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Navigating Trust Dynamics in Turkey:

Insights from the Initial Eight Months of the COVID-19 Pandemic

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ABSTRACT

The global spread of SARS-CoV-2 and its early serious effects raised big concerns about public safety and health, making it the most significant event of the 21st century. The impact of the pandemic also prompted a need for research into how it affected trust in governments. This study investigates the determinants of trust in government during the initial stages of the pandemic in Turkey. A cross-sectional survey of 2,138 respondents retrieved during the pandemic was used to identify the key factors influencing trust. In order to gain analytical insight, probit estimation models were conducted across categories with changing variables to assess the binary outcome of trust in government. The main findings revealed significant associations between trust in government and various factors, including age, demographic, economic, and health realted variables. Notably, as individuals age and their income increases, there is often a tendency to trust government more. However, when education level increases, there is sometimes a corresponding decrease in the level of trust in government. This is similar to what is observed with other demographic variables such as being divorced and some negative economic factors such as unemployment, as well as some negative health experiences such as having chronic disease or being exposed to the virus. These findings underscore the complex interplay of factors that influence public trust during periods of significant challenge and uncertainty, such as pandemics. By gaining insight into the elements shaping trust, governments can adapt their policies to enhance public trust and support.

Keywords. Government trust, lock-down, COVID-19 pandemic, political trust in crisis, cross-sectional survey data, probit model

INTRODUCTION

The Covid-19 pandemic has not only resulted in global health concerns but has also highlighted several dynamics of trust in government issues. Understanding the determinants of trust in government during this crisis could be crucial for policymakers and researchers. This paper aims to analyze and illustrate the factors that can influence trust of individuals in government during the first eight months of the pandemic in Turkey, focusing on some demographic, economic, and health-related variables. The rapid spread and severe effects of the coronavirus led to several concerns in terms of particularly public safety and health policies, making it the first and most significant incident worldwide in the first quarter of 21st century. However, there is not too much research on relationship between demographic, economic and health-related characteristics of the individuals and their trust in government during the pandemic.

The data used in this paper, based on a cross-sectional survey conducted online between April 13 2020 and November 25 2020 in Turkey (N=2,817), explores the social and psychological outcomes of the pandemic (Sari et al., 2022). This study categorizes its analysis into three groups and the analysis method is given in Section 2 (Data and Econometric Estimation Method). Firstly, demographic features, including age, marital status, urban residence, gender, and parental status, will be explored to investigate their potential impact on trust in government. Secondly, economic- and work-related factors such as individual and household income, education levels, working status, and the ability to work from home will be examined. Finally, health-related aspects, including age, chronic illness, and being infected by coronavirus, will be mentioned to understand their role in shaping trust during the pandemic. Estimation models were conducted across categories with changing variables. Methodologically, the chosen regression is the probit model to

assess binary outcome (trust in government) across categories. In Section 3 (Estimation and Findings) these determinants are subsequently discussed in detail with literature. This part includes marginal effects (based on specified probit models), while detailed probit model outputs and additional marginal effects at specific levels are presented in appendix. Section 4 (Conclusion) will highlight key findings and offer insights for future implications for policymakers and researchers in terms of trust in government during times of crisis.

LITERATURE REVIEW

A new coronavirus (SARS-CoV-2) epidemic, which was first diagnosed in Wuhan, China, in December 2019, quickly spread to all countries around the world and has resulted in a pandemic. Within a year, COVID-19 will cause about 2.5 million deaths worldwide. By December 2023, almost 800 million have been affected and around 7 million people died due to Covid-19 (COVID-19 Deaths | WHO COVID-19 Dashboard). Governments began to take many measures to control the coronavirus epidemic, including the closure many public facilities, forced isolation and limitation of civil liberties, depending on the spread of the virus. Especially after the rapid production, distribution, and application of the first vaccine in countries after December 2020, the mentioned measures began to change depending on when the vaccine started to be implemented in the states.

In times of uncertainty crisis like this, the relationship between governments and citizens is vital for society (Toya & Skidmore, 2014). Therefore, governments have a duty to ensure the safety of citizens when faced with such crisis moments. Trust between the government and individuals depends on the perception that the government has the capacity, expertise, and know-how to make good decisions for the public welfare. Public trust in the government's ability to

reduce the negative effects of the pandemic is a crucial factor in building collective resilience and ensuring effective solutions (Gozgor, 2022). Examining the determinants of trust in government during the COVID-19 crisis provides significant insight into governance dynamics and citizen engagement during such challenges. Various demographic and socio-economic factors, such as age, gender, education, income level, and labor force status, have consistently shown associations with trust (from a broad perspective of trust), as observed in studies (Alesina & La Ferrara, 2002; Algan & Cahuc, 2014).

Age, which is included in each category, has emerged as a common factor and has been considered as an important factor in many studies (Christensen & Lægreid, 2003; Dalton, 2005; Espinal et al., 2006; Inglehart, 1997; Zhao & Hu, 2015). When we look at the studies conducted with respect to pandemic, we can see that age is again included as a determinant since age can shape government trust through several generational perspectives from like historical events, diverse media habits, era-specific institutional trust (Liu et al., 2022; Rieger & Wang, 2022).

For other determinants other than age in the demographic factors are marital status, gender, having children and county residence size (living in big cities). The importance of gender as a significant determinant of trust is often discussed before pandemic as well (Blind, 2007; Christensen & Lægreid, 2003). Studies from the late 20th century suggest that the public sector is crucial for women's careers in terms of employment opportunities. Christensen and Lægreid (2020), for example, discussed that women's careers are built on the foundation of the public sector, where they are more likely to be employed than in the private sector. Additionally, women are more likely to be employed in the public sector and may have indirect dependence on it due to traditional caring responsibilities in public institutions (Christensen & Lægreid, 2005). In one another study conducted in Norway, men were reported as potentially being less inclined to trust

in government due to an increase in public expenditure and the resulting increase in tax burden from the growth of public expenditure and the expansion of the workforce (Huseby, 1995). One study suggests a hypothesis associating gender with public trust in government, treating gender as an independent variable at different levels (Zhao & Hu, 2015). Trust in government during the COVID-19 pandemic may vary by gender, with factors such as the unequal impact of crises on women, including increased caregiving responsibilities, as well as the influence of traditional/established gender roles, which shape their trust levels, as discussed in some studies (Czymara et al., 2021; Xue & Mcmunn, 2020). In another study, it is discussed that the relationship between gender and trust in government is influenced by factors such as representation in government, awareness of gender limitations, and past experiences with male leadership roles (Schroeder et al., 2023). Indeed, in the context of the pandemic, gender is recognized as a factor influencing trust in government (Rump & Zwiener-Collins, 2021). Lately, one study in the U.S. reasoned that gender differences in trust may be attributed to feminine personality traits, suggesting that women, characterized by their communal nature, tend to trust government more than men (McDermott & Jones, 2022). Marital status is also considered as one factor that can influence public trust in government, often treated as a control variable in studies before pandemic (Koch, 2019; Price, 2012). Marital status can be a determinant for trust in government because individuals who are satisfied with their close relationships, such as marriage, may perceive government responses more positively, relying on their relationships as sources of safety and support during times of crisis (Murray et al., 2021). For example, in a study, being married has a positive effect on trust in government since the marriage indicates an extension of support during a crisis. Married individuals are less at risk of social isolation, which can impact trust levels (Rump & Zwiener-Collins, 2021). Also, marital status can be a determinant for trust in government because married

or cohabiting individuals tend to have cohesive social networks with a redundancy of social ties, leading to greater social capital (Callois & Aubert, 2007; Keele, 2007), which is positively associated with trust in government (Rosenberg, 2020). However, with the pandemic, some studies include marital status, particularly when assessed alongside factors like having children or gender, especially for women (Gozgor, 2022; Min et al., 2020; Rump & Zwiener-Collins, 2021). While some studies indirectly link having children to trust since having children results in preoccupations, stress, and hard work associated with raising children (Alesina et al., 2004; Alesina & La Ferrara, 2002), there is some other discussions on having children as a demographic factor in assessing the trust during the pandemic (Rump & Zwiener-Collins, 2021). In accordance with this, having school-aged children decreases trust, particularly for women. This may be due to the unequal impact of school closures, which have affected mothers more strongly than fathers (Rump & Zwiener-Collins, 2021). Lastly, city-level factors, such as income inequality, ideological polarization, political institutions, racial fractionalization, and population size also play a role in governmental trust (Rahn & Rudolph, 2005). The size of the municipality, particularly living in large cities in this paper, is considered a key determinant, primarily associated with diffuse support or general trust, according to one study (Christensen et al., 2020). One study suggests that living in large cities can impact trust in government. Trust levels in government tend to converge between urban and rural areas in highly developed regions. However, in densely populated urban areas, liberal pluralists tend to have higher trust levels compared to rural areas, where authoritarian populists tend to have lower trust levels (McKay et al., 2023). The COVID-19 vaccination rates vary between rural and urban regions, which may indicate the impact of city size on trust. Rural areas have lower vaccination rates and trust in information sources, which underscores the role of city size in shaping trust in government (Soorapanth et al., 2023).

Other individual factors impacting on governmental trust are individual income, household income, education level, mother's education level, working status, remote working and working sector. Some studies before pandemic mostly focusing on income inequality show that high levels of it can decrease citizens' trust in government across various countries around the world (Aitalieva, 2017). However, the impact of income level itself on trust in government may be as significant as other factors (Blind, 2007; Murtin et al., 2018; Zhao & Hu, 2015). Income is related to trust in government because individuals with higher incomes tend to have greater socio-economic resources and educational attainment. Conversely, individuals with lower incomes, particularly those from disadvantaged socio-economic backgrounds, are more likely to perceive politicians as serving the interests of the wealthy, contributing to lower levels of trust (Dugdale, n.d.). Higher income leads to greater trust in political institutions. Individuals with higher incomes perceive themselves as having more for which they are concerned in the political system and therefore expect better governance outcomes. Additionally, higher income levels provide individuals with greater access to information and resources, allowing them to evaluate government performance (Clench-Aas & Holte, 2021). During the pandemic as well, individual income is seen as a determinant of trust in government. Higher income is found to be associated with satisfied expectations from governmental policies and measures, fostering trust in the government's ability to address challenges effectively (Agostini et al., 2023; Goldfinch et al., 2021; Liu et al., 2022). There is no conclusive studies in literature regarding the connection between household income and trust in government. However, some studies suggest that income, including household income, may influence political trust along with respect to welfare and fairness perceptions (Bobzien, 2023; Yamamura, 2014). Additionally, household income appears to influence trust in government (Macdonald, 2019), particularly evident in OECD countries, like

Greece and Spain, where significant declines (or minimal growth) in income and earnings since 2005, coupled with substantial increases in long-term unemployment (working status variable was assessed to determine this affect in this paper), have contributed to decrease in trust, as measured by the Gallup World Poll (Murtin et al., 2018). This suggests a connection between economic challenges like household income, unemployment, and trust. During the pandemic, one study thoroughly examines the household income across countries to highlight the economic stability within a household can impact perceptions of government effectiveness (Gozgor, 2022). Moreover, higher education levels could be associated with a lower likelihood of trust in some studies since increased knowledge could result in a more critical attitude towards government (Grönlund & Setälä, 2007; Kim, 2010). In contrast to some other studies, for example, Christensen and Lægreid discuss that higher-educated citizens are more likely to trust the government (Christensen & Lægreid, 2003). Indeed, education level is crucial for trust in government during the pandemic as it influences the ability of the public to understand complex health information and make informed decisions, which affects their trust in government responses accordingly. Many studies held in pandemic times take educational level as determinant factor for trusting in government (Agostini et al., 2023; Rieger & Wang, 2022). Moreover, the education level of one's mother can also influence trust in government, possibly reflecting the intergenerational transmission of attitudes. While one study primarily focuses on the impact of educational experiences on political trust, it does not explicitly delve into the influence of one's mother's education level however they take it as a determinant in their models (Hooghe et al., 2014). In one another study which explores trust in government regarding pandemic management on vaccination among students, research suggested that tertiary-educated (graduate from a college) parents might be more critical and distrustful of the government (Chung et al., 2022). However, it is important that although these

studies incorporate mother's education level as a factor to examine trust in government in different perspectives, there is limited research on this aspect. Unemployment or employment/working status, also is often discussed in trust in government literature (Algan et al., 2017; Bauer, 2018; Christensen & Lægreid, 2003). Also, during pandemic, working status was considered as an important factor (Agostini et al., 2023; Rump & Zwiener-Collins, 2021). The ability to work from home can impact trust in government, particularly in times of this pandemic, as policies affecting remote work become significant for individuals for protection. The measures, such as lockdowns, may have an impact on low-income respondents, influencing their experiences, choices, and opportunities related to working from home and/or avoiding high-risk environments, which in turn can affect trust in government (Enria et al., 2021). Lastly, during the pandemic, trust in government can be significantly influenced by employment in a critical occupation. Those working in essential sectors may have higher expectations for government policies and support. Their experiences, such as potential exposure to the virus and the need to continue working, can shape their perceptions of how effectively the crisis is being managed (Rump & Zwiener-Collins, 2021).

As a last category, health-related variables, including age, home working, presence of chronic illness in oneself or in the family, and a history of coronavirus infection, could play important roles in shaping trust. Having a chronic illness can influence trust in government during the pandemic, as individuals may assess government responses based on proper healthcare services provided by governments. Experiencing Covid-19 personally can also impact trust, as individuals may evaluate government actions and public health measures based on their own challenges with the virus and the government's handling of the crisis. There is limited information available on the direct impact of being infected with Covid-19 and/or having chronic illness on trust in government. According to one study conducted in European Union countries, there is evidence that personal

exposure to coronavirus is associated with reduced trust. However, this study also states that the implementation of lockdown measures (like remote working and social distance) may lead to higher trust (Devine et al., 2020). It is possible that individuals with chronic illnesses, on the other hand, may have unique perspectives or experiences that could influence their trust in government.

DATA and ECONOMETRIC ESTIMATION METHOD

In total, 2,138 respondents were included in this study, providing valuable insights into trust in government and socio-economic factors. The initial dataset had 2,817 responses, but we refined it by simplifying the "Trust in government" variable. Respondents were asked the question: "Do you think the state is protecting your individual and community security during the COVID-19 process?" The responses were then grouped into "Yes" for trust (including Yes, I think/I definitely think so) and "No" for a lack of trust (including No, I don't think/I definitely don't think so), resulting in a more focused and reliable dataset for analysis. In some models, the number of respondents is 1813 due to missing data in 'working from home' variable (hom).

The sociodemographic, economic and work related, and health status related variables are presented in **Table 1** with their descriptions.

Table 1. Description of variables.

Independent Variables	**Abbreviation**	**Description**
Age	age	Numerical variable measured in years
Sex	sex_binary	Simplified binary variable: 1 for male, 0 for female
Marital Status 1	mar_binary	Simplified binary variable: 0 for single, 1 for married or divorced
Marital Status 2	dum_mar	Dummy variables based on marital status: Divorced, Married, Single
Having Children	chi_binary	Simplified binary variable: 1 for having children, 0 for not having
City	cou_binary	Simplified binary variable: 1 for living in big cities, 0 for small cities
Working Sector	sec_binary	Simplified binary variable: 1 for working in health sector, 0 otherwise
Education Level	edu_binary	Simplified binary variable: 1 for university graduate, 0 otherwise
Mother's Education Level	med_binary	Simplified binary variable: 1 for mother university graduate, 0 otherwise
Individual Income	iin_numeric2	Numerical ordinal variable from 1 to 6 representing income ranges (0-1500, 1500-3000, 3000-6000, 6000-12000, 12000-24000, 24000-above)
Household Income	hin_numeric2	Numerical ordinal variable from 1 to 6 representing income ranges (0-1500, 1500-3000, 3000-6000, 6000-12000, 12000-24000, 24000-above)
Working Category	dum_worcat	Dummy variables based on working status: Employed, Student, Unemployed
Working from Home	dum_hom	Dummy variables based on working from home status: No, Partially, Yes
Infected with COVID-19	cov_binary	Simplified binary variable: 1 for infected with COVID-19, 0 otherwise
Chronic Illness	chr_binary	Simplified binary variable: 1 for having chronic illness in self or family, 0 otherwise
Dependent Variable	**Abbreviation**	**Description**
Trust In Government	gov_binary	Simplified binary variable: 1 for Yes, 0 for No

The dataset provides necessary information, encompassing all variables defined above. Trust in government, a pivotal and dependent variable in this study, is dichotomized into "Yes" and "No," with 55.0% of respondents expressing trust and 45.0% indicating otherwise. The average age of respondents is 28,93 years, with a standard deviation of 10,96. **Table 2** presents a comprehensive summary of descriptive statistics, focusing on all demographic, economic, and health-related variables included in this paper. In addition to the summary statistics, a correlation

analysis will be conducted to explore collinearity among variables and these tables are also given in appendices as **Table A1, Table A2, and Table A3.**

Table 2. Summary statistics

Variables	N	Mean	SD	Min	Max	p25	P50	p75
Trust In Government	2138	.45	0.498	0	1	0	0	1
Age	2138	28.933	10.969	18	78	22	25	32
Marital Status (Binary)	2138	.298	0.457	0	1	0	0	1
Gender	2138	.359	0.480	0	1	0	0	1
Having Children	2138	.219	0.414	0	1	0	0	0
City Size	2138	.586	0.493	0	1	0	1	1
Individual Income	2138	2.784	1.154	1	6	2	3	4
Household Income	2138	3.112	1.133	1	6	2	3	4
Education Level	2138	.706	0.456	0	1	0	1	1
Mother's Education Level	2138	.158	0.364	0	1	0	0	0
Working Sector	2138	.107	0.309	0	1	0	0	0
Marital Status (Divorced)	2138	.03	0.172	0	1	0	0	0
Marital Status (Married)	2138	.268	0.443	0	1	0	0	1
Marital Status (Single)	2138	.702	0.457	0	1	0	1	1
Working from Home (No)	1816	.486	0.500	0	1	0	0	1
Working from Home (Partially)	1816	.247	0.431	0	1	0	0	0
Working from Home (Yes)	1816	.267	0.443	0	1	0	0	1
Working Category (Employed or Paid)	2138	.481	0.500	0	1	0	0	1
Working Category (Student)	2138	.319	0.466	0	1	0	0	1
Working Category (Unemployed or Unpaid)	2138	.199	0.400	0	1	0	0	0
Diagnosed with Covid-19	2138	.041	0.199	0	1	0	0	0
Chronic Illness	2138	.422	0.494	0	1	0	0	1

For the estimation methods, probit models were employed to understand the relationship between the binary outcome variable, trust in government (gov_binary), and various predictor variables. Basic model equations were given with regression outputs in corresponding appendices, but categories are summarized here:

a. Category 1: Sociodemographic Factors (Models from 1.1 to 1.4)

The initial probit models included sociodemographic factors such as age, marital status, gender, having children, and city size. In some models, marital status was used as dummy since mar_binary highly correlated with chi_binary category.

b. Category 2: Economic and Work-Related Factors (Models from 2.1 to 2.6)

Subsequent probit models incorporated economic and work-related variables, including individual income, household income, education level, mother's education level, working from home ability, health sector employment, and working status.

c. Category 3: Supplementary Health-Related Factors (Models 3.1 and 3.2)

An additional analysis considered health-related factors, introducing variables such as having experienced COVID-19 (cov_binary) and the presence of chronic illness in the family (chr_binary).

The resulting probit models were analyzed with attention given to coefficients, standard errors, and significance levels. The marginal effects, given in the text based on probit models, are computed at the mean of the independent variables, offering insights into the average impact of each variable on the probability of trusting the government, providing a more interpretable understanding of the results. In all models β_0 (constant) is negative, it implies that the odds of the event happening are less than 1 when all other predictors are at their reference levels. Therefore, this indicates a lower likelihood of trust when there are no specific determinants.

5. Estimation and findings

In **Table 3**, we present the marginal effects based on probit (robust) estimation for demographic variables influencing trust in government across four distinct models, denoted as Models 1.1, 1.2, 1.3, and 1.4. The corresponding p-values indicating the significance level of the estimates are also provided. Coefficients from probit regression results for the models are detailed in the appendix as **Table A4.**

Table 2. Estimated Marginal Effects of Demographic Variables: Probit Regression Analysis

	(1.1)	(1.2)	(1.3)	(1.4)
Variables (Category 1)				
Age	0.006*	0.006*	0.007**	0.007**
	(0.003)	(0.003)	(0.003)	(0.003)
Marital Status (Binary)	0.239***			
	(0.079)			
Gender	0.140**	0.134**	0.131**	0.131**
	(0.059)	(0.059)	(0.059)	(0.059)
City	0.014	0.020	0.012	0.012
	(0.056)	(0.056)	(0.056)	(0.056)
Having Children		0.285***		
		(0.089)		
Marital Status (Divorced)			-0.026	-0.289*
			(0.173)	(0.167)
Marital Status (Married)			0.263***	
			(0.080)	
Marital Status (Single)				-0.263***
				(0.080)
Constant	-0.444***	-0.420***	-0.451***	-0.188
	(0.092)	(0.094)	(0.092)	(0.145)
Observations	2,138	2,138	2,138	2,138
Pseudo R-squared	0.0168	0.0172	0.0178	0.0178
Log Likelihood	-1447	-1446	-1445	-1445

Dependent Variable: Trust in Government
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Initially, Model 1.1 reveals the impact of age, marriage, gender, and city size (residency) on government trust. Model 1.2 expands this by introducing the presence of children in the family. Model 1.3 delves into marital status, distinguishing between its given categories. Model 1.4 refines the marital status variable further, revealing that divorced or never married/single individuals exhibit lower trust. In all models, age exhibits a positive association with a 0.2%, 0.3% and 0.5% increase in the probability of trusting the government at average for each additional year (coefficients of all variables are given in corresponding probit regression models in appendix). Marital status (in binary structure) significantly influences trust, with being married indicating a

9.5% higher probability in Model 1, and female gender shows around 5.5% increase in probability compared to males in all models. In Model 1.2, the addition of a variable related to having children is positively associated with probability of the trust in government with 11.3% (chi_binary) but does not change the impact of other variables. However, in Model 1.3, the introduction of being married status (dum_mar2) shows that around 1% decrease in the probability of trust in government. Model 1.4 further refines the marital status variables, revealing that, despite the initial insignificance, being divorced and being single (dum_mar1 and dum_mar3) becomes significant with a negative impact (respectively -28.9% and -26.3%) on the probability of the trust when compared to being married.

In **Table 4**, marginal effects based on probit (robust) estimation for models influencing trust in government across six models, denoted as Models 2.1 through 2.6, were given. The corresponding p-values indicating the significance level of the estimates are also provided. Probit regression results for these models can be found in the appendix as **Table A5.**

Table 3. Estimated Marginal Effects of Demographic Variables: Probit Regression Analysis

	(2.1)	**(2.2)**	**(2.3)**	**(2.4)**	**(2.5)**	**(2.6)**
Variables (Category 2)						
Age	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Individual Income	0.041***	0.036***	0.036***			
	(0.011)	(0.011)	(0.012)			
Education Level	-0.071**	-0.093***	-0.074***	-0.062**	-0.087***	-0.066**
	(0.028)	(0.025)	(0.028)	(0.028)	(0.025)	(0.027)
Mother's Education Level	-0.129***	-0.128***	-0.131***	-0.121***	-0.120***	-0.124***
	(0.032)	(0.030)	(0.032)	(0.032)	(0.030)	(0.031)
Working from Home (No)	-0.050*			-0.070**		
	(0.030)			(0.029)		
Working from Home (Partially)	-0.061*			-0.072**		
	(0.033)			(0.032)		
Working Sector	0.053	0.020	0.050	0.063	0.022	0.056
	(0.039)	(0.036)	(0.039)	(0.039)	(0.036)	(0.039)

Working Category (Employed or Paid)		0.061*			0.084***	
		(0.032)			(0.031)	
Working Category (Student)		0.035			0.045	
		(0.033)			(0.032)	
Working from Home (Yes)			0.048*			0.059**
			(0.028)			(0.028)
Working Category (Unemployed or Unpaid)			-0.062*			-0.080**
			(0.033)			(0.032)
Household Income				0.021*	0.020**	0.018
				(0.011)	(0.010)	(0.011)
Observations	1,816	2,138	1,816	1,816	2,138	1,816
Pseudo R-squared	0.0274	0.0284	0.0288	0.0234	0.0259	0.0259
Log Likelihood	-1213	-1429	-1211	-1218	-1433	-1215

Dependent Variable: Trust in Government
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Model 2.1 examines the impact of individual income (iin_numeric2) alongside other variables. Age exhibits a significant positive association, with a same 0.5% increase in the probability of trusting the government for each additional year in all models of this category as well. Having higher individual income among six categories corresponds to a 4.1% increase in trust probability, while education level and mother's education level with respect to being a university graduate are associated with a decrease by 7.1% and 12.9% in the probability of trusting government, respectively. Working not from home or partial home working (dum_hom1 and dum_hom2) negatively impacts with decreases of 5.0% and 6.1% in the probability of trust in government, respectively. Model 2.2 introduces new variable (working status) and removes home working-related variables, showing that income remains significant, education continues to impact negatively, and a new variable, being employed or paid as a working status (dum_worcat1) positively influences trust in government probability 6.1%. Model 2.3 further extends the analysis by involving work status and home working-related variables together. The introduction of new

categories (dum_hom3 and dum_worcat3) significantly impacts trust, with working from home positively influencing by 4.8% in the probability of trust in government, which is consistent with the Model 2.2 while being unemployed or unpaid negatively influences the probability of trust in government by 6.2%.

Model 2.4 and Model 2.5 investigates the impact of household income (hin_numeric2) in the absence of individual income and in the presence of other variables like in Model 2.1 and Model 2.2, respectively. It indicates that household income positively influences the probability of trust in government by 2.1% and 2.0%. However, in the sixth model, household income, in this specification, does not have a significant impact on the probability of trust in government.

In Models 3.1 and 3.2, we explore the health-related variables affecting trust in government. Detailed probit regression results for Models 3.1 and 3.2, including the marginal effects and associated coefficients tables can be found in **Table A6 and Table A7,** respectively. In Models 3.1 and 3.2, the impact of health-related variables on trust in government was investigated. These models explore the influence of age, working from home status (indicative of potential exposure to health risks in different work environments), infection with COVID-19 (directly impacting health status), and the presence of chronic illness in the family/respondent (indicating susceptibility to health-related concerns). Age exhibits a positive association with a 0.5% increase in the probability of the trust for each additional year. Notably, in Model 3.1, those not working remotely (dum_hom1) and working partially remotely (dum_hom2) experience a decrease in the probability of trust in government by 4.9% and 6.4%, respectively. Additionally, individuals affected by coronavirus (cov_binary) or having a chronic illness in the family (chr_binary) show a decrease in trust by 11.5% and 6.6%, respectively. Model 3.2 further explores these relationships, revealing that the impact of working remotely becomes insignificant when compared to working

partially remotely, while the positive association between age and trust remains consistent. Notably, working from home (dum_hom3) exhibits a positive influence, with a 6.5% increase in the probability of trust in government. The presence of chronic illness in the respondent (dum_hom3) is associated with a 6.5% increase in trust, highlighting the potential positive effect of remote work and personal health on trust in government.

Age

The results are similar to global evidence presented in one study that uses government trust survey by Fetzer et al. in 2020 (Fetzer et al., 2020; Rieger & Wang, 2022). Age emerges as a robust positive predictor of trust in government, suggesting that older individuals are more likely to trust the government during the pandemic. Also, some other studies (Agostini et al., 2023; Gozgor, 2022; Suhay et al., 2022) collectively support findings of this paper regarding positive association of age variable with trust in government. However, we also deployed some models from different categories with square of age (squared_age) and the negative sign on the coefficient for the squared_age suggests that the relationship between age and the probability is not strictly linear (**Table A8**). In other words, the effect of age on the probability of the event occurring may not be constant across all ages; it might increase or decrease at a varying rate. This is exactly why some marginal effects at other than average values are calculated for age, given in **Table A9**. According to these values, after age 50, the marginal effect continues to decrease (even thoug it is so small), indicating a decline in the probability of the trust in government. On the other hand, one study diverges from our findings with respect age as a negative predictor of government trust during the pandemic crisis (Rump & Zwiener-Collins, 2021), unlike our consistent positive association with age in various demographic models. In short, as individuals age (to some level), there is an increased inclination to trust government measures, possibly due to accumulated life experiences

and a more long-term perspective on governance in some countries. The older generation, particularly those who lived through periods of crises or instability, tend to have greater trust in government. This trust may also be influenced by a long-term perspective that values stability and effective measures (Kudrnac & Klusacek, 2022).

Demographic Variables (Category 1)

Based on a survey conducted in Germany during pandemic, reveals positive association of females to trust in government (Dutta et al., 2022; Rump & Zwiener-Collins, 2021). While being female showing a positive association with trust in some studies conducted in Europe and US as well (Aassve et al., 2022; Suhay et al., 2022), our first category models revealed being male is associated with trust in a positive manner (Gozgor, 2022; Rieger & Wang, 2022). On average, males tend to exhibit higher levels of trust compared to females. The tendency for men to have higher levels of trust in government may be attributed to historical patriarchal leadership roles that have shaped the evolution of trust. This tendency may also be influenced by societal attitudes towards gender equality and broader levels of trust that impact economic development and gender attitudes (Dutta et al., 2022). Being married is identified as a positive contributor to trust in some studies (Gozgor, 2022; Rump & Zwiener-Collins, 2021) like in our study (mar_binary or dum_mar2). Marriage possibly provides a sense of safety and support during crises, reduces social isolation, and fosters cohesive social networks, all of which are associated with trust in government in some studies as well (Callois & Aubert, 2007; Murray et al., 2021; Rump & Zwiener-Collins, 2021). These factors are associated with higher levels of trust. However, in one study in China, being married is negatively associated with trust in government probably due to geo-cultural differences even though the scope is not solely Covid-19 but also previous exposure to SARS epidemic situation (Zhai et al., 2022). Lastly, in Model 2.2, a positive association of having

children to trust in government was also demonstrated. In 2021, Rump and Zweiner-Collins discussed having children very strictly in terms of mothers and their models takes woman and children in household as a one variable in model and having children negatively associated with trust (Rump & Zwiener-Collins, 2021) as in this paper. Family-oriented values in the region, especially the support provided by a marital relationship, could be the explanation for influencing trust positively during the COVID-19 pandemic. Also, being married may create a sense of security and shared responsibility, and indirectly governs trust. On the other hand, major life changes, such as divorce, can lead to disruptions in trust. Divorce may bring about emotional stress that may be caused by societal pressure unique to culture, changes in social dynamics; and in return it may cause to decrease in trust.

Economic Considerations (Category 2)

In this study, income emerges as a positive predictor of trust, while education shows a negative association, presenting a unique perspective compared to some research. Zhai et al. show low income is linked to lower trust like negative coefficient in models of Category 2, but this study does not examine the Covid-19 case only but it also adds a layer to study as exposed to first SARS pandemic (Zhai et al., 2022). In one another study (Goldfinch et al., 2021), income is not significant in its estimation models, but correlation analysis shows positive correlation to trust in government. However, Gozgor interestingly shows a negative association of income to trust in government in his comprehensive study that analyzes Global Behaviors and Perceptions in the COVID-19 Pandemic dataset (Gozgor, 2022). On the other hand, positive association could be attributed to financial stability, satisfaction with economic conditions, and a perception of effective governance associated with higher income.

Empirical studies reveal that the relationship between education and governmental or political trust is context-dependent and has its own complex dynamics (Mayne & Hakhverdian, 2017). Therefore, education, a significant theme, exhibits conflicting patterns across studies, with some showing a positive association in a study conducted in Australia and New Zealand (Goldfinch et al., 2021) and others, like this paper, indicating a negative impact on trust in government in some global, EU-based and US studies (Aassve et al., 2022; Gozgor, 2022; Suhay et al., 2022). Highly educated individuals may engage in more critical thinking and be more discerning in their evaluation of government actions. Also, if they perceive policies as not addressing their needs or benefiting society, they might express lower trust. Additionally, Rump and Zwiener-Collins underscore the relevance of employment status like our models (dum_worcat1 and dum_worcat3), indicating that being economically inactive, or unemployed or unpaid, is negatively associated with trust like in Eurofound's work on Covid-19 (Aassve et al., 2022), which is due to economic hardships can lead to dissatisfaction with government as low-income perspective. Lastly, if the government implements policies that support and facilitate working from home during the pandemic, individuals benefiting from such initiatives may have a more positive view of government actions.

Health-Related Indicators (Category 3)

This study finds partial alignment with Zhai et al.'s study (Zhai et al., 2022). Experiences with a previous epidemic are negatively influencing trust in government during the Covid-19 pandemic. Experiencing COVID-19 and/or having a chronic illness may lead to a negative association with trust in government, potentially due to heightened health-related concerns, perceptions of government effectiveness, and overall crisis management.

CONCLUSION

In conclusion, this study aimed to investigate the determinants of trust in government during the Covid-19 pandemic, employing a probit model incorporating marginal effects and examining demographic, economic and health-related variables. The main findings revealed significant associations between trust in government and various factors, including age, marital status, employment status, and health history. Notably, being male and having children exhibited positive effects on trust, while variables such as divorce and unemployment displayed negative associations. Further investigations could delve into the regional variations observed in the relationship between education and trust, considering cultural and contextual influences. Additionally, understanding the long-term implications of health-related experiences, such as having had COVID-19 or a chronic illness, on trust can inform targeted public health policies and crisis communication strategies.

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APPENDICES

Appendix A.

Table A1. Pairwise correlations among the variables in Category 1

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
(1) Trust in Gov.	1.000								
(2) Age	0.128	1.000							
	(0.000)								
(3) Marital Status (Binary)	0.132	0.655	1.000						
	(0.000)	(0.000)							
(4) Marital Status (Divorced)	-0.001	0.217	0.272	1.000					
	(0.950)	(0.000)	(0.000)						
(5) Marital Status (Married)	0.137	0.593	0.928	-0.107	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)					
(6) Marital Status (Single)	-0.132	-0.655	-1.000	-0.272	-0.928	1.000			
	(0.000)	(0.000)	(1.000)	(0.000)	(0.000)				
(7) Gender	0.082	0.279	0.161	-0.019	0.174	-0.161	1.000		
	(0.000)	(0.000)	(0.000)	(0.384)	(0.000)	(0.000)			
(8) Having Children	0.137	0.667	0.788	0.163	0.751	-0.788	0.189	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
(9) City Size	0.014	0.097	0.053	0.005	0.053	-0.053	-0.037	0.029	1.000
	(0.525)	(0.000)	(0.014)	(0.817)	(0.014)	(0.014)	(0.090)	(0.177)	
p-values are in parentheses.									

Appendix B.

Table A2. Pairwise correlations among the variables in Category 2

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Individual Income	1.000										
(2) Household Income	0.676*	1.000									
	(0.000)										
(3) Education Level	0.219*	0.181*	1.000								
	(0.000)	(0.000)									
(4) Mother's Education Level	0.164*	0.119*	0.158*	1.000							
	(0.000)	(0.000)	(0.000)								
(5) Working Sector	0.055*	0.049*	-0.063*	0.058*	1.000						
	(0.010)	(0.024)	(0.003)	(0.007)							
(6) Working Category (Employed or Paid)	0.374*	0.236*	0.159*	0.028	0.055*	1.000					
	(0.000)	(0.000)	(0.000)	(0.200)	(0.010)						
(7) Working Category (Student)	-0.176*	-0.138*	-0.082*	0.023	-0.019	-0.660*	1.000				
	(0.000)	(0.000)	(0.000)	(0.288)	(0.381)	(0.000)					
(8) Working Category (Unemployed or Unpaid)	-0.262*	-0.134*	-0.103*	-0.062*	-0.047*	-0.481*	-0.342*	1.000			
	(0.000)	(0.000)	(0.000)	(0.004)	(0.029)	(0.000)	(0.000)				
(9) Working from Home (No)	-0.253*	-0.164*	-0.169*	-0.091*	0.136*	-0.096*	-0.100*	0.246*	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
(10) Working from Home (Partially)	0.043	0.060*	0.096*	0.032	-0.062*	-0.070*	0.148*	-0.085*	-0.557*	1.000	
	(0.064)	(0.010)	(0.000)	(0.174)	(0.008)	(0.003)	(0.000)	(0.000)	(0.000)		
(11) Working from Home (Yes)	0.244*	0.127*	0.097*	0.072*	-0.093*	0.176*	-0.031	-0.196*	-0.587*	-0.345*	1.000
	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.185)	(0.000)	(0.000)	(0.000)	
*** $p<0.01$, ** $p<0.05$, * $p<0.1$											

Appendix C.

Table A3. Pairwise correlations among the variables in Category 3

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) Age	1.000					
(2) Diagnosed with Covid-19	-0.016	1.000				
	(0.456)					
(3) Chronic Illness	-0.068*	0.109*	1.000			
	(0.002)	(0.000)				
(4) Working from Home (No)	-0.095*	0.020	0.031	1.000		
	(0.000)	(0.402)	(0.189)			
(5) Working from Home (Partially)	-0.020	0.006	0.025	-0.557*	1.000	
	(0.392)	(0.784)	(0.283)	(0.000)		
(6) Working from Home (Yes)	0.127*	-0.028	-0.059*	-0.587*	-0.345*	1.000
	(0.000)	(0.225)	(0.011)	(0.000)	(0.000)	
*** *p<0.01*, ** *p<0.05*, * *p<0.1*						

Appendix D.

Table A4. Estimated Coefficients of Demographic Variables: Probit Regression Analysis

	(1.1)	(1.2)	(1.3)	(1.4)
Variables (Category 1)	**gov_binary**	**gov_binary**	**gov_binary**	**gov_binary**
Age	0.006*	0.006*	0.007**	0.007**
	(0.003)	(0.003)	(0.003)	(0.003)
Marital Status (Binary)	0.239***			
	(0.079)			
Gender	0.140**	0.134**	0.131**	0.131**
	(0.059)	(0.059)	(0.059)	(0.059)
City Size	0.014	0.020	0.012	0.012
	(0.056)	(0.056)	(0.056)	(0.056)
Having Children		0.285***		
		(0.089)		
Marital Status (Divorced)			-0.026	-0.289*
			(0.173)	(0.167)
Marital Status (Married)			0.263***	
			(0.080)	
Marital Status (Single)				-0.263***
				(0.080)
Constant	-0.444***	-0.420***	-0.451***	-0.188
	(0.092)	(0.094)	(0.092)	(0.145)
Observations	2,138	2,138	2,138	2,138
Pseudo R-squared	0.0168	0.0172	0.0178	0.0178
Log Likelihood	-1447	-1446	-1445	-1445

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
dum_mar1; divorced, dum_mar2; married, dum_mar3; single.

Equation for Model 1.3
$P(Trust = 1) = \Phi(\beta_0 + 0.007 \times age + 0.131 \times sex\_binary + 0.263 \times dum\_mar2)$
$\beta_0 = -0.451$
Φ denotes the cumulative distribution function (CDF)
The model explains approximately 1.78% of the variation in trust.
dum_mar3 is the reference category for dummies in Model 1.3

Appendix E.

Table A5. Estimated Coefficients of Economy-Related Variables: Probit Regression Analysis

	(2.1)	(2.2)	(2.3)	(2.4)	(2.5)	(2.6)
Variables (Category 2)	**gov_binary**	**gov_binary**	**gov_binary**	**gov_binary**	**gov_binary**	**gov_binary**
Age	0.012***	0.012***	0.012***	0.013***	0.013***	0.013***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Individual Income	0.105***	0.092***	0.092***			
	(0.029)	(0.027)	(0.029)			
Education Level	-0.179***	-0.235***	-0.187***	-0.155**	-0.219***	-0.168**
	(0.069)	(0.063)	(0.069)	(0.069)	(0.063)	(0.069)
Mother's Education Level	-0.336***	-0.332***	-0.341***	-0.315***	-0.310***	-0.323***
	(0.084)	(0.079)	(0.084)	(0.084)	(0.078)	(0.084)
Working from Home (No)	-0.128*			-0.177**		
	(0.076)			(0.074)		
Working from Home (Partially)	-0.155*			-0.183**		
	(0.084)			(0.084)		
Working Sector	0.134	0.050	0.126	0.159	0.056	0.141
	(0.098)	(0.089)	(0.097)	(0.098)	(0.089)	(0.097)
Working Category (Employed or Paid)		0.155*			0.212***	
		(0.080)			(0.078)	
Working Category (Student)		0.088			0.115	
		(0.082)			(0.082)	
Working from Home (Yes)			0.120*			0.150**
			(0.071)			(0.070)
Working Category (Unemployed or Unpaid)			-0.158*			-0.204**
			(0.085)			(0.083)
Household Income				0.053*	0.052**	0.046
				(0.028)	(0.026)	(0.028)
Constant	-0.511***	-0.617***	-0.573***	-0.425***	-0.593***	-0.520***
	(0.127)	(0.116)	(0.110)	(0.130)	(0.122)	(0.116)
Observations	1,816	2,138	1,816	1,816	2,138	1,816
Pseudo R-squared	0.0274	0.0284	0.0288	0.0234	0.0259	0.0259
Log Likelihood	-1213	-1429	-1211	-1218	-1433	-1215

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

worcat: work status, dum_worcat1; Employed or Paid dum_worcat2; Student dum_worcat3; Unemployed

Equation for Model 2.3

$P(\text{Trust} = 1) = \Phi(\beta_0 + 0.012 \times \text{age} + 0.092 \times \text{iin\_numeric2} - 0.187 \times \text{edu\_binary} - 0.341 \times \text{med\_binary} + 0.120 \times \text{dum\_hom3} - 0.158 \times \text{dum\_worcat3})$

$\beta_0 = -0.573$

In total, 2.88% of the variation in the dependent variable (trust) is explained by the model.

Appendix F.

Table A6. Estimated Marginal Effects of Health-Related Variables: Probit Regression Analysis

	(3.1)	(3.2)
Variables (Category 3)		
Age	0.005***	0.005***
	(0.001)	(0.001)
Working from Home (No)	-0.049*	0.016
	(0.028)	(0.029)
Working from Home (Partially)	-0.064**	
	(0.032)	
Diagnosed with Covid-19	-0.115**	-0.115**
	(0.057)	(0.057)
Chronic Illness	-0.066***	-0.066***
	(0.024)	(0.024)
Working from Home (Yes)		0.065**
		(0.033)
Observations	1,816	1,816
Pseudo R-squared	0.0182	0.0182
Log Lik	-1225	-1225

Dependent Variable: Trust in Government
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix G.

Table A7. Estimated Coefficients of Health-Related Variables: Probit Regression Analysis

	(3.1)	(3.2)
Variables (Category 3)	**gov_binary**	**gov_binary**
Age	0.013***	0.013***
	(0.003)	(0.003)
Working from Home (No)	-0.123*	0.041
	(0.072)	(0.074)
Working from Home (Partially)	-0.165**	
	(0.084)	
Diagnosed with Covid-19	-0.302*	-0.302*
	(0.156)	(0.156)
Chronic Illness	-0.168***	-0.168***
	(0.061)	(0.061)
Working from Home (Yes)		0.165**
		(0.084)
Constant	-0.352***	-0.517***
	(0.110)	(0.107)
Observations	1,816	1,816
Pseudo R-squared	0.0182	0.0182
Log Likelihood	-1225	-1225

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

hom: working from home: dum_hom1; No, dum_hom2; Partially, dum_hom3; Yes

Equation for Model 3.1

$P(\text{Trust} = 1) = \Phi(\beta_0 + 0.013 \times \text{age} - 0.123 \times \text{dum\_hom1} - 0.165 \times \text{dum\_hom2} - 0.302 \times \text{cov\_binary} - 0.168 \times \text{chr\_binary})$

$\beta_0 = -0.352$

In total, 1.82% of the variation in the dependent variable (trust) is explained by the model.

Appendix H.

Table A8. Estimated Marginal Effects of Variables When Introducing AGE-SQUARED: Probit Regression Analysis

	(1)	(2)	(3)
Variables	**gov_binary**	**gov_binary**	**gov_binary**
Age	0.018	0.050***	0.043***
	(0.014)	(0.014)	(0.014)
Age_squared	-0.000	-0.000***	-0.000**
	(0.000)	(0.000)	(0.000)
Individual Income		0.079***	
		(0.030)	
Education Level		-0.223***	
		(0.071)	
Mother's Education Level		-0.324***	
		(0.085)	
Working from Home (Yes)		0.113	0.156*
		(0.071)	(0.084)
Working Category (Unemployed or Unpaid)		-0.195**	
		(0.086)	
Working Sector		0.121	
		(0.098)	
Marital Status (Binary)	0.216***		
	(0.083)		
Gender	0.138**		
	(0.059)		
City Size	0.014		
	(0.056)		
Working from Home (No)			0.040
			(0.074)
Diagnosed with Covid-19			-0.305*
			(0.158)
Chronic Illness			-0.155**
			(0.062)
Constant	-0.632***	-1.158***	-1.023***
	(0.244)	(0.242)	(0.252)
Observations	2,138	1,816	1,816
Pseudo R-squared	0.0170	0.0317	0.0202
Log Likelihood	-1446	-1208	-1222

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix I.

Table A9. Estimated Marginal Effects at Quartiles (Age = 22, 25, 32) and Adultery Ages: Probit Regression Analysis

	(dy/dx)
Variable	
Age	
1. at 22	0.00270*
	(2.00)
2. at 25	0.00271*
	(1.99)
3. at 32	0.00273*
	(1.98)
4. at 40	0.00274*
	(1.98)
5. at 50	0.00274*
	(1.99)
6. at 65	0.00272*
	(2.05)
N	2138

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