Life Expectancy and Willingness to Fight Climate Change*

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Why are some people more willing to fight climate change than others? This paper empirically tests a widely-hypothesized determinant of climate attitudes — life expectancy. While theoretical models suggest that longer life expectancy increases willingness to pay for climate action, empirical evidence for this relationship remains scarce. Using survey data from nearly 120,000 individuals in 119 countries and plausibly exogenous variation in life expectancy across age-gender-country cells, we find that individuals who can expect to live longer are more willing to pay for climate action. The result is robust to a number of alternative specifications and controls as well as an instrumental variable strategy. These findings contribute to the broader understanding of how demographic and health dynamics shape climate attitudes.
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1 Introduction

Climate change is one of the most pressing challenges facing humanity today, prompting an urgent need for effective solutions and global cooperation. Widespread public support for climate action across diverse populations will be essential to address this global issue effectively (IPCC, 2023). Consequently, it is crucial to understand individual environmental attitudes and the factors that shape them.

One widely hypothesized determinant of individual environmental attitudes is life expectancy. The notion that living longer increases individuals willingness to fight climate change can be derived directly from utility maximization across the life cycle, for instance in a simple OLG model. If an agent can expect to live for more periods and expects negative effects of climate change for her utility in the future, she will be willing to pay more to fight climate change in the current period.[1]

Although the theoretical prediction suggests a clear positive effect of life expectancy on climate attitudes, this relationship may not hold in practice due to free-riding problems and the negligible impact of individual actions on mitigating climate change. Therefore, empirical evidence is needed to understand the relationship between life expectancy and climate attitudes. To the best of our knowledge, all existing studies addressing this issue do not separate the effect of age and life expectancy on climate attitudes (e.g. Andor, Schmidt, and Sommer (2018), Gray et al. (2019)). However, simply observing that older people have less environmental-friendly attitudes does not imply that this is driven by lower life expectancy and the intuition described above. This differentiation is particularly important when studying the effects from a cross-country perspective as there are large differences in the correlation of age and life expectancy particularly between developed and developing countries. When trying to understand the determinants of climate attitudes in more detail, it is, therefore, crucial to disentangle the effect of life expectancy from the effect of age and other demographic factors.

This paper aims to make progress towards a better understanding of climate attitudes by explicitly examining the impact of life expectancy. We provide robust evidence that increased life expectancy increases individuals' willingness to engage in climate action.

Our methodological approach combines data on the willingness to fight climate change from the Global Climate Change Survey (GCCS) (Andre et al., 2024a) with information on life expectancy from period life tables provided by the *Population Division of the United Nations*, which results in observations for nearly 120,000 individuals in 119 countries. Importantly, the life expectancy data is calculated based on previous cohorts within a specific gender-age-country cell, introducing variation

1. For a formal model of this intuition, see Mariani, Pérez-Barahona, and Raffin (2010).

in life expectancy across these cells that is plausibly exogenous to individual behavior. Our empirical strategy leverages this variation - which is comparable to quasi-experimental variation in the sense of an intention to treat approach - to estimate the effect of life expectancy on climate attitudes. This approach allows us to identify the effect of life expectancy on the willingness to pay to fight climate change, abstracting from all country-specific factors that are constant across age and all age-specific factors that are constant across countries.

Our findings confirm the theoretical prediction that individuals with higher life expectancy display more climate-friendly attitudes. Specifically, a one-year increase in life expectancy is associated with a 0.8-percentage point increase in the probability of being willing to contribute 1% of one's household income to combat global warming. This effect is economically meaningful, as increasing remaining years of life by approximately five years is similar to the correlational effect of having secondary compared to only primary education.

In order to test the robustness of our results we run alternative specifications including an instrumental variable approach, a more flexible model allowing for non-linearity in the effect of life expectancy, probit and logit models and a model controlling for experience effects that vary within countries between cohorts. Furthermore, we run our analysis with alternative datasets and outcome variables to measure life expectancy and climate attitudes. Our results remain robust to all of these alternative specifications and measures.

This paper contributes to the growing body of empirical literature on individual climate attitudes. There is broad consensus on the need for global cooperation to effectively tackle climate change (IPCC, 2023), prompting a surge in research on individual climate attitudes. While prior studies have highlighted significant cross-country differences in climate values (Li et al., 2018; Andre et al., 2024a; Dechezlepretre et al., 2024), relatively little is known about the individual-level origins of these differences. Only a few studies have causally identified specific determinants of individual climate attitudes. Most of these studies focus on the effects of the provision of information on the negative effects of climate change and the functioning of policy mechanisms (Mildenberger et al., 2022; Bernard, Tzamourani, and Weber, 2023; Dechezlepretre et al., 2024). Further studies investigated the role of social norms in shaping climate attitudes (Bolsen, Leeper, and Shapiro, 2014; Andre et al., 2024b) or the impact of experiencing natural disasters during formative years (Falco and Corbi, 2023). Our research adds to this literature by investigating the effect of a widely hypothesized determinant of individual climate attitudes: life expectancy.

The paper also contributes to the broader literature on demographic determinants of economic attitudes. While much of this literature explores the effects of age (e.g. Dohmen et al. (2017) and Fitzenberger et al. (2022)), a few studies have also examined the effect of life expectancy. Specifically, life expectancy has been shown to increase religiosity (Lechler and Sunde, 2020), democratic values (Lechler and

Sunde, 2019) and patience (Falk, Hermle, and Sunde, 2019). Our study extends this research by examining how life expectancy influences attitudes toward climate change.

This paper is organized as follows. Section 2 introduces our main datasets for climate attitudes and life expectancy. In Section 3, we present our empirical strategy. Section 4 shows the baseline results. In Sections 5 we discuss potential mechanisms and Section 6 presents a large number of robustness checks. Section 7 concludes.

2 Data

Investigating the effect of life expectancy on climate attitudes requires two essential elements: (1) a reliable, empirically validated measure of climate attitudes, and (2) a measure of life expectancy that exhibits variation which is plausibly exogenous to individual characteristics. In this section, we describe the data sources and methodologies used to obtain these measures.

2.1 Climate Attitudes

To assess willingness to fight climate change, we use the Global Climate Change Survey (GCCS) (Andre et al., 2024a), a global dataset on actual and perceived support for climate action. The GCCS comprises nearly 130,000 observations from 125 countries and was conducted as part of the Gallup World Poll 2021/2022. The survey includes several validated items on climate attitudes. Our primary outcome variable is a binary response (Yes/No) to the question of whether an individual is *'willing to contribute 1% of [their] household income every month to fight global warming'*. Importantly, the measure has been empirically validated, as it predicts actual donation behavior in a representative sample from the United States (Andre et al., 2024b).

In addition to our primary measure, the survey also collects data on willingness to contribute a smaller amount if the individual responded "No" to the initial question, as well as information on social norms and beliefs about others' climate attitudes. We examine the impact of life expectancy on these alternative measures in Section 6.

Descriptive statistics of the GCCS including the life expectancy data are presented in Table 1. After merging the GCCS with the life expectancy data, our final sample consists of approximately 118,000 individuals from 119 countries. The mean willingness to pay 1% of household income to fight global warming across individuals is 0.7 with a standard deviation of 0.46. Individuals from low and middle-income countries are more often willing to contribute 1 % of their household income than individuals from high-income countries with a mean of 0.74 and 0.63, respectively. The country with the lowest willingness to pay is Egypt with 0.33 and the highest Myanmar with 0.95.

To the best of our knowledge, the GCCS is the only globally representative dataset that specifically captures individuals' willingness to financially support climate change mitigation efforts and information on individuals' exact age. In order to broaden the scope of our analysis and examine more general environmental attitudes, we also draw on data from the World Values Survey (WVS) and the European Values Study (EVS). Although these datasets span multiple waves, they cover fewer countries, and their questions on environmental attitudes are less concrete and lack empirical validation. In addition, most questions regarding environmental attitudes have only been asked in the earlier waves of the WVS and EVS in the 1990s and 2000s when knowledge about the future risks imposed by climate change was less widespread. Nevertheless, we present results based on these alternative measures in Section 6.

	Mean	SD
Remaining Years of Life	35.198	14.523
Female	0.527	0.499
Age	42.013	17.725
Log(HH Income pc)	7.951	2.292
Number Children	1.167	1.734
Elementary Education or Less	0.234	0.424
Secondary Education	0.509	0.5
Tertiary Education	0.256	0.437
Low Income Country	0.072	0.259
Lower Middle Income Country	0.300	0.458
Upper Middle Income Country	0.275	0.446
High Income Country	0.353	0.478
Number Countries	119	
Observations	118352	

Table 1. Descriptive Statistics of the GCCS Dataset merged with the life expectancy measure from the UN Population Division.

2.2 Life Expectancy

To obtain a measure of life expectancy, we adopt an approach pioneered by Lechler and Sunde (2019). For each individual, we construct a measure of life expectancy based on period life tables by the *Population Division of the United Nations*. These period life tables provide an estimate of the the expected remaining years of life for a given gender-age cell in a particular country and year using mortality data from previous cohorts. We use these estimates to assign each individual in the GCCS a life expectancy based on their age, gender and country of residence for the year 2021 when the survey was conducted.

It is important to note that the life expectancy calculation is based on aggregated data from previous cohorts. Specifically, the life expectancy of an age group indicates how many years people of this age group can expect to live under the mortality patterns of older cohorts in the last year. Since this life expectancy measure is

derived from cohort data, it remains exogenous to individual characteristics and is unaffected by individual behavior.

We also use the inverse of the probability of dying in the next year from the *Population Division of the United Nations* and period life tables from the *Human Mortality Database* (HMD) as alternative measures of life expectancy. Results using these alternative measures are presented in Section 6.

Figure 1 plots the mean willingness to pay 1 % of household income to fight climate change against the mean remaining years of life by country. There is a positive correlation between mean remaining years of life and willingness to pay. However, this country level correlation can not be interpreted causally since it may suffer from omitted variable bias or be driven by age effects instead of effects of life expectancy. To investigate the causal effect of life expectancy on climate attitudes, we need a different identification strategy which we describe in the next section.

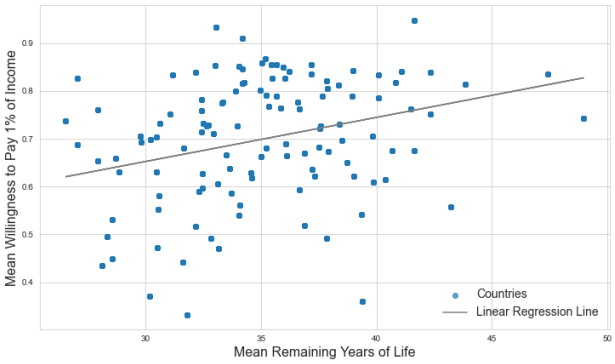


Figure 1. Mean willingness to pay 1 % of household income to fight climate change vs. mean remaining years of life by country.

3 Methodology

To empirically investigate the effects of life expectancy on the willingness to pay for fighting climate change, we exploit quasi-exogenous variation in life expectancy across country-age-gender cells. This identification strategy is similar to the one used by Falk, Hermle, and Sunde (2019). Specifically, we regress a dummy indicating whether one is willing to pay 1 % of household income to fight climate change, $wtp_fight_cc_{igac}$, on the expected remaining years of life, $life_exp_{igac}$, of an individual i of gender g and age a in country c, controlling for a vector of individual characteristics $\mathbf{X}_{igac}$ and a whole set of age and country fixed effects:

$$wtp_fight_cc_{igac} = \beta_0 + \beta_1 life_exp_{igac} + \boldsymbol{\beta_2}\mathbf{X}_{igac} + \boldsymbol{\beta_3}\mathbf{D}_a^{age} + \boldsymbol{\beta_4}\mathbf{D}_c^{country} + \epsilon_{igac} \quad (1)$$

The baseline vector of control variables $\mathbf{X}_{igac}$ includes the gender, the log of household income per capita, the education level, dummies for the number of children and the religion. We control for the number of children as this should affect willingness to pay for fighting climate change when parents' utility is dependent on their children's utility who may expect utility losses due to climate change in the future. We use dummies instead of a running variable for the number of children as we expect non-linearity in the effects. We use religion fixed effects as it has been shown that religion affects attitudes toward climate change (Jenkins, Berry, and Kreider, 2018). This is our preferred specification. In an alternative specification, we include region instead of country fixed effects to control for region specific variation. We use robust standard errors that are clustered on the country level.

This approach allows us to identify the effect of life expectancy on the willingness to fight climate change, abstracting from all country-specific factors that are constant across age and all age-specific factors that are constant across countries. For the example from above, this means that our identification strategy controls for the fact the Netherlands is threatened by climate change more than the US and that younger individuals might be socialized to care more about climate change than older individuals.

Therefore, our identification assumption states that no omitted variable that varies above the gender, age and country level is systematically correlated with the willingness to fighting climate change and our measure of life expectancy.

It is crucial for our identification strategy that the measure of life expectancy is aggregated on cohort level and calculated based on previous cohorts. This makes our approach comparable to quasi-experimental variation in the sense of an intention to treat approach as our measure of life expectancy is not correlated with individual level determinants of life expectancy. It implies that our results cannot be driven by reverse causality. For instance, the fact that an environmental-friendly individual who engages in healthier behavior such as vegetarianism might also live longer does not affect our results.

The variation in life expectancy which we exploit is not exogenous to cohort-level patterns that vary within countries over time, are different between countries and affect life expectancy as well as climate attitudes. One example of such a pattern is that an older cohort in a country experienced war or poverty during their childhood and a younger cohort did not which varies between countries. To address this concern, we follow Falk, Hermle, and Sunde (2019) and instrument life expectancy with the expected remaining years of life of a country-cohort in earlier periods. We show in Section 6.1 that the IV estimates are very similar to our main estimates with the effect being even stronger, suggesting potential attenuation bias in our main estimates. In addition, we run a specification in which we control for the average liferime log(GDP pc), average lifetime institutional quality and average lifetime exposure to violent conflict to control for differential experience effects between cohorts within countries. The results of this specification can be found in

Section 6.1 and show that our results are robust to controlling for these patterns. Furthermore, we run a specification in which we allow for non-linear effects of remaining years of life. This specification can be seen in Section 6.1 and shows that the effects of remaining years of life on climate change are practically linear and monotonous. This result further strengthens our argumentation that the effects are not driven by other patterns varying between cohorts within countries as there is no reason to believe that patterns such as war or poverty during childhood have a linear and monotonous effect on the willingness to pay to fight climate change.

4 Results

Our main outcome of interest is the individual willingness to pay a fraction of ones household income to fight climate change. Specifically, in the GCCS individuals have been asked whether they are *willing to contribute 1% of [their] household income every month to fight global warming*, answering yes or no. We use this binary variable as our main dependent variable.

Table 2 shows our OLS estimation results for several specifications. Our preferred specification is displayed in column (3). This specification includes all control variables and country instead of region fixed effects. Increasing the expected remaining years of life by one year (ten years) increases the willingness to pay 1 % of household income to fight climate change by 0.8 percentage points (8 percentage points). This effect is highly significant and robust to the inclusion of a variety of control variables and fixed effects. Given that at baseline already 69.9 % of people are willing to pay 1 % of household income to fight climate change, increasing expected remaining years of life by one year (ten years) is equal to a 1.1 % (11 %) increase. The effect of increasing remaining years of life by approximately five years ceteris paribus is similar to the correlational effect of having secondary compared to only primary education. Therefore, the estimated effect of life expectancy on climate attitudes is economically meaningful.

	Willingness to Pay 1 % of Income to Fight Climate Change			
	(1)	(2)	(3)	(4)
Remaining Years of Life	0.007***	0.007***	0.008***	0.006***
	(0.002)	(0.002)	(0.002)	(0.002)
Female	−0.011	−0.009	−0.015*	−0.007
	(0.009)	(0.009)	(0.009)	(0.009)
Log(HH Income pc)		0.010***	0.010***	0.011***
		(0.001)	(0.001)	(0.002)
Secondary Education		0.036***	0.036***	0.043***
		(0.006)	(0.006)	(0.006)
Tertiary Education		0.039***	0.041***	0.047***
		(0.010)	(0.010)	(0.010)
1 Child		0.019***	0.018***	0.017***
		(0.004)	(0.005)	(0.005)
2 Children		0.019***	0.020***	0.016***
		(0.005)	(0.006)	(0.006)
3+ Children		0.033***	0.035***	0.027***
		(0.007)	(0.007)	(0.007)
Country FE	Yes	Yes	Yes	No
Age FE	Yes	Yes	Yes	Yes
Religion FE	No	No	Yes	Yes
Region FE	No	No	No	Yes
Mean	0.701	0.701	0.699	0.701
Observations	118,352	118,056	109,939	96,213
R^2	0.085	0.088	0.085	0.118
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 2. OLS results for the effects of remaining years of life on willingness to pay 1 % of household income to fight climate change.

Notes: Standard errors clustered on country level are shown in parenthesis. We do not use country fixed effects in the specification including region fixed effects as they are collinear.

5 Mechanisms

To better understand the mechanisms driving our results, we conduct two analyses. First, we investigate whether higher levels of vulnerability to the negative effects of climate change enhance the effects by analyzing heterogeneity in different vulnerability factors on country level. Second, we examine interaction effects of life expectancy with individual characteristics to understand which characteristics increase and alleviate the effects of life expectancy.

Vulnerability at the Country Level

We examine heterogeneity in our result based on country-level differences in vulnerability to climate change. If individuals know that their country of residence is more vulnerable to climate change in the future, increasing life expectancy may increase their willingness to pay part of their income to fight climate change more as the expected damages to their future utility are larger. Vulnerability can be reflected in a country's limited financial or institutional capacity to support its inhabitants in coping with climate change-related damages, as well as in geographical conditions that increase its exposure to adverse effects of climate change.

We split the countries in a low and high vulnerability group based on the income

level of a country, the average temperature in 2001 - 2020 and the WorldRiskIndex (WRI) which measures the disaster risk of countries based on their exposure to natural hazards and their societal vulnerabilities. We find that the effects of remaining years of life are larger and more significant for individuals from more vulnerable countries based on the income level of the country and the average temperature. However, we do not find significant differences in the effects of remaining years of life on willingness to pay to fight climate change between countries with high and low vulnerability based on the WorldRiskIndex. This might be explained by individuals not being aware of the more complex risk factors that are included in this index.

	Income Level		Average Temperature 2001-2020		WorldRiskIndex (WRI)	
	Low and Middle Income	High Income	Above Median	Below Median	Above Median	Below Median
Remaining Years of Life	0.009***	0.003	0.011***	0.006***	0.008***	0.009***
	(0.002)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)
Female	−0.040***	0.039**	−0.050***	0.002	−0.022*	−0.011
	(0.010)	(0.018)	(0.014)	(0.012)	(0.012)	(0.012)
Log(HH Income pc)	0.011***	0.007***	0.008***	0.011***	0.009***	0.011***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Secondary Education	0.043***	0.021*	0.031***	0.041***	0.037***	0.033***
	(0.006)	(0.012)	(0.010)	(0.007)	(0.009)	(0.009)
Tertiary Education	0.023*	0.056***	0.012	0.054***	0.037**	0.046***
	(0.013)	(0.014)	(0.022)	(0.011)	(0.016)	(0.012)
1 Child	0.026***	0.005	0.035***	0.011*	0.022***	0.014*
	(0.005)	(0.009)	(0.007)	(0.006)	(0.006)	(0.007)
2 Children	0.025***	0.015	0.033***	0.013*	0.026***	0.009
	(0.007)	(0.012)	(0.010)	(0.006)	(0.008)	(0.008)
3+ Children	0.041***	0.013	0.042***	0.033***	0.036***	0.032***
	(0.008)	(0.016)	(0.012)	(0.008)	(0.011)	(0.008)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes	Yes	Yes
Religion FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	No	No	No	No	No	No
Mean	0.742	0.625	0.77	0.666	0.674	0.728
Observations	69,689	40,250	35,253	72,751	58,654	48,423
R^2	0.085	0.060	0.064	0.083	0.092	0.073
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 3. Effects of remaining years of life on willingness to pay 1 % of household income to fight climate change for different risk groups.

Notes: Standard errors clustered on country level are shown in parenthesis. Data on the WorldRiskIndex is taken from the UN organization OCHA and on temperature from the Climate Knowledge Portal of the World Bank. The medians are calculated bases on country level.

Interaction Effects at the Individual Level

To shed more light on how exactly life expectancy affects willingness to fight climate change, we also investigate the interaction effects of life expectancy with individual characteristics. In particular, we are interested in the interaction with having children. From a theoretical perspective, the effect of life expectancy on willingness to pay to fight climate change should be smaller if people have children, since a long life expectancy and children are substitutes: If an individual has children, they are expected to care about the future anyway and therefore the effect of life expectancy on willingness to pay to fight climate change is smaller.

Table 4 shows the results regressions that include interaction effects of life expectancy with a dummy for whether an individual has children, a dummy for whether they belong to the top 50 % of their countries income distribution and

education-dummies. We find that the prediction with regard to having children is confirmed: There is a negative interaction effect of life expectancy with having children. This further suggests that it are indeed considerations about future utility that drive the effect - as predicted in a simple model of utility maximization across the life cycle. In contrast, the interaction effects with education and income are not significant, probably because they do not relate to intertemporal considerations directly.

	Dependent variable:		
	Willingness to Pay 1 % of Income to Fight Climate Change		
	(1)	(2)	(3)
Remaining Years of Life	0.007***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)
Remaining Years of Life * Secondary Education		0.00001	
		(0.0003)	
Remaining Years of Life * Tertiary Education		−0.0001	
		(0.0004)	
Remaining Years of Life * Log(HH Income pc)			0.00001
			(0.0001)
Remaining Years of Life * Children>0	−0.001***		
	(0.0003)		
Female	−0.005	−0.009	−0.009
	(0.009)	(0.009)	(0.009)
Children > 0	0.052***	0.022***	0.022***
	(0.010)	(0.004)	(0.004)
Log(HH Income pc)	0.010***	0.010***	0.009***
	(0.001)	(0.001)	(0.003)
Secondary Education	0.036***	0.035***	0.035***
	(0.006)	(0.012)	(0.006)
Tertiary Education	0.039***	0.041**	0.038***
	(0.010)	(0.016)	(0.010)
Country FE	Yes	Yes	*Yes*
Age FE	Yes	Yes	*Yes*
Religion FE	Yes	Yes	*Yes*
Region FE	No	No	*No*
Mean	0.699	0.699	0.699
Observations	118,056	118,056	118,056
R^2	0.088	0.088	0.088
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 4. Effects of remaining years of life on willingness to pay 1 % of household income and interaction effects with having children, income and education.
Notes: Standard errors clustered on country level are shown in parenthesis.

6 Robustness

In this section, we discuss the robustness of our results to alternative specifications, alternative measures of life expectancy and alternative measures of climate attitudes.

6.1 Alternative Specifications

Instrumental Variable Approach
In order to address potential concerns of omitted variable bias resulting from differ-

ential patterns between cohorts within countries, we use an instrumental variable approach. Specifically, following Falk, Hermle, and Sunde (2019), we use the expected remaining years of life for a cohort in earlier periods as an instrument for the expected remaining years of life of the current cohort. The life expectancy from 10, 20, 30 and 40 years ago should not be correlated with current cohorts differential experiences during their lifetime. The results of this analysis are presented in Table 5. We estimate four separate models that use the 10, 20, 30 and 40 year lag as an instrument. In all models the results are similar to the results obtained via OLS. The effect is even stronger in the IV model, suggesting that our main estimate is biased downwards, potentially due to the reasons discussed in Section 3.

	Willingness to Pay 1 % of Income to Fight Climate Change			
	IV 2011	IV 2001	IV 1991	IV 1981
Remaining Years of Life (Instrumented)	0.012***	0.013***	0.015***	0.016***
	(0.002)	(0.002)	(0.002)	(0.003)
Female	−0.031***	−0.037***	−0.043***	−0.051***
	(0.009)	(0.009)	(0.010)	(0.012)
Log(HH Income pc)	0.010***	0.010***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
Secondary Education	0.036***	0.036***	0.036***	0.036***
	(0.006)	(0.006)	(0.006)	(0.006)
Tertiary Education	0.040***	0.040***	0.040***	0.040***
	(0.010)	(0.010)	(0.010)	(0.010)
1 Child	0.018***	0.018***	0.018***	0.017***
	(0.005)	(0.005)	(0.005)	(0.005)
2 Children	0.019***	0.019***	0.019***	0.019***
	(0.006)	(0.006)	(0.006)	(0.006)
3+ Children	0.035***	0.034***	0.034***	0.034***
	(0.007)	(0.007)	(0.007)	(0.007)
Country FE	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes
Religion FE	Yes	Yes	Yes	Yes
Region FE	No	No	No	No
Observations	109,939	109,939	109,939	109,939
R^2	0.085	0.085	0.085	0.084
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 5. Instrumental variable results for the effects of remaining years of life on willingness to pay 1 % of household income to fight climate change.

Notes: Standard errors clustered on country level are shown in parenthesis. We use the expected remaining years of life in a given gender-age-country cell in previous cohorts as instrumental variable for current expected remaining years of life.

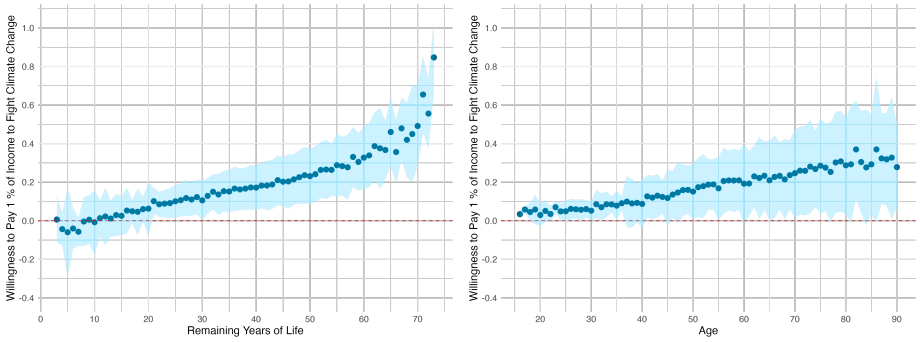
Allowing for Non-Linear Effects

To investigate the effect of life expentancy further and capture potential non-linearities, we also estimate a fixed effects model similar to the one used by Lechler and Sunde (2019). This model differs from our main specification (1) by including fixed effects for the life expectancy, thereby not assuming a functional form for the effects of life expectancy on willingness to fight climate change.

$$wtp_fight_cc_{igac} = \beta_0 + \boldsymbol{\beta_1}\mathbf{D}_{igac}^{life_expectancy} + \boldsymbol{\beta_2}\mathbf{X}_{igac} + \boldsymbol{\beta_3}\mathbf{D}_{a}^{age} + \boldsymbol{\beta_4}\mathbf{D}_{c}^{country} + \epsilon_{igac} \quad (2)$$

The results for this specification can be seen in Figure (2). The willingness to pay clearly increases with remaining years of life and age. The graph also highlights the importance of separating the effects of age and remaining years of life. While younger individuals seem to be willing to pay 1 % of their income to fight climate change less often than older individuals ceteris paribus, individuals with a higher life expectancy are more likely to be willing to pay 1 % of their income to fight climate change.

The results are consistent with our main results and suggest that the effect of life expectancy is not driven by age effects as these exhibit an opposing trend. In addition, the results show that the effect of life expectancy on the willingness to fight climate change is approximately linear and therefore our linear main specification is likely a good approximation of the true relationship.



(a) Effects of Remaining Years of Life **(b)** Effects of Age

Figure 2. Coefficients of remaining years of life and age for the dependent variable willingness to pay 1 % of household income to fight climate change.

Notes: Standard errors are clustered on country × age × gender level. The blue areas show 95 % confidence intervals. We use age dummies up to the age of 90 as above this age the number of observations is quite low.

Controlling for Experience Effects

In order to control for the fact that individuals from different cohorts have experienced different levels of income, institutional quality and conflict in their life, we include covariates for average lifetime log(GDP pc), average lifetime institutional quality and average lifetime exposure to violent conflict to the specification in equation 1. The data come from the *Polity 5 Project* (institutional quality), the *Maddison Project* (GDP) and the *UCDP/PRIO Armed Conflict Dataset* (conflict). The results remain stable. This suggests that the effect is not driven by systematic changes in the economic or institutional environment within countries over time.

	Dependent variable:			
	Willingness to Pay 1 % of Income to Fight Climate Change			
	(1)	(2)	(3)	(4)
Remaining Years of Life	0.008***	0.009***	0.008***	0.011***
	(0.002)	(0.002)	(0.002)	(0.002)
Avg. Institutional Quality Lifetime	−0.001			0.002
	(0.002)			(0.002)
Avg. log GDP Lifetime		−0.084***		−0.073**
		(0.032)		(0.030)
Avg. Conflict Exposure Lifetime			0.031	0.021
			(0.054)	(0.051)
Female	−0.014	−0.018**	−0.021**	−0.033***
	(0.009)	(0.008)	(0.010)	(0.009)
Log(HH Income pc)	0.010***	0.010***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
Secondary Education	0.036***	0.037***	0.036***	0.036***
	(0.006)	(0.006)	(0.007)	(0.007)
Tertiary Education	0.041***	0.040***	0.032***	0.033***
	(0.010)	(0.010)	(0.012)	(0.012)
1 Child	0.020***	0.019***	0.027***	0.027***
	(0.004)	(0.004)	(0.005)	(0.005)
2 Children	0.020***	0.019***	0.026***	0.025***
	(0.005)	(0.005)	(0.006)	(0.006)
3+ Children	0.034***	0.033***	0.038***	0.038***
	(0.007)	(0.007)	(0.008)	(0.008)
Country FE	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes
Religion FE	Yes	Yes	Yes	Yes
Region FE	No	No	No	No
Mean	0.699	0.698	0.715	0.715
Observations	114,378	117,129	80,596	79,617
R^2	0.090	0.088	0.093	0.094
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 6. Main Specification with controls for average lifetime values of GDP, institutional quality and conflict.)

Notes: Standard errors clustered on country level are shown in parenthesis.

Probit and Logit Models

Given the binary nature of the dependent variable, we also estimate logit and probit models. The results are presented in Table 7. They align closely with the results obtained via OLS, in that the coefficient of life expectancy remains positive and significant in both models. Moreover, the probit and logit estimates are larger than the OLS estimates from our main specification. Consequently, one may interpret the estimate of the main specification as a lower bound of the effect.

	Willingness to Pay 1 % of Income to Fight Climate Change		
	OLS	Probit	Logit
Remaining Years of Life	0.008***	0.022***	0.035***
	(0.002)	(0.005)	(0.009)
Female	−0.015*	−0.037	−0.055
	(0.009)	(0.026)	(0.045)
Controls	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Age FE	Yes	Yes	Yes
Religion FE	Yes	Yes	Yes
Region FE	No	No	No
Mean	0.699	0.699	0.699
Observations	109,939	109,939	109,939
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 7. OLS main specification results compared to probit and logit specifications.
Notes: Standard errors clustered on country level are shown in parenthesis.

6.2 Alternative Measures of Climate Attitudes

Alternative Climate Attitudes in the GCCS

Beyond the main measure, the *GCCS* contains several other questions on climate attitudes. Table 8 presents the results for those measures. We find that the effect of life expectancy is positive and significant for all measures. The first measure (column 1) is a dummy indicating whether the willingness to pay to fight climate change is positive. This is constructed from the question *Would you be willing to contribute a smaller amount than 1% of your household income every month to fight global warming?*. This question is asked only when the respondent answered "No" to the first question on willingness to pay more than 1 % of the household income. The other variables are beliefs about others´ answer to the main measure (column 2), a question about social norms (column 3: *Do you think that people in [your country] should try to fight global warming?*) and demand for government action (column 4: *Do you think the national government should do more to fight global warming?*). The results — in particular for social norms and government action — seem to be predicted by a similar argument as our main result and therefore strengthen our conclusion: If individuals expect to live longer, they may be more likely to care about the future and therefore be more likely to support action against climate change.[2]

2. The only variable for which an effect may seem surprising is the beliefs-measure. In our judgement, potential explanations could be be motivated reasoning or a false consensus effect.

	Dependent variable:			
	WTP Positive	Belief Share Others' WTP 1 % Income	Others Should Fight Climate Change	Gvt Should Fight Climate Change More
Remaining Years of Life	0.008***	0.004***	0.004**	0.004***
	(0.002)	(0.001)	(0.002)	(0.002)
Female	−0.011	−0.009	0.014**	0.009
	(0.008)	(0.006)	(0.006)	(0.007)
Log(HH Income pc)	0.010***	−0.001	0.005***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Secondary Education	0.034***	0.008	0.047***	0.036***
	(0.005)	(0.005)	(0.006)	(0.007)
Tertiary Education	0.051***	−0.035***	0.057***	0.037***
	(0.009)	(0.007)	(0.007)	(0.007)
1 Child	0.019***	0.010***	0.005	0.003
	(0.004)	(0.003)	(0.003)	(0.003)
2 Children	0.024***	0.008**	−0.003	−0.001
	(0.005)	(0.004)	(0.004)	(0.004)
3+ Children	0.036***	0.014***	−0.0003	−0.007
	(0.007)	(0.004)	(0.006)	(0.005)
Country FE	Yes	Yes	Yes	Yes
Age FE	Yes	Yes	Yes	Yes
Religion FE	Yes	Yes	Yes	Yes
Region FE	No	No	No	No
Mean	0.757	0.396	0.868	0.887
Observations	109,939	99,961	108,742	108,109
R^2	0.080	0.072	0.067	0.057
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 8. Results for alternative measures of climate attitudes and beliefs about others' climate attitudes from the GCCS.

Notes: Standard errors clustered on country level are shown in parenthesis.

Alternative Climate Attitudes in the Integrated Values Survey

We use data from the Integrated Values Survey (IVS) which consists of the World Values Survey (WVS) and the European Values Survey (EVS) to test the robustness of our results to a different dataset containing questions regarding climate attitudes. Even though the IVS contains several questions in the category of environment, only few of them have been asked in the current waves which contain a larger number of countries especially from the low- and middle-income countries and target attitudes towards fighting climate change directly. Therefore, we use the three main questions that capture the willingness to forgo income or other benefits to fight climate change [3]: (1) Protect: A dummy variable indicating which of the following two statements comes closer to ones view. *A. Protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs B. Economic growth and creating jobs should be the top priority, even if the environment suffers to some extent* (2) Increase Taxes : On a scale from one to four: *How much do you agree with the following: Increase in taxes if extra money used to prevent environmental pollution.* (3) Give Income: On a scale from one to four: *How much do you agree with the following: I would give part of my income if I were certain that the money would be used to prevent environmental pollution.* Note that while these questions are the closest available proxies for our main variable of interest in the GCCS, they likely

3. We do not consider three questions that have only been asked to a limited set our countries and in the second wave (1990-1994) as they are not comparable to our worldwide dataset from 2021: Talking about the environment makes people anxious, to combat unemployment one has to accept environmental problems and whether protecting the environment and fighting pollution is less urgent than suggested. In addition, we do not consider three questions that have been asked in more current waves as they do not adequately capture the tradeoff between fighting climate change and forgoing income: the government should reduce pollution and whether human should coexist with or master nature.

reflect broader environmental attitudes rather than those specific to global warming or climate change. Unlike the GCCS, they are less precise and focus on general environmental concerns rather than explicitly addressing attitudes toward climate change.

Table 9 displays the result for all three variables. The effect is positive for all three variables but only reaches statistical significance in the case of the *Protect*-Variable. There are two potential explanations for this. One potential explanation seems to be that the variables just capture different attitudes and the effect of life expectancy is stronger for concrete attitudes towards climate change than for more general environmental attitudes. Another plausible explanation are data limitations. The *Protect*-Variable is the only variable that has been asked also in waves 6 (2010-2014) and 7 (2017-2022) of the WVS. Not only do we, therefore, have fewer observations, but those observations stem from earlier years. This is relevant for two reasons: First, the effect in our baseline specification is mainly driven by lower and middle income countries (see Table 3), which are particularly underrepresented in the earlier waves. Second, the effect of life expectancy may have became stronger over time with environmental issues becoming more salient. The fact that the coefficient is not significant for the *Increase Taxes*-Variable or the *Give Income*-Variable might therefore be best explained by those questions not having been asked in Wave 6 and 7 of the WVS.

Ultimately, although data limitations prevent us from fully verifying the robustness of our results within the IVS, we believe that the significant effect observed for the only variable available in the more recent waves strongly supports the general robustness of our main findings when using a different dataset with alternative measures of climate attitudes.

	Dependent variable:		
	Protecting Environment Priority	Support Increase Taxes to Fight Pollution	Give Income for Enviornment
Remaining Years of Life	0.003***	0.004	0.003
	(0.001)	(0.004)	(0.003)
Female	−0.0002	−0.021	−0.019
	(0.007)	(0.019)	(0.015)
Controls	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
Age FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Religion FE	Yes	Yes	Yes
Region FE	No	No	No
Mean	0.563	2.623	2.761
Observations	256,703	95,221	78,643
R^2	0.068	0.085	0.083
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 9. Results for alternative measures of environmental attitudes from the IVS.

Notes: The IVS dataset is used. Standard errors clustered on country x year level are shown in parenthesis. Similar to the main specification we use control variables for the number of children, the the education level and the income level. As we have observations from different waves of the IVS, we also include year fixed effects.

6.3 Alternative Measures of Life Expectancy

In our main specification we use data on life expectancy from the UN Population Division. However, there are also other sources for measures of life expectancy available. In order to test the robustness of our results to different measures of life expectancy, we use data on life expectancy from the Human Mortality Database (HMD) and data on the probability of dying in the next year from the UN Population Division. These measures differ from the measure used in our main specification in two ways. First, the HMD contains information on much fewer countries than the UN data and it does not contain information on low and lower-middle income countries. Second, the probability of dying in the next year is a rather short-term measure of mortality risk in contrast to the long-term measure life expectancy. We use the inverse of the probability of dying in the next year so that the expected sign of the estimate is the same as in our main specification and to have larger absolute differences between individuals' values.

	Willingness to Pay 1 % of Income to Fight Climate Change	
	Remaining Years of Life (HMD)	1 / Probability of Dying
Remaining Years of Life (HMD)	0.006	
	(0.004)	
1 / Probability of Dying		0.00002***
		(0.00000)
Female	0.033*	0.010*
	(0.018)	(0.005)
log(hh income pc)	0.008**	0.010***
	(0.003)	(0.001)
Secondary Education	0.025*	0.038***
	(0.013)	(0.006)
Tertiary Education	0.050***	0.043***
	(0.017)	(0.010)
1 Child	0.006	0.020***
	(0.008)	(0.005)
2 Children	0.012	0.021***
	(0.012)	(0.006)
3+ Children	0.012	0.037***
	(0.016)	(0.007)
Country FE	Yes	Yes
Age FE	Yes	Yes
Religion FE	Yes	Yes
Region FE	No	No
Observations	38,468	108,632
R^2	0.069	0.085
Note:		*p<0.1; **p<0.05; ***p<0.01

Table 10. Results when using the life expectancy from the HMD and the inverse of the probability of dying in the next year as alternative measures of life expectancy.
Notes: Standard errors clustered on country level are shown in parenthesis. The sample size for the HMD is lower because the HMD only contains information on high and higher middle income countries.

The results are presented in Table 10. The size of the estimate for the life expectancy taken from the HMD is very similar to our main effect. However, the effect

is not significant. One explanation fot this is that the sample size is much smaller. In addition, the effect may be less clear in the selected sample of only high- and higher middle-income countries which we use in the HMD analysis due to the HMD only containing life expectancy data for these countries. As shown in Table 3, the effect is larger and more significant in low- and middle-income countries, which may explain the non-significant effect in the HMD analysis.
For the inverse probability of dying in the next year, we find a positive and highly significant effect. The size of this effect is relatively small. If an individuals' probability of dying in the next year decreases from 10% to 1% the willingness to pay 1 % of the household income to fight climate change increases by 0.18 percentage points ceteris paribus ((1/0.01 - 1/0.1)*0.00002 = 0.0018). This suggests that changes in a short-term measure of mortality have a smaller effect on climate attitudes than changes in a long-term measure of mortality, which makes sense given that people may expect high climate risk rather in the distant future than in the near future. Consequently, the estimates for alternative measures of life expectancy are consistent with our main results.

7 Conclusion

This paper empirically tests the hypothesis that individuals' willingness to fight climate change increases with their life expectancy which is suggested by theoretical models of utility maximization over the life cycle but has not been empirically validated so far. Using survey data from nearly 120,000 individuals in 119 countries and plausibly exogenous variation in life expectancy from life tables, we find that an increase in life expectancy of ten years leads on average to a 8 percentage points higher probability of being willing to pay 1 percent of income to fight climate change.
This finding is robust to a number of alternative specifications such as probit and logit models as well as a dummy model which does not assume linearity in the effects of life expectancy. Furthermore, an instrumental variable strategy supports our results and we find similar effects when using alternative measures of climate attitudes and life expectancy.
There are several implications of this finding. First, it provides new evidence that climate preferences are not only shaped by individual and social characteristics but also by demographic factors. Second, it has important implications for thinking about the effect of climate change. For example, it seems reasonable to assume that a consequence of global warming is a decrease in life expectancy. Hence, our finding suggests a feedback loop between climate change and life expectancy. Global warming leads to a decrease in life expectancy, which in turn leads to a decrease in willingness to fight climate change which in turn leads to an increase in global

warming. Further research could try to study this feedback loop in more detail. Finally, our papers point to a positive side-effect of investing into better living conditions and health, in particular in low and middle income countries.

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