) who found that women represented a higher share of workers, who had caring responsibilities than the rest of the workforce.

Also, comparing the match between workers' level of education and job, the results show that a larger proportion of the population reported a match between their levels of education and job. This infers that the majority of the workers in the Estonian labour force are employed based on their level of education. Also, the education-job match depicts that most of the workers were employed in the appropriate sectors/institutions and thus professionally fit. These professional fits could translate to high work efficiency, effective job delivery, and a high level of employee performance, provided all other work conditions are met.

As regards the sector of the economy of the institution/firm where the respondents work, the results show that a larger proportion of the respondents work in the tertiary sector of the economy while the least proportion works in the primary sector of the economy. Most of the employees work in the tertiary sector of the economy. Furthermore, the results show that a very large proportion of the respondents were engaged in permanent work contracts (within the period under study).

Table 3 shows the socio-demographic share of teleworkers of the LFS survey respondents, for a period of 11 years (2000 - 2020). Socio-demographic information such as gender, age classification, levels of education, citizenship, and marital status. Share of teleworkers as regards the size of the firms where the respondents work, region, nationality, sector of employment, and contract type were examined. The table shows the share of each category of teleworkers before the pandemic (2010 - 2019), and during the pandemic (2020). This study adopted the categories of teleworkers used in the Estonian LFS survey.

The results show that out of all the observations, 8.27% of males teleworked all the time before the pandemic, while 23.78% of males teleworked during the pandemic. Also, the results show that 10.84% of females teleworked all the time before the pandemic, while 19.16% teleworked all the time during the pandemic. These results show that a larger proportion of males teleworked all the time than the females. These findings are supported by Vilhelmson and Thulin (2016), who found that working from home is more common among affluent, well-educated men in the creative and knowledge-based professions who live in large cities. Considering the period under study (2010 – 2020), the findings infer that the males teleworked more than their female counterparts. Also, the findings infer that before the pandemic, more males teleworked than females. However, during the pandemic, there was a paradigm shift as more females teleworked than males in Estonia.

**Table 3: Socio-Economic Categories Share of Teleworkers**

Socio-Demographic Categories	Before COVID-19 Lockdown					After COVID-19 Lockdown				
	Teleworked all the time	Teleworked most times	Teleworked half times	Teleworked quarter times	Teleworked less than quarter times	Teleworked all the time	Teleworked most times	Teleworked half times	Teleworked quarter times	Teleworked less than quarter times
Gender										
Male	8.27	11.64	11.71	20.37	48.02	23.78	18.20	15.64	16.27	26.11
Female	10.84	9.42	11.64	18.01	50.09	31.57	19.16	13.05	12.41	23.80
Age										
Age0_24	13.51	11.79	9.09	21.62	43.98	39.83	17.80	7.63	13.56	21.19
Age25_49	8.44	9.99	11.52	19.04	51.02	27.29	18.31	13.45	14.43	26.51
Age50_75	11.23	11.81	12.29	19.55	45.13	28.26	19.72	16.73	13.73	21.57
Marital Status										
Single	10.57	10.35	9.00	18.34	51.73	32.48	18.80	10.04	13.69	25.00
Married	9.16	10.52	12.08	19.40	48.84	26.86	18.64	15.31	14.47	24.72
Widowed	10.59	12.08	12.39	19.70	45.23	30.55	19.29	11.58	12.54	26.05
Nationality										
Estonian	9.33	10.34	11.73	19.37	49.23	27.31	18.99	14.65	14.15	24.89
Non-Estonian	10.22	12.23	11.36	18.70	47.50	31.62	17.18	12.03	14.43	24.74
Region										
Northern	7.19	9.46	11.50	18.16	53.69	27.57	19.70	14.69	13.59	24.45
Central	10.18	11.54	8.82	20.70	48.77	21.29	18.32	15.84	15.35	29.21
North-Eastern	10.48	17.83	13.97	21.69	36.03	26.98	22.22	7.94	13.49	29.37
Western	13.13	9.59	9.59	18.04	49.66	36.05	6.98	12.79	11.63	32.56
Southern	15.49	11.44	11.20	23.35	38.52	36.62	12.68	8.45	19.72	22.54
Employment Type										
Permanent										
Contract	8.18	9.74	10.13	18.52	53.43	27.33	18.81	13.98	14.02	25.85
Temporary										
Contract	3.99	8.60	9.68	16.28	61.44	17.89	23.17	14.63	14.63	29.67
Firm Size										
1 – 10 employees	15.01	14.93	15.30	19.95	34.80	33.98	16.64	14.71	13.66	21.02
11-49 employees	7.98	8.95	10.00	20.35	52.72	23.40	18.05	14.04	15.76	28.75

50-199 employees	4.65	6.70	8.36	17.63	62.66	23.28	20.75	14.35	13.75	27.86
200-499 employees	2.63	7.13	10.86	16.12	63.27	30.25	22.34	13.08	14.44	19.89
500 employees and more	5.37	7.84	9.34	19.01	58.43	29.83	19.07	14.43	12.47	24.21
Sector of Employment							16.67	16.67	22.92	19.79
Primary	18.56	13.76	13.10	15.50	39.08	24.30	15.86	14.07	16.37	29.41
Secondary	6.75	9.03	8.57	20.33	55.31	28.75	19.12	13.91	13.68	24.54
Tertiary	9.25	10.72	11.68	19.11	49.22	28.14	18.70	14.00	14.22	24.94

In addition, the results show that 18.56% in the primary sector of employment teleworked all the time before the pandemic, while 24.30% in the primary sector teleworked after the pandemic. The results show that there is an increase in the level of those that, while 45.1% represents a share of the teleworkers in the tertiary sector of the economy during the pandemic. This infers that teleworking is much more feasible in the tertiary sectors than in other sectors. A further look at the results in Table 3 shows that considering all the periods under study, workers in the tertiary sector of the economy teleworked more than other sectors of the economy, secondary and primary sectors. Also, the results infer that before and during covid-19, workers in the tertiary sector teleworked more than workers in other sectors.

Furthermore, the results in Table 3 show that the majority of the respondents teleworked all the time, especially after the pandemic outbreak. The results in Table 3 show that the employees who are on permanent contract engagement teleworked all the time less than those on temporary contract employment. In addition, employees in small organizations teleworked more than those in large enterprises, regardless of the duration of their teleworking. This may be due to the inability of small businesses to provide working spaces for their workers. It could also be a result of large numbers of small organisations in services. More also, the large number of start-ups in Estonia, which are usually small organizations, could contribute to this figure. In addition, the results in Table 3 show that majority of the teleworkers in Estonia work in the tertiary sector of the economy, while the least proportion of teleworkers is employed by the primary sector of the economy. A cursory look at the categories of teleworkers and their respective industries, the results in Table 3 show that majority of the teleworkers are in the public services, followed by teleworkers in the trade sector of the economy. The results also show that the least proportion of teleworkers in the country is in the energy.



## 4.2 Regression Analysis

This result describes the binary logit models of the selected independent variables on the probabilities of teleworking and predicted probabilities of each model. The interpretation of the marginal effect of the regressors depends on this probability. Table 4 reflects the marginal effects of three versions of a binary logit model in which the dependent variable is a discrete choice variable that compares teleworkers with those with not teleworking. These three versions include various regressors to test the robustness of the effects identified. The first model includes the worker's gender, age, level of education, and employment status. The second model includes predictors such as occupation in addition to the regressors in the first model, while the third logit model includes firm size as additional regressors.

The first model which accounted for a predicted teleworking probability of 9.98%, found gender, workers between the ages of 25-49 years, education, and employment status to be significant. The second model added that workers within the age range of 0 and 24 years could also predict the probability of telework, including employees' current occupations as shown by their significant levels. This increased the probability to telework to 18.22%. The third model significantly predicted that the firm size of the employees influences the probability to telework. This increased the predicted probability to 18.76%.

The marginal effect results show that being a man increases the probability of teleworking by 22.22%, this is reduced to 18.66% and 18.65% in models 2 and 3 respectively. This also confirms that there existed a relationship between gender and the probability of telework. The marginal results also show that having a primary education is associated with the probability of teleworking being lower by 42.26% ( $7.7/18.22$ ) in model 2 and further reduced to 41.73% ( $7.83/18.76$ ) when considering the firm sizes as shown in model 3. This shows that level of education could significantly predict workers' ability to telework. In addition, the marginal results show that having permanent contract employment reduces workers' ability to telework while working as a temporary worker could increase the worker's probability of telework. The marginal effects result further shows that occupation types influence employees' ability to telework.

The explanatory variables chosen to explain teleworking include those factors proposed traditionally by the socio-economic literature. In particular, the regressors considered allowing for personal characteristics such as gender, age, educational attainment, employment status, firm size, and types of occupation. The outcomes of the models' estimations are discussed in

this section. To begin, Table 5 shows the marginal effects associated with the first equation of the ordered response model that explains teleworking in Estonia before and during the COVID-19 pandemic outbreak. As regards the gender distribution of the respondents, men are more likely to telework than women. Women were less likely than males to utilize telework to balance their work and family lives. This is evident both before and after the pandemic. Before the pandemic, the probability of teleworking is about 3.5 percentage points higher than the female workers and 2.4 percentage points higher during the pandemic. This infers that although the male workers teleworked more than the female workers, this was reduced during the pandemic. Contrary to pre-pandemic findings, these results may imply that the most adaptive economic sectors to lockdown and telework were those with the largest percentage of women. These findings are similar to the study conducted by Ruiz (2022) on factors determining telework before and during COVID-19 in Spain and Andalusia. Ruiz (2022) found that since the pandemic outbreak, the likelihood of female employees working remotely has increased dramatically.

Secondly, the results of the marginal effect show that before the pandemic outbreak, the probability to telework by workers within the age range of 25 - 49 years is about 2.3 percentage points higher than workers above 49 years. This increased to about 6.8 percentage points during the pandemic. Also, before the pandemic, the probability to telework by workers less than 25 years is about 1.0 percentage points higher than for workers above 49 years and 2.9 percentage points higher during the pandemic. This finding infers that employees the probability to telework by employees above 49 years reduced during the pandemic when compared with other age categories. Work-from-home policies favour long-term employees who have earned the confidence of their bosses, although younger people may choose to telework more than older workers, who may be less familiar with technology innovations supporting teleworking. Hence, the probability to telework is negatively related to age. This is consistent with Drucker & Khattak (2000).

Also, emphasis is placed on the importance of lifelong learning in an ever-dynamic labour market, as well as the development of cross-sectoral competencies gained via the educational system. The probability of teleworking by employees with tertiary education is 4.6 percentage points higher than employees with a secondary level of education and 6.9 percentage points higher than employees with a primary level of education. This is before the pandemic. During the pandemic, the probability to telework by employees with tertiary education is 6.8 percentage points higher than employees with a secondary level of education and 11.5

percentage points higher than employees with primary education. These results infer that the higher the level of education of an employee, the higher their probability of telework. This is consistent with the findings of Ruiz (2022). Thus educational attainment is positively correlated with an employee's probability of telework. To be successful at teleworking, one needs discretion as well as the ability to manage time and handle issues, all of which may be learned in school.

Regarding workers' employment status, before the pandemic, the probability of telework by employees with a temporary contract type is about 0.5 percentage points higher than for employees with an oral contract. Also, the probability to telework by employees with a permanent contract type is about 2.4 percentage points lesser than employees with an oral contract type. However, the probability of teleworking by employees with either permanent or temporary contract types is lesser than for employees with oral contract types. Furthermore, the results show that before the pandemic, the probability to telework by employees of different occupations differs. Specifically, employees that are managers, and professionals have a higher probability to telework than employees working as technicians, sales staff, agricultural workers, tradesmen, and machine operators. Similarly, during the pandemic, managers and professionals have a probability to telework more than other types of occupations present in the LFS data. This implies that managers and professionals had acquired the needed skills to telework before the pandemic outbreak, which in a way contributed to their abilities to teleworked more during the pandemic.

Considering employees' firm size as related to the probability of telework. The marginal effects estimations show that, before the pandemic, employees working within small organisations are more likely to telework than employees working in organisations with employees more than 10 employees. This is consistent with the share of teleworkers working in smaller organisations. Both before and during the pandemic.

## CONCLUSIONS

The COVID-19 pandemic showed how technology may help managers and the government control workplace dangers by working from home. This study concentrated on the direct impacts of gender, education, marital status, firm size and sector of the status on an employee's probability of telework. Both the number of teleworkers in Estonia and the frequency of telework during the period under study were estimated. The study's objective is to examine an employee's probability to telework, and if the coronavirus outbreak increases the probability to telework of an employee. The study also established whether there is a relationship between teleworking and the dependent variables. The findings of the study infer types of occupation and employee firm sizes increase employees' probability to telework. This study also found that the rate of teleworkers in Estonia varies across the various sector of the economy, and various regions of the country, with the North-eastern region having the largest share of teleworkers during the pandemic, who teleworked all the time.

The prevalence of teleworkers in some sectors of employment more than the others could be due to the nature of the sector. For instance, the tertiary sector is mostly for professionals. This is supported by the study of Deng, Morissette and Messacar (2020), who found that most jobs in finance and insurance, educational services, and professional, scientific, and technical services can potentially be performed from home while those in accommodation and food services and agriculture, forestry, fishing and hunting have almost no telework capacity.

Findings from the study also imply that the outbreak of the covid-19 does not impact an employee to telework, regardless of their commuting distance, and match between their education and job. This finding of this study implies that commuting distance does not impact a worker's probability to telework. This is in contrast to the findings by Helminen and Ristimäki (2007) who found that commuting distance contributes significantly to the probability of telework. This study proposed further research on employees' references for teleworking

during the pandemic and factors that could promote teleworking during the pandemic. This study provides insight into the prevalence and share of teleworkers in the study area, comparing the period before the pandemic and after the pandemic. It is of significance to policymakers in Estonia.

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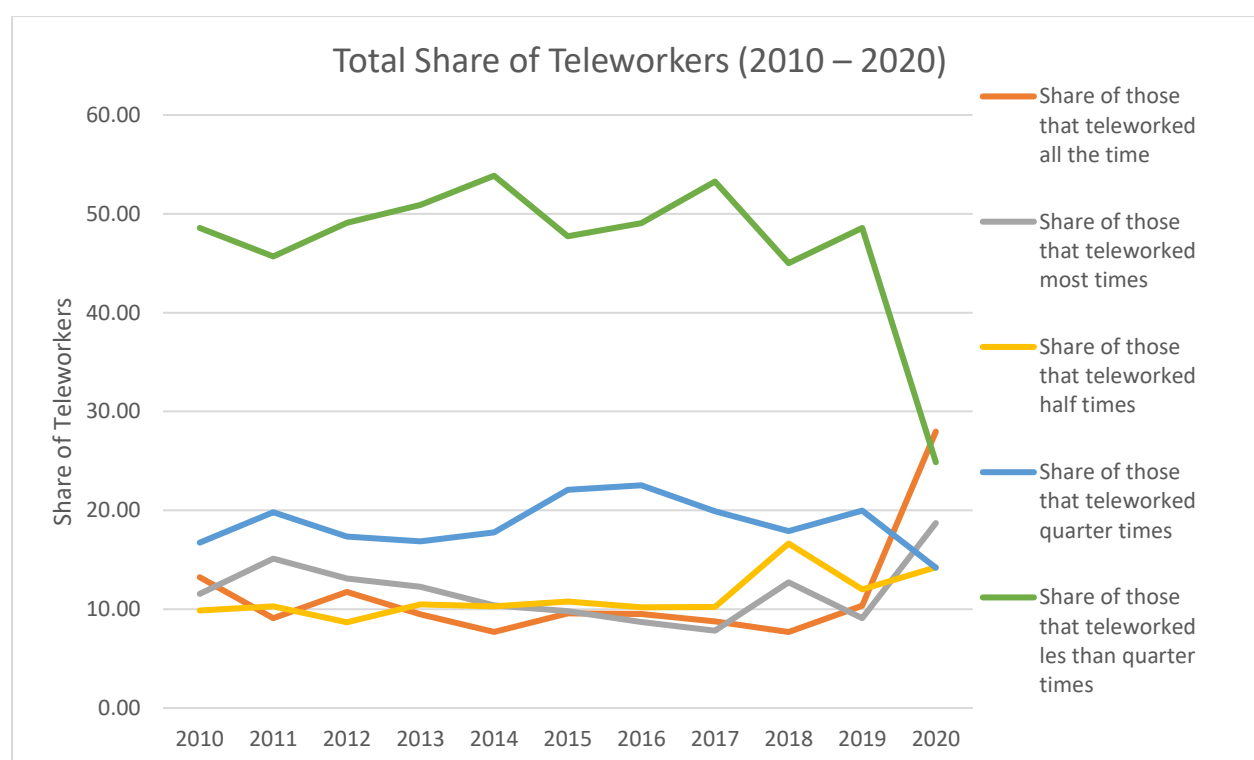


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## APPENDICES

Table 1: Total Share of Teleworkers (2010 – 2020)

Year	Did not teleworked	Share of those that teleworked all the time	Share of those that teleworked most times	Share of those that teleworked half times	Share of those that teleworked quarter times	Share of those that teleworked less than quarter times
2010	7963	13.23	11.56	9.88	16.75	48.58
2011	9157	9.08	15.13	10.29	19.82	45.69
2012	10637	11.75	13.12	8.68	17.35	49.10
2013	10734	9.49	12.28	10.49	16.85	50.89
2014	10913	7.71	10.40	10.28	17.76	53.86
2015	10628	9.59	9.81	10.78	22.09	47.74
2016	10424	9.53	8.70	10.19	22.54	49.05
2017	11908	8.77	7.82	10.21	19.92	53.27
2018	11995	7.69	12.73	16.64	17.91	45.02
2019	11733	10.36	9.10	12.02	19.97	48.56
2020	10996	27.97	18.72	14.25	14.20	24.87



**Table 2: Demographic Characteristics of the Respondents**

<b>Characteristics</b>	<b>Obs</b>	<b>Percentage Share (%)</b>
Gender		
Female	221,317	52.10
Male	221,317	47.90
Nationality		
Eston	221,317	74.50
Non-eston	221,317	25.50
Marital Status		
Single	221,317	25.90
Married	221,317	62.80
Widowed	221,317	11.30
Age Distribution		
Age 0-24 years	221,317	16.30
Age 25-49 years	221,317	42.30
Age 50-75 years	221,317	41.40
Education		
Matched	221,317	53.60
undereducated	221,317	1.50
Overeducated	221,317	6.10
Firm Size		
1 – 10 employees	135,675	26.90
11-49 employees	135,675	37.20
50-199 employees	135,675	22.30
200-499 employees	135,675	6.50
500 employees and more	135,675	6.30
Sector of Economy		
Primary	204,569	5.60
Secondary	204,569	17.90
Tertiary	204,569	59.90
Sectors		
Construction	204,569	8.40
Energy	204,569	0.50
Sales trade	204,569	11.40
Hotels	204,569	6.40
Transport	204,569	3.50
Finance	204,569	2.40
Other service	204,569	1.20
Public service	204,569	12.80

Public admin.	204,569	1.30
Education	204,569	3.00
Health	204,569	2.90
Types of Contract		
Temporary contract	122,227	3.60
Permanent contract	122,227	93.10

**Table 4: Logit Models**

	<b>Model 1</b>		<b>Model 2</b>		<b>Model 3</b>	
	Marginal Effects	z	Marginal Effects	z	Marginal Effects	z
<b>Predicted Probability</b>	0.0998		0.1822		0.1876	
<b>Gender</b>						
male	0.0228016	12.49***	0.0349426	19.05***	0.0354298	19.24***
<b>Age</b>						
age0_24	0.0015124	0.32	0.0114084	2.43*	0.0129908	2.78**
age25_49	0.0380543	19.42***	0.0283693	14.86***	0.0283356	14.87***
<b>Education</b>						
Primary	-0.2352272	-39.91***	-0.0771447	-12.98***	-0.0783689	-13.22***
Secondary	-0.1378643	-71.36***	-0.0507502	-24.96***	-0.0522181	-25.6***
<b>Employment Status</b>						
Permanent contract	-0.0239574	-5.32***	-0.0229196	-5.23***	-0.0189304	-4.33***
Temporary contract	0.0134814	2.36*	0.0119094	2.15*	0.0157654	2.85**
<b>Occupation</b>						
Managers			0.1226916	9.77***	0.1240292	9.87***
Professionals			0.1085425	8.68***	0.1131748	9.05***
Technicians and associate professionals			0.0830929	6.63***	0.0850611	6.79***
Clerical support workers			0.0418904	3.24**	0.0449304	3.47***
Service and sales workers			-0.0809459	-6.08***	-0.0791291	-5.95***
Skilled agricultural, forestry and fishery workers			-0.0221185	-1.27	-0.0256608	-1.47
Craft and related trades workers			-0.1018266	-7.63***	-0.0968463	-7.26***
Plant and machine operators			-0.1209212	-8.84***	-0.1137571	-8.32***
Elementary occupations			-0.1762769	-11.1***	-0.1702208	-10.74***
<b>Firm Size</b>						
1 – 10 employees					0.0483664	3.43***
11-49 employees					0.0011618	0.08
50-199 employees					0.010359	0.74
200-499 employees					0.0331766	2.33*
500 employees and more					0.0282378	1.98*
<b>N</b>	<b>115285</b>		<b>115265</b>		<b>115240</b>	

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

*The reference is woman above 49 years, with tertiary education with an oral contract*

**Table 5: Models for the probability of Teleworking: marginal effects**

	Before COVID-19		During COVID-19	
	Marginal Effects	z	Marginal Effects	z
<b>Gender</b>				
male	0.0357131	19.46***	0.024338	3.55***
<b>Age</b>				
age0_24	0.0107015	2.29*	0.0293988	1.72
age25_49	0.0235303	12.32***	0.0684521	9.96***
<b>Education</b>				
Primary	-0.0695653	-12.06***	-0.1145402	-4.79***
Secondary	-0.0461303	-22.5***	-0.0777667	-10.49***
<b>Employment Status</b>				
Permanent contract	-0.0242762	-5.91***	-0.0634441	-2.65**
Temporary contract	0.0052046	0.97	-0.0035727	-0.13
<b>Occupation</b>				
Managers	0.113453	8.79***	0.2022619	4.78***
Professionals	0.1000041	7.78***	0.1984897	4.73***
Technicians and associate professionals	0.0762379	5.92***	0.1272571	3.04**
Clerical support workers	0.0397015	2.99**	0.0821098	1.9
Service and sales workers	-0.0688568	-5.03***	-0.1341721	-3.05**
Skilled agricultural, forestry and fishery workers	-0.0137164	-0.8	-0.0743578	-0.98
Craft and related trades workers	-0.0765687	-5.64***	-0.2178274	-4.69***
Plant and machine operators	-0.0822009	-5.96***	-0.4107617	-6.89***
Elementary occupations	-0.144006	-8.98***	-0.3150498	-5.79***
<b>Firm Size</b>				
1 – 10 employees	0.0497193	3.62***	-0.0571367	-0.88
11-49 employees	0.0044218	0.32	-0.0999105	-1.55
50-199 employees	0.0113175	0.82	-0.0852246	-1.32
200-499 employees	0.0281004	2.02*	-0.0448036	-0.69
500 employees and more	0.0228205	1.64	-0.0503864	-0.77
<b>N</b>	<b>102,380</b>		<b>12,860</b>	

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

*The reference is woman above 49 years, with tertiary education with an oral contract*

## **Kaugtöö levik ja sagedus Eesti näitel**

### **Kokkuvõte**

Majanduse toimimises toimuvad muutused eriti COVID-19 pandeemia aegsete piirangute kontekstis on tekitanud küsimuse kui paljudel töökohtadel on praktiliselt võimalik töötada kodust. Paljude töötajate jaoks on kaugtöö üksnes pandeemia ajal kasutatud ajutine lahendus, samas teiste töötajate gruppide jaoks võib pandeemia-aegne kaugtöö motiveerida kasutama täiesti uut viisi majandustegevuseks, mis jääb kestma ka peale pandeemia lõppu. Käesolevas magistritöös uuritakse kuidas mõjutas COVID-19 pandeemia kaugtöö kasutamist Eestis erinevate töötajate gruppide poolt ja millised tegurid mõjutavad tõenäosust, et töötaja täidab tööülesandeid läbi kaugtöö. Uurimistöös kasutatakse Eesti Tööjõu-uuringu indiviiditaseme andmeid perioodist 2010-2020. Uurimistöö lõi välja mitmeid seoseid kaugtöötamise sageduse ja erinevaid sotsiaaldemograafiliste tunnuste vahel, nt dokumenteeriti kõrgem kaugtöötamise sagedus meeste seas. Analüüsis tuvastati ka millistes töötajate gruppides kasvas kaugtöötamine COVID-19 pandeemia ajal enam

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