

Millennials and Early Retirement: An Exploratory Study

Igor Tkalec

Social Data Institute, University College London, London WC1E 6BT, UK; i.tkalec@ucl.ac.uk

Abstract: The article explores the extent to which working conditions and health factors shape Millennials' preferences to retire early in the European context. On the one hand, Millennials' approach to life and work potentially implies a preference to retire early. Yet, on the other hand, the ongoing trend of tightening conditions and penalizing early retirement, as well as the expected decrease in living standards in old age for Millennial cohorts, restricts options and discourages early retirement. The results indicate that Millennials across Europe do not explicitly express a wish to retire early. This holds true most prominently for Millennials who are healthy and satisfied with their job. The analysis employs a classification decision tree model as the main method.

Keywords: early retirement; Millennials; working conditions

1. Introduction

Millennials, born in the last two decades of the 20th century [1], are often labeled as the “generation whine”, “me me me”, or “look at me” generation due to their perceived overindulgence and confidence [2,3]. However, they arguably consider leisure as one of their priorities in life [4–6]. To this end, we can repeatedly notice alleged success stories of Millennials valuing leisure over work in news feeds. Such alleged media sentiments can also be noticed when it comes to Millennials' preferences about retirement. Thus, news item titles, e.g., ‘Millennials are determined to retire early. Here's how they can actually pull it off’ [7], ‘Younger generations are redefining retirement’ [8], ‘10 Personal Finance Tips to Get You to Early Retirement’ [9], ‘Millennials Want to Retire at 50. How to Afford It Is Another Matter’ [10], and ‘By wanting to retire early, Millennials are subverting conventional ideas of work and finances’ [11], to name a few, are not surprising. News items arguably reflect wishful thinking more than realistic possibilities and preferences for early retirement among the Millennial generation. This article focuses on the latter through an exploratory analysis.

Given that working conditions and health-related factors are often good predictors of early retirement [12–15], the article explores the extent to which such factors shape Millennials' preferences (not) to retire early, particularly in the European context. From a broader perspective, this article ultimately aims to motivate (social policy) scholars to engage in similar questions and topics. The findings of the exploratory analysis suggest that Millennials do not have an explicit appetite for early retirement when considering their working conditions and health. Thus, the alleged Millennial desire to retire early reported in the news does not appear to be a genuine trend in the European context. To analyze this further, the main method used in this article is supervised machine learning through a classification decision tree model.

The Millennial generation has been extensively studied regarding work attitudes, conditions, and well-being [3,16–20], which are crucial factors in deciding whether or not to retire prematurely [12,21–25]. The present analysis intersects with and adds to these bodies of literature, particularly by considering the specificity of the Millennial generation and the broader socioeconomic conditions that enable options for early retirement in pension systems (to maintain a certain standard of living in early retirement). These dimensions are examined through the lens of working conditions and health-related factors.



Citation: Tkalec, I. Millennials and Early Retirement: An Exploratory Study. *Merits* **2023**, *3*, 248–262. <https://doi.org/10.3390/merits3020015>

Academic Editors: Enrico Marelli and Marcello Signorelli

Received: 29 December 2022

Revised: 15 March 2023

Accepted: 28 March 2023

Published: 30 March 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Studies on Millennials' attitudes toward work repeatedly highlight leisure and work–life balance as essential to the Millennial working culture [1,19,26], which may potentially imply that Millennials would not hesitate to retire early. However, as discussed in the article, the socioeconomic reality and the Europe-wide policy agenda that promotes old-age employment are arguably not conducive to early retirement. It is worth noting that the existing literature on Millennials is predominantly US-centric, whereas the present analysis has a European focus.

Studying the Millennial generation in the context of early retirement may at first appear “random” and out of context. Nevertheless, I argue that such research efforts are worthwhile. As the Baby Boomer generation begins to retire, under the current institutional setup of public pension schemes across Europe, Millennials have become the main tax base and contributors to those schemes. Partially because of this, retirement prospects for Millennials appear gloomy. Millennials are likely to be worse off in terms of pension amounts (i.e., pension adequacy) and old-age living standards compared to older generations [27–29]. Moreover, general economic conditions related to labor market dynamics [29] and the repercussions of the Great Recession [29,30] further exacerbate the retirement prospects of Millennials.

Considering the above, the mentioned news items appear to be more similar to a dream than reality. Taking into account the highlighted unfavorable socioeconomic conditions under which Millennials' prospects for decent living standards during retirement appear poor, Millennials may actually be deterred from early retirement as the pension benefits are lower on average by default (when compared to benefits at the minimum pension age). In the Section 2, I provide further elaboration on why examining Millennials in the context of early retirement is indeed worthwhile and interesting.

The article is structured as follows. Section 2 depicts the Millennial generation, focuses on its attitudes toward work, and discusses the current state of early retirement options. Subsequently, the materials and Section 3 specifies the data sample and reason classification decision tree model used in the analysis. Section 4 presents insight from the decision tree model, whereas Section 5 elaborates on its implications.

2. Literature Review: Millennials and Retirement

So why is it interesting to study Millennials in the context of (early) retirement? This section outlines a couple of sets of reasons, which ultimately inform the expectations for the analysis. It starts with a discussion on the Millennial generation and its characteristics, attitudes toward work, and the role of technology. Subsequently, the section discusses the interaction between working conditions and early retirement as well as prospects for Millennials' retirement.

2.1. The Millennial Generation and the Workplace

The literature on Millennials recognizes distinct characteristics of this generation that are essential for understanding their expectations and behaviors throughout their professional life. Millennials grew up in a “helicopter” parenting environment [26], where they are perceived as special (i.e., the parents' sense of purpose) and where everyone receives participation trophies and ribbons in competitions [31]. This environment boosted their confidence and self-esteem. In a professional setting, Millennials tend to have a strong belief in themselves, an explicit need for achievement, good negotiation skills, a willingness to embrace technology, and an expectation to work on well-structured projects within a team [1,17,31,32]. Additionally, Millennials are conventional and tend to follow rules and trust authority figures. In the workplace, this is reflected in their belief that compliance ensures success [31]. Connected to this, Millennials tend to equate effort with performance [33]. However, they are arguably “directionless dreamers” [31] with no clear life plan and have a sense of entitlement greater than other generations [32].

The aforementioned characteristics shape the attitudes of Millennials toward work and workplace expectations and behavior. First and foremost, Millennials prioritize the

need for a work–life balance throughout their professional career [1,16,19,26,34]. Work–life balance encompasses company policies that mitigate family stress and conflicts. The lack of such policies can potentially result in burnout, exhaustion, and health issues [26].

In addition, Millennials have high expectations when it comes to job advancements, promotions, and in-job upskilling [2,16,26]. Moreover, they expect their employers to drive positive and social change and have meaningful and impactful company missions [1,2,16,19,26,35]. This explains why Millennials tend to be selective in their job search [1] and change jobs more frequently compared to older generations [35,36]. Furthermore, Millennials believe that good leadership [37] and a socially engaging workplace with friendly coworkers [38] are important for their prosperity. However, Millennials' abilities in the workplace often do not meet their high expectations [16].

Although the outlined characteristics and attitudes toward work appear distinct and somewhat “unique” for Millennials, comparative generational literature does not provide compelling evidence that each generation can be considered distinct regarding work attitudes. Instead, studies show that generational effects on work attitudes are small [17,18] and that it is difficult to generalize generational differences concerning work attitudes [20]. Nevertheless, a broad trend toward individualization in the workplace among younger generations has been observed [20]. In the context of Millennials, this links to the above-mentioned personality characteristics, such as confidence and self-entitlement. Nonetheless, importantly, although the attitudes toward work may have remained stable among generations, the approach to the workplace is distinctive [36].

Another relevant consideration in depicting Millennials' distinct approach to the workplace is technology. Technologies such as mobile phones and social networks have shaped the way Millennials communicate and learn [2,35]. Consequently, technology is an integral part of generational behavior and its changes [3,18]. For example, Millennials reported that the internet is as important as air, water, food, and shelter [39]. Additionally, Millennial driving habits have changed due to increased usage of mobile technologies such as online shopping and social media [40]. From a broader economic policy perspective, technology is at the center of structural socioeconomic changes and plays a decisive role in the generation of future economic growth and the future of work [41]. This, in turn, inevitably affects retirement prospects for Millennial cohorts.

2.2. Early Retirement and the Workplace

Early retirement occurs when an individual successfully takes up pension benefits prior to reaching the minimum statutory retirement age (the age at which full pension benefits can be claimed), as defined by law, which is 65 or older in most EU member states. In other words, early retirement occurs when the effective age of retirement (the age at which one claims pension benefits) is lower than the statutory age [13].

The desire and eventual decision to retire (early) at a certain age depend on the so-called pull and push factors [22]. Pull factors concern the utilization of economic and other advantages in retirement, such as enjoying more leisure time. Conversely, push factors concern individual-level considerations that ultimately “push” individuals to leave the labor market. Such considerations entail health and working conditions, as well as more specific factors therein [12,14].

Health- and working condition-related factors are robust predictors of early retirement. For example, job stress and the lack of autonomy in work were demonstrated as significant predictors of early retirement [13]. Moreover, self-perceived health is closely linked to the decision to retire early [15]. Other studies reassert the importance of these and similar factors [14,42,43].

In the EU context, early retirement as an option within national pension systems has faded and is being penalized. The gradual elimination of early retirement options has been a preferred policy path and narrative since the Great Recession, with a focus on promoting longer working lives and policies for old-age employment [44]. However, despite these policies, Europeans tend to, on average, retire early. Table 1 shows that in the large majority

of EU member states, the statutory retirement age is higher than the effective retirement age (i.e., the difference between the two is positive).

Table 1. Statutory and effective retirement ages in the EU.

Country	Statutory Age	Average Effective Age	Difference
Belgium	65	63.3	1.7
Bulgaria	64.2	64.7	−0.5
Czech Republic	63.5	63.5	0
Denmark	65.5	65	0.5
Germany	65.7	64.7	1
Estonia	63.6	65.2	−1.6
Ireland	66	65.5	0.5
Greece	67	63	4
Spain	65.7	63.4	2.3
France	66.8	62.3	4.5
Croatia	65	62.7	2.3
Italy	67	65.2	1.8
Cyprus	65	64.4	0.6
Latvia	63.5	63.2	0.3
Lithuania	63.8	63.4	0.4
Luxembourg	65	60.4	4.6
Hungary	64	63.2	0.8
Malta	62.9	62.8	0.1
Netherlands	66.3	65.8	0.5
Austria	65	63.2	1.8
Poland	65	64.5	0.5
Portugal	66.4	64.6	1.8
Romania	65	64.1	0.9
Slovenia	65	62.1	2.9
Slovakia	62.5	62	0.5
Finland	63.5	63.9	−0.4
Sweden	67	65.6	1.4

Note: Data are for males in 2019. Source: European Commission [45].

To illustrate the trend of fading early retirement, I provide a few non-exhaustive policy examples. In 2019, Croatia reduced pension benefits by 0.30% for each month in early retirement. The Czech Republic has a similar system for penalizing early retirement. In Germany, postponement of retirement (beyond statutory age) adds a bonus on the final pension amount. From 2015, Portugal tightened conditions for the take-up of early retirement—the minimum age is 60 and the minimum contribution period is 40 years. Similar policy measures have been implemented in Belgium [46].

Another factor that is relevant for the (early) retirement of Millennial cohorts is pension adequacy, which estimates the living standard in retirement compared to the standard during employment. In the EU context, prospects for pension adequacy do not appear promising. The EU policy agenda, conducted through policy coordination under the European Semester, tends to favor pension sustainability (the long-term financing of public pension schemes) that, at times, works against pension adequacy levels [47,48]. Accordingly, a trade-off between sustainability and adequacy may be observed in the future, where the former improves and the latter declines [45,49,50]. Pension adequacy is under additional pressure, considering that the Baby Boomer generation started to retire in the 2020s. As Baby Boomers across the EU take up pension benefits from unfunded public pension (solidarity) schemes, the cost of this falls on a shrinking (mostly Millennial) tax base.

In addition to the gradual fading of early retirement options and the uncertain future of pension adequacy across the EU, the general state of the economy for Millennials is also not conducive to leaving the labor market early [29]. Due to the Great Recession, Millennials had a relatively slow and more precarious start to their professional careers [29,30]. Moreover, in the US context, Millennials tend to have inadequate or no savings, a higher

financial burden of student debt, and relatively low participation in occupational pension plans [28].

2.3. Expectations for the Analysis

Based on the insight from the literature review, this section elaborates on the expectations for the exploratory analysis. The main expectation is that although Millennials may potentially have an appetite for early retirement due to the prominence of work–life balance and leisure in their working culture, the socioeconomic conditions and policy agenda across European countries are arguably not encouraging for early retirement. In this context, Millennials who are to a certain extent satisfied with their current working situation and individual well-being may choose to refrain from early retirement.

The following observations from the literature support the expectation. First, due to a “rocky” start to their careers due to the Great Recession, Millennials’ personal saving rates are not likely to accumulate in sufficient amounts to provide a decent standard of living in premature retirement. Second, although Millennials tend to emphasize the importance of leisure in their lives (a pull factor for early retirement), their eagerness to contribute to something meaningful and impactful in their professional lives appears to be in favor of them staying in the labor market. Third, current early retirement schemes that often include a penalty in the form of a lower final pension amount are more conducive to postponing retirement even beyond the statutory retirement age. Fourth, an expected decline in living standards among the elderly in the long term that affects Millennial cohorts does not make early retirement attractive. Fifth, although the role of technology as a driver of economic prosperity has become ever more important and has been an integral part of Millennial lives, the future general economic outlook is expected to deliver slower economic growth and lower investment return rates, trends that impact retirement prospects.

In an attempt to empirically explore the above reasoning, the analysis focuses on push rather than pull factors for early retirement (i.e., health and working conditions). Although pull factors are also relevant for such an analysis (e.g., as they appropriately reflect Millennials’ insistence on leisure), push factors (a) have been demonstrated to have an empirically meaningful relationship with early retirement; (b) better reflect current and uncertain economic environments within which Millennials have been building their careers and retirement prospects; (c) reflect Millennials’ professional well-being and reported work attitudes; and (d) from a practical perspective, are more quantifiable and accessible as data.

Moreover, it is important to note that the exclusive focus on Millennials is justified for three reasons. First, they arguably have a distinct approach to work compared to older generations, particularly due to their familiarity with technology, although work values across generations have largely remained stable. Second, Millennials report higher levels of obesity and lower general fitness compared to older generations, making them distinct in terms of health [18]. Third, Millennials have at least twenty-something years until they reach statutory retirement age, making it sensible to inquire about their desire to retire early as they approach their prime earning potential age (40s to early 50s).

3. Materials and Methods

3.1. Data, Samples, and Variables

The data used for the analysis are part of a simplified version of the SHARE (Survey of Health, Ageing, and Retirement in Europe), i.e., easyShare (release 8.0.0., October 2022) [51], which consists of the same number of observations, but includes fewer variables than its complete and more complex counterpart (a request to access SHARE data was made on 2 November 2022 via email, and was approved on 3 November 2022). The simplified version is sufficient for the present analysis as it includes all variables of interest. The creation of the sample of interest was based on two conditions: (a) age range and (b) notified response to the question informing the target variable. Concerning the age condition, in line with the research objective, only Millennial respondents born between 1980 and 1999 are included in

the analysis. As shown in Figure 1, Millennials take up a relatively small proportion of the easySHARE dataset. This is expected as SHARE surveys are targeted at people aged 50 and older. However, the Millennial sample is still of sufficient size for an exploratory analysis. Survey respondents come from 25 countries (see Appendix A, countries include 23 EU member states (excluding Romania, Malta, Lithuania, and Cyprus), as well as Switzerland and Israel).

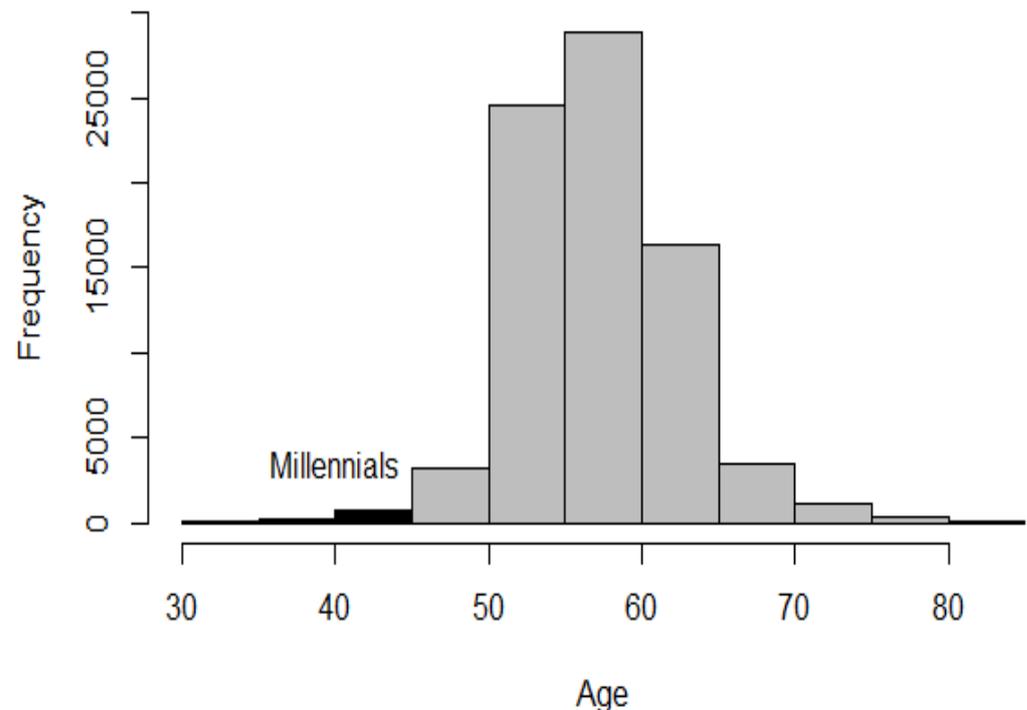


Figure 1. Age distribution of respondents who answered the question about the target variable (ep036_mod). Source: Author, based on easySHARE data.

Moreover, among the Millennials, only those who answered “yes” or “no” to the survey question labeled ep036_mod in the original dataset (i.e., “Thinking about your present [main/secondary] job, would you like to retire as early as you can from this job?”) are included in the analysis. The number of respondents who satisfy both conditions is $n = 421$. In the present research context, the response to the question on early retirement presumably reflects one’s current sentiment on the place of work and, thus, a (less) likely appetite for retiring early. The mean imputation was employed for missing data. Imputations are calculated from the sample and are based on the predictor variables used in the analysis.

I use nine continuous and categorical predictors in the analysis. The selection of predictors is based on conceptual and theoretical insight into the Millennial generation, which emphasizes well-being and work-life balance in the working environment (see Section 2.1). Therefore, the predictors include variables related to health/well-being and working conditions, which have been demonstrated in the literature as useful predictors of early retirement. Table 2 summarizes the predictor variables used in the analysis. The target variable corresponding to the survey question about early retirement is binary. The selected predictors from the easySHARE survey data are suitable for the analysis and align with the exploratory research objective of this article. Moreover, SHARE data has already been used to study the target variable of early retirement [52].

3.2. Classification Decision Tree Model

The research objective is operationalized by a supervised single decision tree classification machine learning model. The decision tree model fits into the present context as it is generally suitable for analyses with a relatively small sample; can handle missing values;

learns from predictors that have a relatively small number of disjoint values; and classifies a discrete binary target variable. Moreover, decision trees efficiently model different types of predictors (continuous, ordinal, categorical) and are insensitive to outliers. Importantly, decision tree models are appropriate for exploratory analyses [53].

Table 2. Predictive variables.

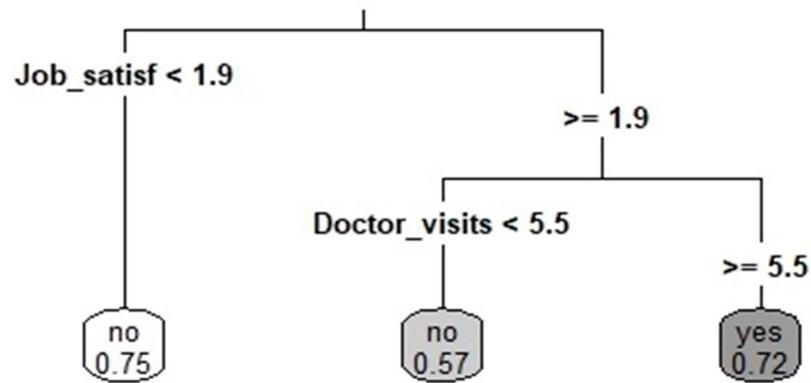
Group	Predictor	Mean	Std. Dev.	Min.	Max.
Health	Depression	2.081	1.81	0	9
	Doctor_visits	3.512	4.97	0	50
Levels					
Health	Self_health	5	1 = excellent; 5 = poor		
	Chronic_dis	5	0 = none; 4 = stroke or cerebral vascular disease		
	BMI	4	1 = underweight; 4 = obese		
Work	Job_term	2	1 = short-term; 2 = permanent		
	Life_quality_cat	2	higher > 38.9; lower < 38.9		
	Hours_worked	2	more than 40 > 40; less than 40 < 40		
	Job_satisf	4	1 = strongly agree; 4 = strongly disagree		

n = 421

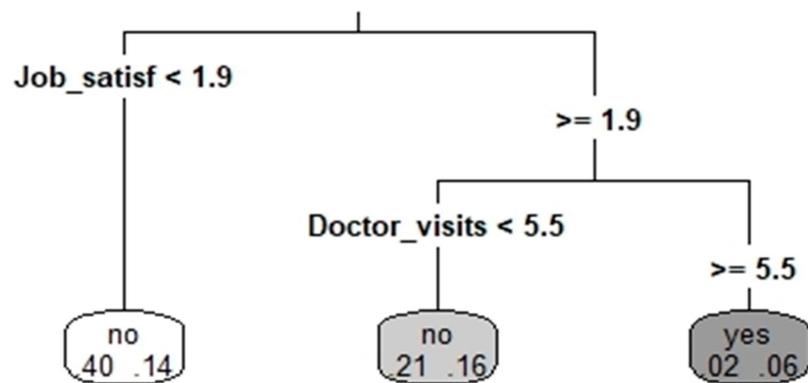
Note: Life_quality_cat—CASP-12 measure of the quality of life based on four subscales, i.e., control, autonomy, pleasure, and self-realization; depression—depression scale according to the EURO-D 12-item symptom scale (depressed mood, pessimism, suicidal, guilt, sleep, interest, irritability, appetite, concentration, enjoyment, and fearfulness)—treated as a categorical predictor; doctor_visits—number of doctor visits within the past year; hours_worked—usual hours worked per week, treated as a categorical predictor; self_health—self-perceived health; chronic_dis—“number” of chronic diseases as a finite list of conditions that were included in the answer options; BMI—categorized body mass index; Job_term—short-term (less than 3 years) or permanent contracts; Job_satisf—job satisfaction. Source: Author.

Regarding the structure of a decision tree (see Figure 2), each node represents a predictor that is split based on criteria or threshold with respect to its ability to predict the target variable [54]. The split criteria decide on which predictor to split. The algorithm selects the predictor that maximizes the information gained from the data at hand (i.e., “the best location”). Every tree branch splits on one and only one predictor. The split threshold determines the value of a predictor at which a split is done [53]. The number of splits made in a single model needs careful attention to avoid overfitting. A tree leaf indicates the most appropriately classified value of the target variable. In other words, decision trees are essentially a series of nested if-then statements that lead to probabilities of a certain outcome [53]. Each path from the tree root node (a predictor on which a tree splits first) to a leaf node (the last split in the model) is an if-then conjunction, while the whole tree is a disjunction of these conjunctions [54].

The analysis was conducted in R (packages used: rpart [55], rpart.plot [56], caret [57], vip [58], pdp [59]). The algorithm applies recursive partitioning. It splits the predictor variables based on information gain criteria and prunes the tree with backfitting. Numeric predictor variables are split only once. The training set consists of 66% observations, while the remaining 34% consist of the test set for predictions.



(a) Probabilities relative to observations falling in the respective node *



(b) Probabilities relative to all observations in the data sample **

Figure 2. Decision tree for ER (early retirement). Note: no = does not wish to retire early from a current job; yes = wishes to retire early from current job. * Probability of the fitted class within a respective node. The sum of probabilities across a respective node equals 1. ** Probability of the fitted class considering the whole sample (not only observations falling into a single node). The sum of probabilities across the tree leaves equals 1. Model accuracy: 0.74. Source: Author.

4. Results

Figure 2 illustrates the decision tree model. To account for potential overfitting, I set the minimum number of observations in a node to be split to 20; and the maximum depth of the final tree to 3 (the root node is counted as depth 0). The overall accuracy of the model is 74% (see Appendix B).

4.1. Probabilities for Target Classes

Figure 2a shows the probabilities for target fitted classes in relation to observations within the respective node. The sum of probabilities in the respective node equals 1. Concerning probabilities for not wishing to retire early (ER = no), the following conditions apply:

$$ER_no(75\%) = Job_satisf < 1.9$$

$$ER_no(57\%) = Job_satisf \geq 1.9 \& Doctor_visits < 5.5$$

In other words, there is a 75% chance that Millennials who are very satisfied with their jobs do not wish for early retirement (as opposed to a 25% chance that individuals who belong in this node do wish to retire early). Similarly, there is a 57% chance that Millennials who are less satisfied with their jobs and visit their doctors 5 times or less also do not wish to retire early (as opposed to a 43% chance that individuals who belong in this node do wish to retire early).

Figure 2b reinstates the relevance of these findings. When the probabilities of the two decision tree branches (if-then statements) that lead to ER = no are considered in relation to the entire sample (rather than just the observations that belong to the branches' respective nodes), the probability of ER = no remains higher than that of ER = yes. Concretely, for the tree branch $Job_satisf < 1.9$, the probability of ER = no in relation to the whole sample is 40% (as opposed to 14% for ER = yes). Similarly, for the tree branch $Job_satisf \geq 1.9 \ \& \ Doctor_visits < 5.5$ the probability of ER = no in relation to the whole sample is 21% (as opposed to 16% for ER = yes).

Concerning the probability of one's wish to retire early (ER = yes), the following condition applies:

$$ER_yes(72\%) = Job_satisf \geq 1.9 \ \& \ Doctor_visits > 5.5$$

Millennials who are less satisfied with their current situation and visit a doctor's office five or more times have a 72% chance to wish for early retirement (as opposed to a 28% chance that individuals who belong in this node do not wish to retire early). However, when considering this decision tree branch in relation to the whole sample, the probability of ER = yes is only 6%.

Overall, the model indicates that Millennials across Europe do not generally prefer/wish to retire early. More specifically, Millennials who are highly satisfied with their job and are relatively healthy are unlikely to have a preference for early retirement.

4.2. Feature Importance

Out of the nine predictors included in the model, two—job satisfaction and doctor visits—have particularly high importance in predicting early retirement (see Figure 3).

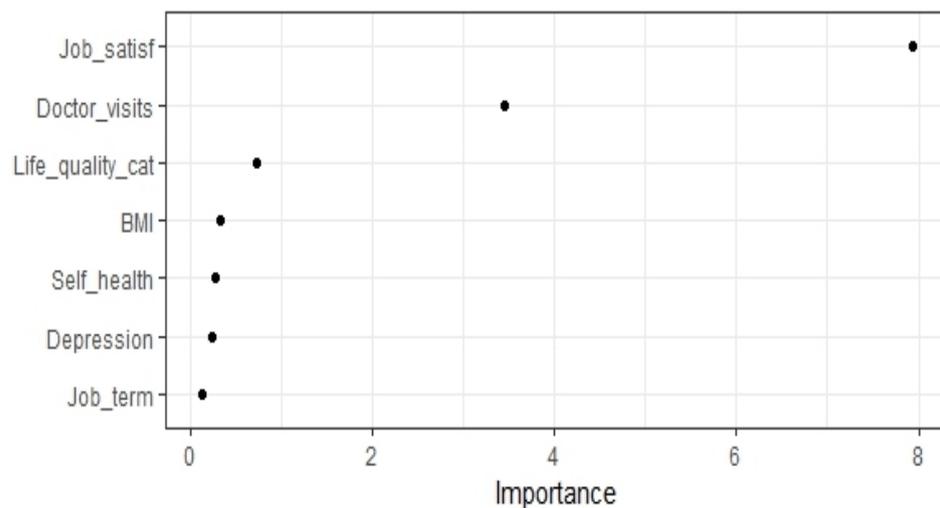


Figure 3. Feature importance for early retirement. Source: Author.

The partial dependence plots in Figure 4 show how changes in specific values of the two most important predictors affect the probability (on average) of not wishing to retire early (target class ER = no). Both predictors, job satisfaction and doctor visits, display a clear step-like relationship with the target class ER = no. This indicates that the average prediction probability of the outcome of interest substantially increases when job

satisfaction (Job_satisf) is at a level of 2 and 1 (i.e., one is (very) satisfied with their job) and when doctor visits (Doctor_visits) equal 5 or less (i.e., one visits the doctor's office five times or less in a year). Partial dependence plots are informative because the two predictors are not significantly correlated with each other or with the majority of other predictors (see Appendix C).

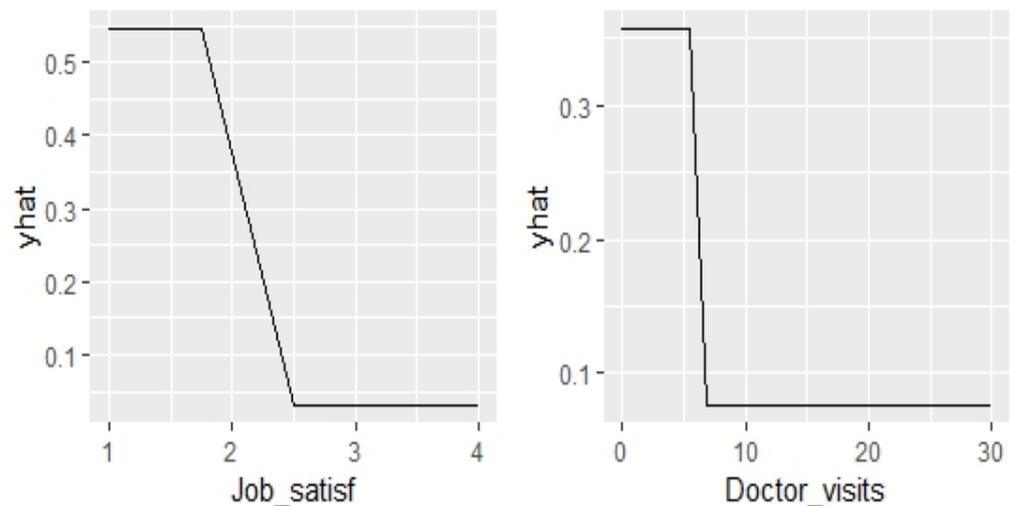


Figure 4. Partial dependence plots for two predictors with the highest feature importance.

4.3. Limitations

The analysis has notable limitations. First, the data sample of interest suffers from a significant portion of missing values. As noted above, this issue was remedied with mean imputation rather than the exclusion of rows. The latter was not the preferred approach, as the missing values were scattered across the predictors rather than being clustered within specific respondents/rows. Thus, deleting rows would have resulted in a substantial yet unnecessary loss of information. Second, the sample is unbalanced concerning the target variable (ER) in favor of class “no” (no = 285; yes = 136). This partially explains why the model's predictions for class “yes” have relatively lower accuracy. Moreover, the data sample is unbalanced concerning gender (male = 48; female = 373), which hampers the generalizability of the results. Regarding generalizability, a relatively small sample size is an additional obstacle. Third, indicators concerning Millennial usage of technology that closely link to their approach to work were not included in the analysis due to their absence from the dataset. Fourth, the model may appear too simplistic, which is the result of parameter tuning (e.g., maximum depth, minimum number of observations for a split) aimed at preventing overfitting.

5. Discussion

The main results of the exploratory analysis suggest that Millennials in Europe do not show an explicit desire to retire early as long as they are satisfied with their job and are relatively healthy. This has potential implications for both Millennials as future retirees and governments/policymakers as current and future retirement planners.

First, as Millennials currently constitute a large portion of the tax base that finances public pension schemes for current retirees, their indication of not wanting to leave the labor market early to some extent secures the sustainability and endurance of existing public pension schemes. As a result, governments may not face additional pressure to pursue pension reforms, which tend to be politically sensitive and often costly. Nevertheless, pressure for reform has already been in place due to aging trends and the ongoing retirement of the Baby Boomer generation.

Second, Millennials not wanting to retire early sends two types of policy signals to governments/policymakers. On the one hand, this signals that prevalent policies to

penalize and tighten conditions for early retirement and the insistence on longer working lives and old-age employment may have started to show effect. On the other hand, as Millennials' wish not to retire early closely links to their working conditions and job satisfaction, governments/policymakers may receive the signal that implemented economic and labor market policies have had some degree of success. To this end, for example, labor market activation policies at the EU level appear prominent. Nevertheless, as discussed in the literature review, Millennials' preferences not to retire early may derive from the failure of governments to enable conditions for economic prosperity both during employment and in retirement in the long term. Hence, as present findings are only exploratory with very limited generalizability, future analyses of Millennials and retirement may focus on the further unraveling of mechanisms behind their aspirations and preferences.

Third, concerning Millennial life preferences with the prominence of leisure and work–life balance, the absence of an explicit tendency to retire early implies that Millennials might be even more adamant about such possibilities during their professional careers. This, in turn, has repercussions on employers' approaches and flexibility in hiring the Millennial workforce. Contemporary experiments with four-day workweeks, full-time remote work, and the introduction of nomad visas in some EU countries exemplify employers' and policymakers' responses to work–life balance demands.

In conclusion, this exploratory analysis indicates that Millennials across Europe do not show an explicit appetite for early retirement. This observation is the most prominent under the conditions of high job satisfaction and good health. Nevertheless, due to the above-discussed limitations of the model, the results of the analysis have very limited generalizability and serve as empirical evidence that is yet to be explored in more depth.

Further prudent research avenues on the subject of generational early retirement may include country-level (and case-study) analyses that notably consider the institutional setup of national pension systems and the (dis)incentives for early retirement therein. Additionally, empirical assessment of the dynamics between early retirement and old-age employment, especially in the context of individual well-being, appears relevant. Moreover, the present analysis may serve as a starting point for further comparative generational studies on retirement-related topics. Such analyses would highlight eventual generational variation in terms of (early) retirement preferences, which is beyond the scope and exploratory objective of the present analysis. When it comes to comparing the results of the present analysis with generational studies discussed in the literature review, it is difficult to draw direct comparisons due to divergent research objectives. Existing studies primarily aimed to detect determinants of early retirement, whereas the present analysis utilizes these determinants to predict (rather than to explain) Millennials' appetite for early retirement.

Contributions of the article are two-fold. On the one hand, the analysis reinstates the utility of work- and health-related factors in explaining preferences for early retirement demonstrated in existing studies. On the other hand, the analysis studies Millennials in the context of early retirement, which is a somewhat pioneering research effort, intersecting and expanding literature on generational studies and social policies that hopefully motivate similar and policy-relevant analyses.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable as the study uses secondary data and does not involve direct interaction with humans.

Data Availability Statement: Data used in the analysis may be accessed at <https://share-eric.eu/data/data-access> (login required; date accessed: 3 November 2022).

Conflicts of Interest: The author declares no conflict of interest.

Appendix A. Responses to the Survey Question on Early Retirement ep036_mod
—The Dependent Variable ER across Countries Included in the Sample

Country	ER	
	No	Yes
Austria	75.76	24.24
Belgium	83.02	16.98
Bulgaria	100.00	0.00
Croatia	100.00	0.00
Czech Republic	74.36	25.64
Denmark	57.14	42.86
Estonia	83.33	16.67
Finland	100.00	0.00
France	46.67	53.33
Germany	64.29	35.71
Greece	45.00	55.00
Hungary	33.33	66.67
Ireland	66.67	33.33
Israel	50.00	50.00
Italy	64.29	35.71
Latvia	100.00	0.00
Luxembourg	100.00	0.00
Netherlands	73.68	26.32
Poland	50.00	50.00
Portugal	33.33	66.67
Slovakia	100.00	0.00
Slovenia	42.86	57.14
Spain	64.71	35.29
Sweden	70.83	29.17
Switzerland	70.59	29.41

Appendix B. Confusion Matrix for ER (Early Retirement)

	Predicted	
	No	Yes
no	100	6
yes	30	5

Appendix C. Correlation Tests

	Kruskal–Wallis Test <i>p</i> -Value	
	Job_satisf	Doctor_Visits
Doctor_visits	0.6706	NA
BMI	0.9317	0.4888
Hours_worked	0.1055	0.63
Life_quality_cat	0.0004868 *	0.04101 *
Depression	0.6396	0.21 ‡
Self_health	0.2367	4.766×10^{-10} *
Job_term	0.2617	0.5839
Chronic_dis	0.6501	0.0012 *
Job_satisf	NA	0.2509

Alpha level: 0.05. Note: ‡ Pearson correlation coefficient; * positive correlation.

References

- Burkus, D. Developing the Next Generation of Leaders: How to Engage Millennials in the Workplace. *Leadersh. Adv. Online* **2010**, *19*, 1–6.
- Hershatler, A.; Epstein, M. Millennials and the World of Work: An Organization and Management Perspective. *J. Bus. Psychol.* **2010**, *25*, 211–223. [[CrossRef](#)]
- Myers, K.K.; Sadaghiani, K. Millennials in the Workplace: A Communication Perspective on Millennials' Organizational Relationships and Performance. *J. Bus. Psychol.* **2010**, *25*, 225–238. [[CrossRef](#)] [[PubMed](#)]
- Twenge, J.M.; Kasser, T. Generational Changes in Materialism and Work Centrality, 1976–2007: Associations With Temporal Changes in Societal Insecurity and Materialistic Role Modeling. *Personal. Soc. Psychol. Bull.* **2013**, *39*, 883–897. [[CrossRef](#)] [[PubMed](#)]
- Twenge, J.M.; Campbell, S.M.; Hoffman, B.J.; Lance, C.E. Generational Differences in Work Values: Leisure and Extrinsic Values Increasing, Social and Intrinsic Values Decreasing. *J. Manag.* **2010**, *36*, 1117–1142. [[CrossRef](#)]
- Lyons, S.T.; Schweitzer, L.; Ng, E.S. How have careers changed? An investigation of changing career patterns across four generations. *J. Manag. Psychol.* **2015**, *30*, 8–21. [[CrossRef](#)]
- NBC. Millennials Are Determined to Retire Early. Here's How That May Actually Be Possible. *NBC News*. 2021. Available online: <https://www.nbcnews.com/better/lifestyle/millennials-are-determined-retire-early-here-s-how-they-can-ncna1042911> (accessed on 27 December 2022).
- Hillary Business Insider. Are People Retiring Earlier or Later? Both Are True—And It Says a Lot about the Youngest Generations Entering and Defining the Workforce. *Business Insider*. 2020. Available online: <https://www.businessinsider.com/young-generations-early-retirement-never-retiring-careers-2020-1> (accessed on 27 December 2022).
- 10 Personal Finance Tips to Get You to Early Retirement. *Acorns*. 2022. Available online: <https://www.acorns.com/learn/retiring/personal-finance-tips-to-get-you-to-early-retirement/> (accessed on 27 December 2022).
- The New York Times. Millennials Want to Retire at 50. How to Afford It Is Another Matter. *The New York Times*. 2022. Available online: <https://www.nytimes.com/2022/09/24/business/millennials-retirement.html> (accessed on 27 December 2022).
- CNA. Commentary: By Wanting to Retire Early, Millennials Are Subverting Conventional Ideas of Work and Finances—CNA. *Channel News Asia*. 2022. Available online: <https://www.channelnewsasia.com/commentary/fire-financial-independence-retire-early-work-jobs-invest-2881331> (accessed on 27 December 2022).
- van den Berg, T.I.J.; Elders, L.A.M.; Burdorf, A. Influence of Health and Work on Early Retirement. *J. Occup. Environ. Med.* **2010**, *52*, 576–583. [[CrossRef](#)]
- Blekesaune, M.; Solem, P.E. Working Conditions and Early Retirement: A Prospective Study of Retirement Behavior. *Res. Aging* **2005**, *27*, 3–30. [[CrossRef](#)]
- Boumans, N.P.; de Jong, A.H.; Vanderlinden, L. Determinants of early retirement intentions among Belgian nurses. *J. Adv. Nurs.* **2008**, *63*, 64–74. [[CrossRef](#)] [[PubMed](#)]
- Karpansalo, M.; Manninen, P.; Kauhanen, J.; Lakka, T.A.; Salonen, J.T. Perceived health as a predictor of early retirement. *Scand. J. Work. Environ. Health* **2004**, *30*, 287–292. [[CrossRef](#)] [[PubMed](#)]
- Ng, E.S.W.; Schweitzer, L.; Lyons, S.T. New Generation, Great Expectations: A Field Study of the Millennial Generation. *J. Bus. Psychol.* **2010**, *25*, 281–292. [[CrossRef](#)]
- Kowske, B.J.; Rasch, R.; Wiley, J. Millennials' (Lack of) Attitude Problem: An Empirical Examination of Generational Effects on Work Attitudes. *J. Bus. Psychol.* **2010**, *25*, 265–279. [[CrossRef](#)]
- Deal, J.J.; Altman, D.G.; Rogelberg, S.G. Millennials at Work: What We Know and What We Need to Do (If Anything). *J. Bus. Psychol.* **2010**, *25*, 191–199. [[CrossRef](#)]
- Bannon, S.; Ford, K.; Meltzer, L. Understanding Millennials in the Workplace. *CPA J.* **2011**, *81*, 61–65.
- Lyons, S.; Kuron, L. Generational differences in the workplace: A review of the evidence and directions for future research: Generational Differences in the Workplace. *J. Organ. Behav.* **2014**, *35*, S139–S157. [[CrossRef](#)]
- Dorn, D.; Sousa-Poza, A. 'Voluntary' and 'involuntary' early retirement: An international analysis. *Appl. Econ.* **2010**, *42*, 427–438. [[CrossRef](#)]
- Lund, T.; Villadsen, E. Who retires early and why? Determinants of early retirement pension among Danish employees 57–62 years. *Eur. J. Ageing* **2005**, *2*, 275–280. [[CrossRef](#)] [[PubMed](#)]
- Blundell, R.; Meghir, C.; Smith, S. Pension Incentives and the Pattern of Early Retirement. *Econ. J.* **2002**, *112*, C153–C170. [[CrossRef](#)]
- Engels, B.; Geyer, J.; Haan, P. Pension incentives and early retirement. *Labour Econ.* **2017**, *47*, 216–231. [[CrossRef](#)]
- Schils, T. Early Retirement in Germany, the Netherlands, and the United Kingdom: A Longitudinal Analysis of Individual Factors and Institutional Regimes. *Eur. Sociol. Rev.* **2008**, *24*, 315–329. [[CrossRef](#)]
- Buzza, J.S. Are You Living to Work or Working to Live? What Millennials Want in the Workplace. *J. Hum. Resour. Manag. Labor Stud.* **2017**, *5*, 15–20. [[CrossRef](#)]
- Johnson, R.W.; Smith, K.E.; Cosic, D.; Wang, C.X. *Retirement Prospects for the Millennials: What Is the Early Prognosis?* Working paper 2017-17; Center for Retirement Reserach: Boston, MA, USA, 2017. [[CrossRef](#)]

28. Brown, J.E. *Millennials and Retirement*; Technical Report; National Institute of Retirement Security: Washington, DC, USA, 2018.
29. Gale, W.G.; Gelfond, H.; Fichtner, J.J. How Will Retirement Saving Change By 2050? Prospects for the Millennial Generation. *SSRN Electron. J.* **2018**. [[CrossRef](#)]
30. Munnell, A.H.; Hou, W. *Will Millennials Be Ready for Retirement?* Technical Report 18-2; Center for Retirement Research at Boston College: Chestnut Hill, PA, USA, 2018.
31. DeBard, R. Millennials coming to college. *New Dir. Stud. Serv.* **2004**, *2004*, 33–45. [[CrossRef](#)]
32. Brant, K.K.; Castro, S.L. You can't ignore millennials: Needed changes and a new way forward in entitlement research. *Hum. Resour. Manag. J.* **2019**, *29*, 527–538. [[CrossRef](#)]
33. Ng, E.S.; Johnson, J.M. Millennials: Who are they, how are they different, and why should we care? In *The Multi-Generational and Aging Workforce*; Edward Elgar Publishing: Cheltenham, UK, 2015; pp. 121–137. [[CrossRef](#)]
34. Wood, J.C. Millennials in the Workplace: Mystery or Magic? *Disput. Resolut. J.* **2019**, *74*, 111–120.
35. Calk, R.; Patrick, A. Millennials Through The Looking Glass: Workplace Motivating Factors. *Disput. Resolut. J.* **2017**, *16*, 131–139.
36. Stewart, J.S.; Oliver, E.G.; Cravens, K.S.; Oishi, S. Managing millennials: Embracing generational differences. *Bus. Horizons* **2017**, *60*, 45–54. [[CrossRef](#)]
37. Peyton, F.C. Workplace Design: The Millennials Are not Coming—They're here. *DMI Spring* **2015**, *26*, 54–63.
38. Chou, S.Y. Millennials in the Workplace: A Conceptual Analysis of Millennials' Leadership and Followership Styles. *Int. J. Hum. Resour. Stud.* **2012**, *2*, 71. [[CrossRef](#)]
39. Geraci, J.C.; Nagy, J. Millennials—The new media generation. *Young Consum.* **2004**, *5*, 17–24. [[CrossRef](#)]
40. McDonald, N.C. Are Millennials Really the “Go-Nowhere” Generation? *J. Am. Plan. Assoc.* **2015**, *81*, 90–103. [[CrossRef](#)]
41. Vermeulen, B.; Kesselhut, J.; Pyka, A.; Saviotti, P. The Impact of Automation on Employment: Just the Usual Structural Change? *Sustainability* **2018**, *10*, 1661. [[CrossRef](#)]
42. Litwin, H. Does early retirement lead to longer life? *Ageing Soc.* **2007**, *27*, 739–754. [[CrossRef](#)]
43. Wilson, D.M.; Errasti-Ibarrondo, B.; Low, G.; O'Reilly, P.; Murphy, F.; Fahy, A.; Murphy, J. Identifying contemporary early retirement factors and strategies to encourage and enable longer working lives: A scoping review. *Int. J. Older People Nurs.* **2020**, *15*, e12313. [[CrossRef](#)] [[PubMed](#)]
44. Özdemir, E.; Ward, T.; Fuchs, M.; Ilinca, S.; Lelkes, O.; Rodrigues, R.; Zolyomi, E. *Employment of Older Workers*; Research Note no. 5/2015; European Commission: Brussels, Belgium, 2016.
45. European Commission. Directorate General for Economic and Financial Affairs. In *The 2021 Ageing Report: Underlying Assumptions and Projection Methodologies*; Publications Office: Luxembourg, 2020.
46. European Commission. Directorate General for Employment, Social Affairs and Inclusion. In *2021 Pension Adequacy Report: Current and Future Income Adequacy in Old Age in the EU*; Publications Office: Luxembourg, 2021; Volume 2.
47. Guardiancich, I.; Natali, D. The Changing EU “Pension Programme”: Policy tools and ideas in the shadow of the crisis (Final draft). In *The New Pension Mix in Europe. Recent Reforms, Their Distributional Effects and Political Dynamics*; Natali, D., Ed.; Travail et Société/Work and Society, PIE-Peter Lang: Brussels, Belgium, 2017; p. 20.
48. Parker, O.; Pye, R. Mobilising social rights in EU economic governance: A pragmatic challenge to neoliberal Europe. *Comp. Eur. Politics* **2018**, *16*, 805–824. [[CrossRef](#)]
49. Jackson, R.; Howe, N.; Nakashima, K. *The Global Aging Preparedness Index*; Technical Report; Center for Strategic & International Studies, Jackson National Life Insurance Company: Denver, CO, USA, 2010.
50. Mercer, M. *Melbourne Mercer Global Pension Index*; Technical Report; Australian Centre for Financial Studies: Melbourne, Australia, 2011.
51. Survey of Health, Ageing and Retirement in Europe, SHARE Research Data Center. *Guide to easySHARE Release 8.0.0*; Version Number: 8.0.0; Type: Dataset; Survey of Health, Ageing and Retirement in Europe, SHARE Research Data Center: Munich, Germany, 2022. [[CrossRef](#)]
52. Siegrist, J.; Wahrendorf, M.; von dem Knesebeck, O.; Jurges, H.; Borsch-Supan, A. Quality of work, well-being, and intended early retirement of older employees—baseline results from the SHARE Study. *Eur. J. Public Health* **2007**, *17*, 62–68. [[CrossRef](#)]
53. Hartshorn, S. *Machine Learning with Random Forests and Decision Trees: A Visual Guide for Beginners*. E-Book Kindle Edition. 2016. Available online: <https://www.amazon.com/Machine-Learning-Random-Forests-Decision-ebook/dp/B01JBL8YVK> (accessed on 27 December 2022).
54. Mitchell, T.M. *Machine Learning*, 1st ed.; McGraw-Hill Education: New York, NY, USA, 1997.
55. Therneau, T.; Atkinson, B. Rpart: Recursive Partitioning and Regression Trees R Package Version 4.1.19. 2022. Available online: <https://www.rdocumentation.org/packages/rpart/versions/4.1.19/topics/rpart> (accessed on 27 December 2022).
56. Milborrow, S. Rpart.plot: Plot 'rpart' Models: An Enhanced Version of 'plot.rpart' R Package Version 3.1.1. 2022. Available online: <https://cran.r-project.org/web/packages/rpart.plot/rpart.plot.pdf> (accessed on 27 December 2022).
57. Kuhn, M. caret: Classification and Regression Training R Package Version 6.0-93. 2022. Available online: <https://rdr.io/cran/caret/> (accessed on 27 December 2022).

-
58. Greenwell, B.; Boehmke, B. Variable Importance Plots—An Introduction to the vip Package. *R J.* **2020**, *12*, 343–366. [[CrossRef](#)]
59. Greenwell, B. pdp: An {R} Package for Constructing Partial Dependence Plots. *R J.* **2017**, *9*, 421–436. [[CrossRef](#)]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.