The use of age-based practices in financial services

Prepared for
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Executive summary

The Equality Bill, published in April 2009, will outlaw discrimination on the basis of age in the provision of goods, facilities and services in Great Britain. As a result, and depending on the secondary legislation to be introduced under a power in the Bill, the way in which age is used in the provision of financial services may need to change. Some current age-based practices may not be compatible with the new law.

The Government Equalities Office (GEO) commissioned Oxera to conduct economic analysis and provide evidence to inform its development of detailed legislation on age discrimination in financial services. The analysis comprises both an assessment of the current use of age-based practices in financial services and an evaluation of the economic impact of restricting certain practices in the market. The focus is on the markets for motor and travel insurance, with additional analysis presented for (unsecured) personal loans. The main findings are summarised below.

Current age-based practices in the provision of financial services (sections 3 and 4)

Age-based practices in the provision of motor insurance, travel insurance and personal loans vary across products and providers. Notwithstanding this variation, there are general patterns that emerge, as follows.

– Prices for motor and travel insurance differ depending on the age of the customer. Older people pay more than other age groups to obtain similar cover for motor and travel insurance; for motor insurance, it is the youngest drivers (under 25) who tend to pay most.

– Prices for travel insurance often stay flat within an age band, but then can jump in a step-wise manner (and often significantly) as the customer moves to the next age band.

– Providers of motor and travel insurance specialise. Targeting specific age groups (and refusing to supply specific groups) is common practice. There are therefore fewer providers of motor and travel insurance for some specific age groups—particularly the older age groups (for motor and travel insurance) and the young (for motor insurance).

– Age (over 18) has less of an impact on personal loan offerings and pricing, and there is no age-based specialisation of lenders similar to that found in the motor and travel insurance markets.

– Age is often used as a filter to determine how risk is assessed and a product sold, so prospective customers of different ages can be treated differently in the transaction process. For example, older customers can be asked to provide additional information (eg, medical screening) or to buy products in a different way (eg, by phone rather than the Internet).

These patterns show that age is used as a significant piece of information in determining how prospective customers are treated, including whether the provider will offer a service at all and at what price.

However, the current market also displays the following features.

– No age group is excluded from the market in the sense that there is *no* provider at all that is willing to supply them. For example:

– more than 30 different motor insurance quotes are available for individuals aged 80 plus from one price comparison website alone (see Figure 3.4 in the report). An external market report lists 60 different policies for an 85-year old, and more than half of these insure ages up to 99 or are without age limit. Also, motor insurers generally do not apply maximum age limits for their existing customers, so renewal is possible irrespective of age;

– about 20 different travel insurance policies (single-trip cover) are offered to an 80-year old from one price comparison website alone (see Figure 3.5 in the report). An external market report lists more than 60 single-trip policies for those aged 85 years, of which more than one-third are without maximum age limit.

– Only a small proportion of people have experienced being refused insurance cover because of their age (see Figures 3.6–3.8 in the report). For example, only 3% of respondents aged 80 or over have been refused travel insurance cover in the last year because of their age. For motor insurance, the percentage of refusals experienced by those aged 80 or over is even lower, at 1.5%, and is similar to the refusal rate experienced in the 18–24 age group (1.4%).[1] Most of those refused insurance because of their age subsequently find an insurer willing to provide cover.

– The number of suppliers varies with the size of the group of potential customers who have a similar profile—there are more suppliers in the larger markets, and fewer in those markets with fewer potential customers.

– Unlike many other products or services, in motor and travel insurance age is strongly correlated with the costs of provision. Figure 1 illustrates how the (expected) average claims cost per travel insurance policy increases with the age of the insured—in particular in relation to medical claims.

Figure 1   Expected average claims cost per travel insurance policy, by age group
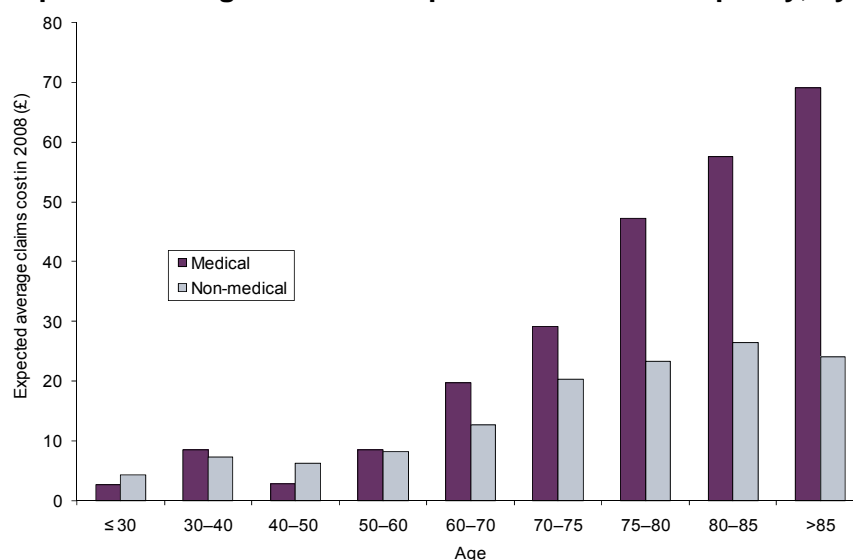
Notes: Expected average claims cost is calculated by multiplying the average cost of claims by the frequency of the claims occurring in each age group, distinguishing between medical and non-medical claims. The data refers to a large travel insurance scheme for underwriting year 2008.
Source: Oxera analysis based on data from a travel insurance provider.

[1] Based on a consumer survey conducted face to face by GfK NOP with more than 2,000 consumers, of whom nearly 700 are in the 60+ age group and just over 200 in the 80+ group.

– Given the considerable differences in the risks and costs of provision, risk-reflective and cost-based pricing will imply significant price differences between age groups.

– There is no obvious systematic bias in the pricing of motor or travel insurance such that certain age groups are being overcharged and more profitable for the insurer than others, notwithstanding the higher premiums paid by these age groups.

– Loss ratios in insurance (which measure claims costs relative to insurance premiums) are reasonably similar across the age groups.[2] Figure 2 shows an example of the loss ratios for motor insurance, calculated from aggregate market data on claims costs and premiums.

Figure 2   Loss ratios in motor insurance, by age group
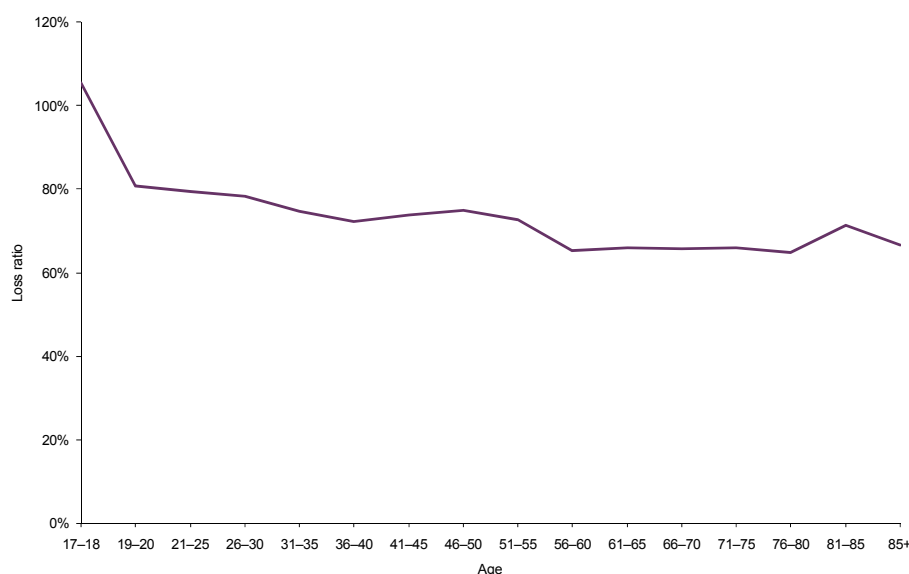
Notes: Loss ratios calculated by dividing total claims costs by total gross written premiums for each age group. Data captures more than 90% of the market for private motor vehicle insurance (cars) and refers to underwriting year 2005.
Source: Oxera analysis based on Association of British Insurers data.

– The aggregate loss ratio for the 17–18 age group exceeds 100%—ie, claims costs exceed the premiums earned on the policies sold to this group. With this exception, and taking account of the random element in claims costs, loss ratios are reasonably similar, at between 65% and 75% irrespective of whether the age groups of 31–40-year olds are considered (4.8m policies are included in the data) or the 51–60-year olds (4.3m policies), or indeed the 81+ year olds (0.4m policies).

– Separate data made available by a sample of motor insurers confirms that there is no systematic overcharging of older drivers. In fact, any bias in pricing works in favour of the oldest group of drivers: the available data shows that policies sold to drivers above the age of 90 do not, on average, cover the costs of claims (see Figure 4.14 in the report).

– In travel insurance, the loss ratios examined (see Figures 4.15 and 4.16 in the report) also show that premium levels do not always increase sufficiently with age to cover the higher claims costs (and the greater uncertainty around these claims costs).

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[2] Loss ratios cannot be directly translated into profitability as they do not include all expenses incurred by insurance companies, nor any returns on the investment of premiums.

- For both motor and travel insurance, there is no evidence of a systematic overcharging of certain age groups. If there is a bias in pricing relative to the risk and cost of provision, it tends to work in favour of older people (as well as the young in the case of motor insurance).

- Some age-based practices, such as the use of broad age bands combined with significant price increases between age bands, may appear arbitrary. However, they can be explained by the interplay of risk considerations and transaction costs, where simple age rules are being used to keep down transaction costs while preserving a pricing structure that broadly reflects risks.

This suggests that, from an economic perspective, the risks that are correlated with age are being correctly priced and that, in terms of absolute availability, there are no significant age-related segments of the market that are currently unserved (for the products examined).

Overall, there is undeniably a clear differentiation of consumers in the market on the basis of their age. However, the differences are driven by the real differences between age groups in the costs of provision (and the level of demand). The specialisation of providers, combined with differences in the economics of supply, can explain much, if not all, of the differentiation experienced by consumers of different ages in the market. Whether this outcome in the market is *acceptable* or *fair* (from an equity perspective) is not an economic question.

The impact of limiting the use of age in financial services provision (section 5)

There is significant evidence, in the academic literature and elsewhere, to show that any restriction on risk-based and cost-reflective pricing leads to distortions in the operation of insurance and loan markets, resulting in higher prices (or lower quality) for consumers. There is also significant evidence on the importance of age as a proxy for many risks.

The Government has made clear that the new law would not mean the complete removal of age-based practices in financial services provision. The policy objective is to ban the use of those practices that are unreasonable and cannot be justified on the basis of objective evidence.

Nonetheless, when evaluating the impact of different policy proposals, a number of general economic considerations apply:

- any policy measure that restricts the use of age in risk underwriting and product supply decisions will impose costs. The costs that can more easily be quantified are the pure administrative or system costs of complying with the new requirements. These costs are often small. The more significant sources of cost are likely to relate to adverse impacts on the efficiency of pricing and the wider functioning of the market;

- if the risks correlated with age are correctly priced, a restriction in the use of age can in general not make the supply of the products more efficient. In other words, the outcome will *not* be 'more or better products for consumers at a lower price'. Any increase in the risks or other costs of provision as a result of a policy change will ultimately be borne by customers;

- while some age groups may benefit from a restriction on age-based practices, this will almost certainly be at the cost of other age groups. If a policy measure does not correct a market failure and deliver overall efficiency benefits, any improvement in the outcome for one consumer group (eg, older people) will be to the detriment of other groups (eg, younger people).

The following summarises the main impacts of the specific policy measures that have been the focus of the recent policy debate.

Ban on age limits
Under this option, providers would no longer be able to refuse to supply consumers according to their age, but would instead be required to offer products to consumers of all ages.

The main sources of benefit therefore relate to those consumers obtaining access where the product was previously not supplied or difficult to find, and the reduced time searching for providers supplying the relevant age group.

While the benefits of product access may be important for individual consumers, the aggregate benefits of the policy intervention are limited because of the small proportion of consumers currently excluded from the market on the grounds of their age. Importantly, exclusion as a result of price would not be improved—ie, a requirement to supply all age groups does not imply a reduction in price, so consumers who consider the products to be too expensive for them would not benefit. Instead, the potential beneficiaries are confined to those who have been unable to *locate* a suitable product where that product currently exists in the market.

In addition to the direct administrative or systems costs incurred by providers to comply with a removal of age limits (in motor and travel insurance), there would be costs to insurers associated with the mispricing of risks due to the lack of data and actuarial expertise when supplying age groups previously not supplied. Where such mispricing occurs, the financial losses can be significant.

Not all insurers have the necessary expertise or capability to price the spectrum of risks in the market. This applies to age-related risk as much as to other kinds of risk, and it explains why there is a degree of specialisation in the market. Thus, extending supply to cover all ages would not only require changes to the existing systems, but would also result in the costs of building up the required actuarial expertise. The consequence may be a reduction in the underwriting quality, as providers would be underwriting risks for which they do not currently have this expertise.

To respond to the requirement to supply all ages, providers have three main options:

– offer prices that reflect expected costs (inflated to account for the uncertainty). Such costs may be extrapolated from existing proprietary data, or from monitoring prices currently available in the market from providers already supplying the age group(s) in question; and/or

– limit the volume of additional business by offering very high prices (in excess of the prices already available in the market) or imposing restrictions on other risk characteristics; and/or

– remove certain products entirely from the market to avoid supplying to customers with higher risk.

Under the second and third options, product access is unlikely to be increased. Even under the first option, the gain to consumers is also not clear—prices are unlikely to fall even for those age groups where currently fewer providers are active in the market. Prices are instead more likely to rise.

Any response by firms would involve additional costs, such as quoting for products across age groups that are subsequently not sold, or establishing what other risk characteristics

could be used instead of age to segment the market. Unless absorbed by providers, these costs would be passed on to existing customers through higher prices.

The costs would also increase if the ban on age limits were implemented such that age could no longer be used as a trigger to invoke a different application or underwriting procedure (because the potentially more costly procedure would then need to be applied across customers of all ages), or if age (date of birth) can no longer be used for identification or verification purposes more generally.

Requirement to narrow age bands
The effects of a requirement to narrow age bands can be expected to be less significant than a ban on age limits (and apply to travel insurance only). Currently, individual consumers may experience steep increases in the level of premiums from one year to the next as they move from one age band to the next. Such price jumps may appear unfair, particularly if unexpected.

With narrower age bands, these jumps would be avoided and replaced by a 'smoother' price structure (eg, where prices change every year). However, the change would mainly result in a redistribution of prices—prices are likely to increase for customers currently at the older ends of the current age bands (who at present tend to receive a cross-subsidy from the younger ages within the same age band) and fall for the younger ages in each band.

Objective justification requirement
There are different ways of implementing a requirement for providers to justify objectively the use of age-based practices, and the impact depends on the chosen approach.

At the general level, since there is little evidence of 'unfair' age-based practices in the market, the overall economic benefits from objective justification cannot be expected to be large. There may, of course, be 'unfair' practices in individual cases. Granting individuals the right to legal redress and requiring firms to justify their practices in the individual case can be expected to reduce the incidence of such practices.

However, the benefits of protection from unfair practices in these individual cases may require very detailed justification at the individual firm level, rather than aggregate industry-level data. Put differently, a justification based on shared data and industry-wide information may deliver little benefit in the sense that such data would not necessarily provide the evidence needed to justify the different practices in individual cases.

At the same time, the more detailed or disaggregated the evidence required at individual firm level, the higher the administrative and other costs are likely to be. For example, the costs of 'proving' that a particular price increase is justified for 74-year olds turning 75 is likely to be significantly more costly than presenting statistics on the actuarial correlation between age and risk at the insured class level. If the justification were required at the level of a *specific* 74-year old turning 75, the process would be even more costly—or indeed not possible—thus requiring the use of some other factor(s) to set prices (eg, introducing detailed medical or other tests in an attempt to measure the true functional age of an individual).

Statistical results will always be volatile and prone to error. Thus, even if prices are set in an actuarially fair manner when the risk is underwritten, a provider may not be able to provide evidence for this using the data available at the time the proof is needed. The legal risk for individual providers of not being able to provide justification if they are taken to court may trigger more cautious underwriting or force providers to hold more capital for the same level of risk, resulting in costs that are passed on to customers.

A justification requirement can have an asymmetric effect on different firms in terms of the costs of generating the information required, with small (or new) firms in the market having a comparative disadvantage because they may have less (or a shorter history of) statistical

data. Shortage of data (and the greater variability that comes with it) makes it difficult for firms to develop a commercial strategy that is both economic and can be justified on the basis of their own data.

In addition to creating barriers to entry for new firms in the market, the justification requirement may hinder new products or policy terms being developed because firms cannot provide the evidence (and cannot restrict their risk by limiting availability to a specific risk class) when piloting an innovative scheme.

The adverse consequences can be reduced or eliminated by relaxing the level of proof required for individual firms, allowing approximations, exempting new firms or new products, having industry-wide justification only or, indeed, exempting certain practices from the justification requirement completely.

However, as noted, a justification requirement delivers few aggregate benefits given that there is little evidence of widespread 'unfair' practices in the market—eg, the data available does not show any systematic overcharging of certain age groups in the market. Therefore, objective justification mainly delivers benefits if it prevents 'unfair' practices in individual cases, which do not follow the pattern of pricing or product availability generally observed in the current market.

Signposting and referrals
From a market-wide economic perspective, there is no evidence of significant unmet demand by certain age groups. If there are failures in the market, they are more likely to be in the way it currently matches demand and supply—ie, there is evidence of some consumers having greater difficulties in finding the relevant products or providers because of their age.

Signposting and referrals seek to address access problems and improve market outcomes by changing the distribution process—ie, consumers refused at the point of sale because of their age would be given the relevant information about, or be directly referred to, a provider catering for their particular age group.

Setting up the signpost or providing referral services in the motor and travel insurance market would impose costs and, as with all policy measures in this area, the age groups who would benefit from the change are not necessarily those who would pay for the cost. However, the services would be targeted at those (few) consumers currently refused supply by a provider on the basis of age, and hence avoid the potential costs and distortive effects on market functioning that arise with restrictions on the underwriting process, product offerings and pricing structures.

Signposting and referrals would still imply a differential treatment in the transaction process of consumers on the basis of age (eg, an 85-year old would continue to be refused travel insurance by some providers and instead be passed on to a specialist).

Nonetheless, compared with the alternative of removing age limits and requiring all providers to supply all age groups (potentially through all distribution channels), the options are less costly and, at least in principle, can deliver equivalence in the desired market outcome; namely, those (few) consumers who are currently refused or find it difficult to obtain insurance cover because of their age are more likely to obtain cover.

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1 Introduction

On behalf of the Government Equalities Office (GEO), Oxera has conducted economic analysis of the use of age-based practices in the provision of financial services, with a view to providing evidence around which GEO can develop legislation on age discrimination in the financial services sector. This report summarises the findings of the analysis.

1.1 Background and objectives

Financial services providers often take account of the age of their existing or potential customers in providing their services. For example, insurance companies are currently free to set insurance premiums according to different rating factors, including age. Insurers are also able to restrict their product offerings to, or specialise in the offerings for, certain age groups. Similarly, lenders can take account of the age of borrowers when granting loans or pricing other credit products.

With the introduction of the Equality Bill and secondary legislation to be made under a power in the Bill,[3] the use of certain age-based practices by financial services providers may become restricted if they are considered to result in unjustified discrimination on the basis of age.

In April 2008, the Government formed an Experts' Working Group with representatives of the financial services and age sectors to review commercial practices and gather evidence on the implications of making age discrimination unlawful in financial services. The group represented a diverse range of opinions. Financial services providers argue that the use of age as a rating factor is essential for risk-based pricing and the efficient operation of the market. Representatives of older people believe that certain age-based commercial practices are unfair and should be banned, or only allowed if justified by evidence. The final report of the Experts' Working Group sets out the key issues and areas of contention (HMT 2008). While both financial services and age sector organisations agree that legislation should not prevent objectively justified practices, there continues to be disagreement in a number of areas, for example on:[4]

– the use of minimum and maximum age limits—whether age limits should be banned to ensure that providers supply products to all consumers, regardless of their age;

– the narrowing of age bands—whether providers should be encouraged to narrow the age bands which they use to group consumers for pricing purposes;

– the justification requirement—whether and how the industry should be required to demonstrate that age-based practices are justifiable.

A recent research report, commissioned by the Association of British Insurers from CRA International, presents new analysis and evidence on the impact of potential legislation to ban age limits, restrict the use of age bands and/or impose a justification requirement (ABI 2009a). The report examines two insurance markets that could be significantly affected by potential age discrimination legislation: private motor and travel insurance. It concludes that there are no significant market failures in the provision of insurance to the motor and travel insurance markets and that, consequently, the net benefits of the different policy options are small in both markets.

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[3] The Equality Bill was published on April 27th 2009 when this study was being finalised. See GEO (2009).

[4] See section 6 in HM Treasury (2008) for a summary of issues identified for future debate and analysis.

The GEO asked Oxera to provide an independent and objective research report that builds on these (and other) studies and fills gaps in the evidence available and analysis already undertaken, so as to increase the evidence base available to the Government when it develops legislation around age discrimination in the financial services sector.

The economic analysis both assesses the current use of age-based practices in financial services and evaluates the impact of limiting the use of certain practices. The focus is on the markets for motor and travel insurance, with additional analysis presented for unsecured personal loans.

1.2   Approach

The research is structured around a conceptual economic framework of analysis that allows a systematic evaluation of the current use of age-based practices in financial services and the impact of restricting certain practices on outcomes in the market, from both the demand and supply side. The applied analysis provides quantitative evidence where possible, combining existing empirical research results with new data and analysis.

The main information sources are outlined below.

– Review of academic literature and policy studies—this included theoretical and empirical papers on the economics of insurance and loan pricing and the impact of age (or other) discrimination legislation. The evidence and analysis presented in recent policy studies was also reviewed.

– A consumer survey explored the demand for, and access to, insurance and loan products across age groups. The fieldwork, conducted by GfK NOP during March–April 2009, involved face-to-face interviews with more than 2,000 consumers from different age groups. The responses of the 80+ consumer group were boosted by an additional survey for this group, such that the final sample included responses from just over 200 consumers aged over 80.

– Interviews were undertaken with representatives of age sector organisations, individual product providers and distributors, their representative industry bodies, independent actuaries and credit scoring organisations, in order to gain a better understanding of the status quo in the market and discuss the impact of changing how the age of the customer is currently being used from both the consumer and industry perspective.

– Other data-gathering and analysis—data was gathered from a range of sources, including existing studies and market reports, price-comparison websites and individual industry players.

The research was undertaken during the period from mid-February to end April 2009. Oxera is grateful to everyone who participated in the interviews and/or provided data.

1.3   Structure of report

The report is structured as follows.

– Section 2 describes the conceptual framework of analysis. It first sets out the basic economics of insurance and loan pricing and then explains the analysis of the status quo in the market and evaluation of policy options.

– Section 3 focuses on the markets for the insurance and loan products from the perspective of the demand side. It compares the demand of different age groups for insurance and personal loans against the availability of products, and draws conclusions about the extent of any unmet demand.

–   Section 4 focuses on the supply side of insurance and loan provision. In particular, it presents the analysis of the role of age in risk-based pricing and the extent to which age-based differentiation in product offerings and pricing can be explained by differences in risks and costs.

–   Section 5 builds on the analysis of the status quo in the market and examines the impact of changing certain age-based practices along different dimensions.

–   The appendices contain a review of the literature and additional data.

2 Framework of analysis

This section summarises the framework of analysis adopted to undertake the research study. It considers some of the economic principles underlying the supply and pricing of insurance and personal loans (section 2.1). It then sets out how the debate around the use of age in the provision of financial services can be explained by different viewpoints on the concepts of economic efficiency, equity/fairness and feasibility (section 2.2).

Against this background, the section goes on to describe the two main parts of the analysis undertaken: the analysis of the current use of age-based practices in motor/travel insurance and personal loans (section 2.3), and the assessment of the impact of limiting the use of certain practices (section 2.4).

2.1 Economic principles of insurance and loan pricing

2.1.1 Insurance pricing

Individuals pay for insurance to protect them against an unfavourable event occurring in the future. For example, they buy travel insurance in case they fall ill and incur medical costs while on holiday, and they (are required to) buy motor insurance to cover their liabilities if they cause an accident and injure a third party.

Insurance works according to the following two principles:

– **actuarial equivalence**—insurers have to price insurance on the basis of an individual's risk, including the probability of a claim being made against the policy and the cost of that claim. That is, the insurance premium is in line with the expected cost of the claim;

– **risk solidarity within risk pools**—risk is shared between individuals within risk pools.[5]

By placing individuals into risk categories and pooling risks within these categories, insurance companies set premiums such that they reflect the average of the expected claims cost within a risk category (plus the additional costs that arise in the insurance process—eg, distribution, administration of claims). This is illustrated in Figure 2.1.

Figure 2.1   Illustration of aspects of insurance pricing relevant to this study

Source: Oxera.

There is solidarity within risk categories or pools—those who are fortunate in the pool and do not suffer damage contribute to meet the cost of those who do.

Insurers form risk pools such that there is a relatively low predictable within-group risk variation (ie, the group contains individuals with similar risk characteristics) and relatively large between-group risk variation. Insurers can use a range of characteristics to determine

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[5] For a further discussion, see ABI (2008).

the risk profile of the individual, some of which are outside the individual's control, whereas others are controllable (ie, a result of individual choice).

There is a large body of literature to demonstrate that, in a competitive insurance market, premiums reflect costs (ie, pricing will be risk-based) and that such risk-based pricing is economically efficient (see Appendix 1). In particular, in the absence of risk-based pricing, two well-known sources of inefficiencies would arise.

– **Adverse selection**—if low- and high-risk individuals were grouped and charged an equal price based on the average risk in the group, the low-risk individuals would pay a price that is higher than their own risk and correspondingly subsidise the individuals in the group that have higher than average risk. This cross-subsidy may result in the low-risk individuals leaving the group as their own policies become too expensive. As they begin to leave, the average risk of the remaining individuals rises, and as more low-risk individuals drop out, this in turn may threaten the financial stability of the insurance activity and the insurer.

– **Moral hazard**—if premiums are set too low relative to what cost-reflective premiums for individuals with certain risk characteristics imply, moral hazard behaviour may arise and overall risk levels may increase.

2.1.2 Loan pricing

As in the insurance market, risk-based pricing is a key principle in the supply of (unsecured) personal loans. Providers make lending decisions according to a risk assessment of the loan applicant (and their own credit strategy—eg, loan product specification, terms and conditions). The decision variables that are important to a lender are typically whether to issue a loan, the credit limit, and the applicable interest rate.

As shown in Figure 2.2, the price of the loan comprises an element to compensate the lender for the time value of money associated with providing the loan, which is the same to everyone in the economy, as well as a risk premium, which reflects the borrower's individual risk. The individual risk to be assessed is the likelihood of the borrower defaulting on their obligations to service and repay the loan.

Figure 2.2   Illustration of aspects of loan pricing relevant to this study
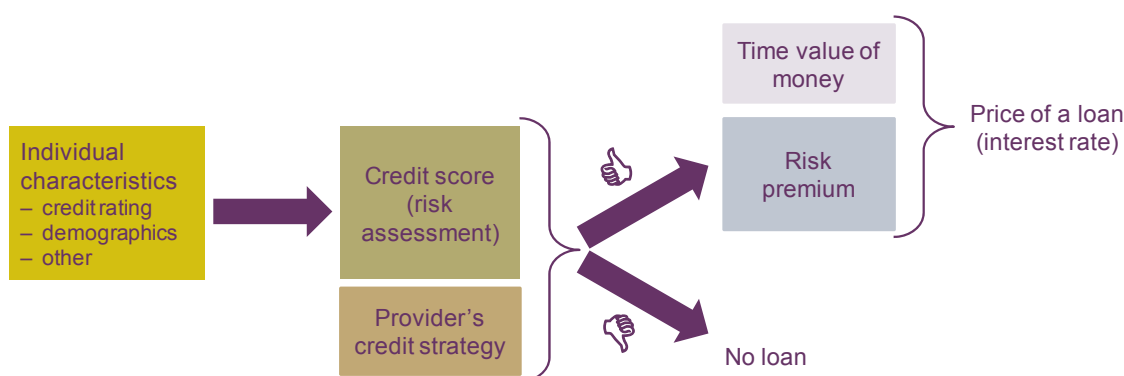
Source: Oxera.

Credit scoring is the main process by which the risk of default is assessed. Lenders use credit scores to classify potential customers into risk classes, and then offer and price loans accordingly. Credit scores may be reflected in both the credit limit (including the refusal to sell an unsecured loan) and/or the interest rate payable on the loan, depending on the business model and product specifications of the loan provider.

As in the case of insurance, a competitive market for loan provision can be expected to deliver loan products at prices that reflect the cost of providing the loan, including the costs

associated with default risk. Risk-based pricing again is crucial to efficient functioning of the market.

2.2 The potential trade-off between economic efficiency, equity/fairness and feasibility

While risk-based pricing must generally be accepted as being key to the efficient functioning of both the markets for insurance and personal loans, one central question in the context of this study relates to the use of age as a relevant individual characteristic:

– is age an efficient proxy for risk, and does the inclusion of age in risk classifications lead to (more) efficient market outcomes?

Moreover, the policy debate around the use of age-based practices in financial services is not only about economic efficiency considerations, but also about perceptions of fairness and equity. The relevant question is:

– even if efficient, is it fair or equitable to use age in the supply of financial products?

Finally, there is the issue of feasibility. The best method of categorising individuals according to their risk may simply not be practical (or there may be other constraints that explain why age is being used). The relevant question here is:

– are other, perhaps fairer or more efficient, approaches more feasible than the use of age in risk classification?

The following provides an overview of the concepts of equity/fairness and feasibility, and how they may be traded off against economic efficiency considerations.

As further set out in sections 2.3 and 2.4, while economic analysis can inform about the relevant trade-offs, the decisions on how to resolve these trade-offs is ultimately a matter for policy. The analysis contained in this report does not make a judgement on the trade-offs; rather, it examines the status quo in the market and sets out the implications of limiting the use of certain age-based practices, using economic analysis.

Figure 2.3   The use of age in risk classification: the potential trade-offs
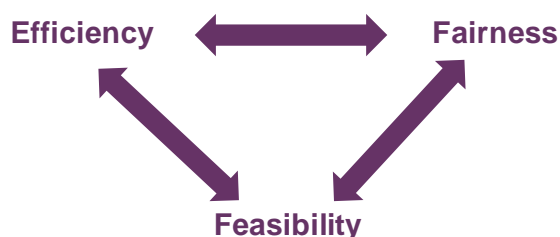
Source: Oxera.

Efficiency versus equity/fairness
Risk-based or cost-reflective pricing is a necessary condition to achieve an economically efficient outcome in the market. Such pricing may also meet perceptions of what constitutes a fair or equitable outcome. However, under some interpretations of the notion of equity/fairness, differentiation on the basis of age would be deemed unfair and not acceptable even if age were an efficient proxy for risk. Relevant considerations include the following.

– In insurance, risks are pooled across individuals. In this case, what is 'fair' at the group level within a risk pool may not be considered fair at the individual level. That is, there is a distinction between the **group and individualistic view on fairness**—the latter

focuses on the fair treatment in terms of individuals, whereas the former supports equal treatment of groups (Thiery and Van Schoubroeck, 2006). Suppose, for example, that the group of 20-year olds paid higher motor insurance premiums than the group of 40-year olds because of a higher accident rate among the 20-year olds. The outcome may be considered fair from a group perspective—each group pays in proportion to its risk, and cross-subsidies between the two groups are avoided. However, the outcome may be perceived unfair from the perspective of the individual—there may well be an individual 20-year old who is as likely to cause an accident as the average 40-year old. Put differently, if the group fairness view is adopted, there is not necessarily a trade-off between efficiency and equity/fairness if each group pays premiums based on the risk of the group. However, if an individualistic view is adopted, the outcome may not be perceived equitable unless individuals of different ages were treated equally, even if the outcome implied cross-subsidies across age groups.

– One of the arguments in favour of non-discriminatory treatment is often that of **controllability**. Age (like gender but, for example, unlike whether an individual is a smoker) is not under the individual's control. Whether a factor is controllable is irrelevant for efficiency considerations, but some may deem it unfair to differentiate on the basis of age or other uncontrollable factors (or they may deem this more unfair than differentiation on the basis of a controllable factor such as whether the individual is a smoker).

– For a characteristic to be used in insurance or loan pricing, it is required that the characteristic can predict the risk (ie, claims frequency or severity, or the risk of default), but there does not necessarily have to be causality between the characteristic and the risk. Thus, from the risk classification and product pricing perspective, it does not matter whether age is **causal** or just **correlated**. However, from a fairness point of view, it may matter whether age is causal or not, as it may be perceived as 'unfair' to use a characteristic that does not *cause* increased risk.

– Even if the outcome in the market were such that people of all age groups have access to the relevant products and are charged a price that reflects their risk or cost of provision, some may perceive a problem with the **fairness of the process** by which the outcome is achieved. For example, given the special nature of the risks of certain age groups, providers may be required to request additional information from those age groups or adjust the underwriting process to deal properly with the risk. The outcome may be efficient, but it may be the differential treatment in the transaction process that is perceived as unfair or hurtful for the individuals in the age groups concerned.

Efficiency and fairness versus feasibility

In insurance, age is often thought of as a key proxy for the physical and behavioural characteristics of an individual. Here, it may be useful to distinguish between chronological age (simply, age) and functional age. **Chronological age** is the number of year since birth, whereas **functional age** is an 'indexing tool that equates human ability in terms of common performance standards' (Kelly and Nielson 2006). Functional age could be defined in terms of physical conditions which, for example, determine the driving ability of an individual (sight, reaction speed, etc) or describe the existing medical conditions and probabilities of developing new ones.

Arguably, functional age is likely to be more causal to the risks than chronological age in both motor and travel insurance, and thus may be regarded as a fairer basis for risk classification. It may also be a more appropriate factor for risk classification if it more accurately measures the risk. However, it may not be possible or may be very costly to measure the characteristics that define an individual's functional age. While medical screening and self-certification can partly achieve that, the cost and/or non-verifiability may be problematic. Moreover, the tests required to establish the true functional age of an individual may be considered too intrusive from the perspective of the individual.

Therefore, if it is the true functional age of an individual that determines risk, but this age cannot be directly measured, there may be a case for using the chronological age as a proxy for functional age due to feasibility—ie, chronological age may correlate with functional age and hence it may be a proxy for risk (even if the relationship is neither direct nor causal). This is illustrated in Figure 2.4.

Figure 2.4 Functional and chronological age: causal or correlated?
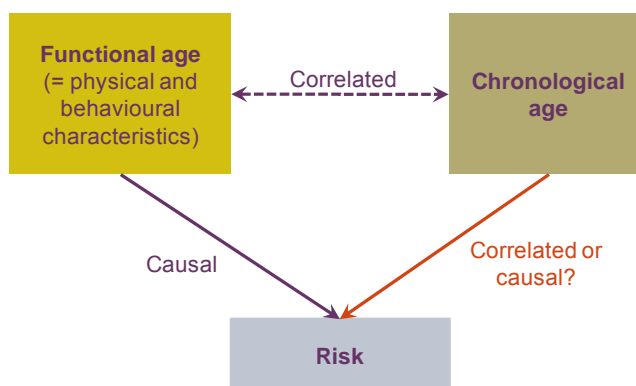
Source: Oxera.

The discussion of chronological versus functional age is less relevant in the consumer credit market, but the general point also applies:

The use of (chronological) age may not accurately predict risk, and it may result in only a very approximate classification of risk. This in turn may result in the failure of the market to supply services or charge prices to individuals or groups of individuals that, if only their true risk could be identified more easily and accurately, could become economic to supply or be charged different prices. The question is whether the approximate classification on the basis of chronological age is nonetheless the best alternative available—ie, in practice, a different approach to risk classification may not be feasible and would not necessarily lead to a more desired market outcome.

2.3 Assessing the status quo in the market: the current use of age-based practices and its implications

The economic assessment starts with analysis of the status quo in the market. In particular, it seeks to answer the following questions.

– Is there a mismatch between the supply and demand of financial products for certain age groups?

– Are there insurance policies or loans that it would be economic to sell to certain age groups but which are currently not sold?

– Is there unmet demand that can be attributed to a failure in the supply of products for certain age groups?

To address these questions, the analysis starts with a description of the following:

– availability—whether motor/travel insurance and loan products are available for consumers of different ages, and, more generally, how availability differs across age groups;

– access—how available products can be accessed by consumers of different ages, and whether access is more difficult for some age groups even if the products are available in principle; and

– prices—how prices of otherwise similar products differ depending on the age of the consumer seeking to purchase the product.

Based on the market description, the analysis then involves an assessment of:

– the demand side—what is the level of demand for the relevant products by different age groups, and how does this demand compare with the product offerings in the market (and accessibility of those products)?

– the supply side—is age an efficient proxy for risk? Do the product offerings and prices for different age groups in the market reflect differences in risk and the cost of provision?

The description of the current market and analysis from the demand-side perspective is presented in section 3, and the supply-side assessment is contained in section 4. It is the combined analysis from both the demand and supply sides which will allow inferences to be drawn about the status quo in the market. For example, reduced availability of products for certain age groups does not, in itself, provide any evidence that the market is not working efficiently. Instead, it may be that the level of demand for the product is too low for it to be economically supplied by all providers in the market. More generally, the fact that not all providers are supplying all customers is consistent with an efficiently functioning market in which there is specialisation in supply.

Similarly, evidence of high prices paid by certain age groups does not allow any inferences to be drawn about the functioning of the market. In a competitive market, the dynamics are such that prices tend to move towards cost, and the higher prices may then be a reflection of higher costs of provision—ie, they may indicate cost-reflective pricing rather than any systematic bias in the profits earned by providers on the products sold to certain groups of consumers.

The use of certain age-based practices may be the result of an efficiently functioning market where products are offered and priced according to the risk or cost of provision. However, the outcome may be considered detrimental for the affected age groups for equity/fairness reasons. For example, the process by which the outcome is achieved may in itself be perceived as unfair—some may object to a differential treatment of individuals because of their age in the transaction process (eg, when they buy the insurance or apply for a loan) even if the outcome is such that the products are being supplied to the age groups and priced in a risk-based, cost-reflective manner. Similarly, some may object to the fact that certain providers choose not to supply certain age groups even if it can be shown that those age groups have a very different risk or cost of provision—while such specialisation is consistent with an efficiently functioning market, some may consider the rejection of individuals on the basis of their age to be objectionable because of being unfair or hurtful from the perspective of the individuals concerned.

Whether the outcome is perceived as detrimental overall also depends on distributional views—it may be possible to increase the product set or reduce prices for the age groups in question, but only by making other age groups worse off. For example, if younger people paid a lower price for a product than older people because they have lower risk and prices were fully cost-reflective, then for the provision to remain economically viable overall, the price paid by older people can only be reduced if there is a corresponding increase in the price paid by younger people—ie, the price reduction for one age group needs to be cross-subsidised by another age group.

A cross-subsidy between different age groups may be justifiable depending on the distributional preferences or views adopted on equity/fairness—ie, is £1 saved by one age group (eg, older people) valued more than £1 paid extra by another age group (eg, the young).

It is understood that the policy decisions regarding age discrimination legislation are made with a view to tackling the arbitrary use of age as a factor in financial services and to achieve specific distributional objectives. Nonetheless, a policy intervention that changes the use of age-based practices may have distributional implications (eg, with benefits or costs accruing to some age groups but not others).

Distributional considerations are a matter for policy and cannot be answered by economic analysis. Correspondingly, this study does not take any views on what is 'fair' or 'equitable' and hence not to make any judgement on what distributional outcomes are preferred overall. Rather, the pure distributional consequences are described, but not evaluated.

Part of the analysis of the status quo also includes feasibility considerations. Even if the current use of (chronological) age in the provision of insurance and loans is not fully efficient (or indeed fair), it is important to consider whether a restriction on the use of age, or the replacement of age by an alternative classification variable, would be feasible and result in an improvement of market outcomes. The way in which age is used currently may not deliver the ideal outcome, but may nonetheless be best given the constraints of what can be achieved in practice, due to limitations relating to information and transaction costs. This analysis links to the assessment of what the impact will be if certain age-based practices are restricted in the market.

2.4 Assessing the implications of limiting the use of certain age-based practices

2.4.1 Overview of options considered in the policy debate

A number of policy options have been put forward to restrict the use of age-based practices in financial services or limit their impact for consumers. While a complete ban of the use of age is not among the options considered, the recent debate has focused on the following.

– **Removal of age limits**—to address concerns that certain age groups (in particular, the older age groups) find it difficult to obtain insurance or other financial products. This may involve the removal of any kind of age limits (for consumers above 18), or, as a variation, the removal of only the maximum age limits to address the specific old-age concerns that have been raised.

– **Narrowing of age bands**—to address concerns that the use of age bands (in particular, as they are observed in the market for travel insurance) leads to large jumps in prices that cannot reflect changes in the riskiness of consumers as they move from one age band to the other. This may involve the requirement for providers to price at integer ages (ie, by single year) or otherwise to narrow the age bands that apply to consumers; the requirement may affect all ages or, again, only the old-age segment.

– **Objective justification**—to address concerns that certain age-based practices do not reflect the associated risk and ensure that only the justifiable or overall beneficial practices continue in the market. The interpretation of what constitutes 'objective justification' and the resulting information requirements at individual firm- or industry-level are yet to be defined.

In addition, the policy debate has focused on the following two further options which are aimed at facilitating the distribution of, or access to, financial products, rather than triggering changes in the underwriting process and age-related product portfolio of providers.

– **Signposting**—if a provider is unwilling to provide a quote to an individual because of age, there would be a requirement to communicate the information that directs the individual to alternative providers that supply customers of this age. A variation would be designated websites or other signposts that direct consumers to the relevant providers and products.

– **Referrals**—with a similar objective to the signposting option, providers not wishing to provide a quote to an individual because of age could instead be required to refer the individual to a partner supplying the relevant product.

The policy options are described in more detail in the Experts' Working Group report (HMT 2008), and have also been examined in the recent ABI report on the impact of age discrimination legislation on the motor and travel insurance markets (ABI 2009a).

Starting with the analysis of the status quo in the market, this study sets out the implications of adopting these policy options, drawing from the existing studies and, where possible, filling gaps in the existing evidence and analysis. The aim is to provide economic analysis that sets out the dimensions of possible impact so as to inform policy decision-making.

2.4.2 Dimensions of impact evaluated

The impacts considered capture the efficiency, equity/fairness and feasibility issues described above and, for practical evaluation purposes, have been grouped into the following broad dimensions:

– direct benefits to consumers in the relevant age groups—positive changes in product availability, access and/or price for the relevant age groups;

– direct costs to industry—the adjustments to current age-based practices on the supply side and the compliance costs (as well as other costs and risks) incurred in doing so.

– wider impacts on market functioning—the consequences (potentially unintended) for pricing efficiency and the competitive dynamics of the relevant insurance and loan markets;[6]

– distributional implications—the wider (potentially unintended) distributional consequences for other age groups that are not directly benefiting from the policy change.

These dimensions of impact are described in more detail in section 5. Some of them are inherently difficult to quantify. Section 5 sets out quantitative and qualitative evidence to assess the empirical significance of the impacts. The assessment is descriptive and based on economic analysis. No judgement is being applied on how to make trade-offs between these impacts.

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[6] There may also be wider impacts on the economy (eg, a change in the price of travel insurance may alter people's travelling, which may have ramifications for the travel industry, and so on), but these are not considered in the analysis.

3 Product availability and (unmet) demand across age groups

This section examines the status quo in the market from the demand side, focusing on the demand for travel and motor insurance, and personal loans by different age groups (section 3.1), the availability of products to, and rejections experience of, different age groups (section 3.2), and the access to these products (section 3.3). The analysis draws extensively from a consumer survey conducted for Oxera and other market data collected.[7]

3.1 Demand for products by age group

The first step is the assessment of the level of demand for the relevant financial services products by different age groups. If there is little or no demand for a particular product, or by a particular age group, lack of availability will not be a problem—ie, any lack of supply is simply a sign of low or no demand. Demand for motor insurance, travel insurance and (unsecured) personal loans is assessed below.

3.1.1 Motor insurance

As reported by Age Concern and Help the Aged (2007), 38% of people aged 70 and above, and 26% of people in the UK aged 80 and above held motor insurance in 2006. Using population figures from the Office of National Statistics (ONS) from 2007, this would imply that around 2.69m people over the age of 70 (including 0.71m people over the age of 80) held motor insurance in 2006, which is around 4.4% of the UK population (ONS 2007).

An even higher proportion of those aged 70 and above hold a driving licence: 52% in 2007 according to the Department for Transport (DfT 2007). Using ONS population figures from 2007, this would imply that around 3.71m people over the age of 70 hold a driving licence, which is around 6.1% of the UK population (ONS 2007).

Actual demand for motor insurance among the over 70s is likely to be between these two figures (ie, between 38% and 52%) since, for example, there may be some licence holders who are unaware that they can purchase motor insurance, and therefore do not hold it, or have been refused a policy and stopped searching.

This is consistent with the results of a survey of over 2,000 adults undertaken for Oxera.[8] Figure 3.1 shows the proportion of respondents who hold, have held or have tried to purchase motor insurance in the last 12 months, or who intend to purchase motor insurance in the next 12 months.

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[7] The survey and sample is described in Appendix 3. The survey involved face-to-face interviews with over 2,000 respondents, and each age group shown contains more than 200 consumers (also due to a sample boost of the 80+ age group). Nonetheless, for some of the few issues examined, the results shown per age group are based on relevant responses from fewer than 100 consumers.

[8] Hereafter referred to as the Oxera survey.

Figure 3.1   Demand for motor insurance, by age group

Legend:
- Proportion of respondents who hold/have held motor insurance in the last 12 months
- Proportion of respondents who have tried to buy motor insurance in the last 12 months
- Proportion of respondents who intend to buy motor insurance in the next 12 months
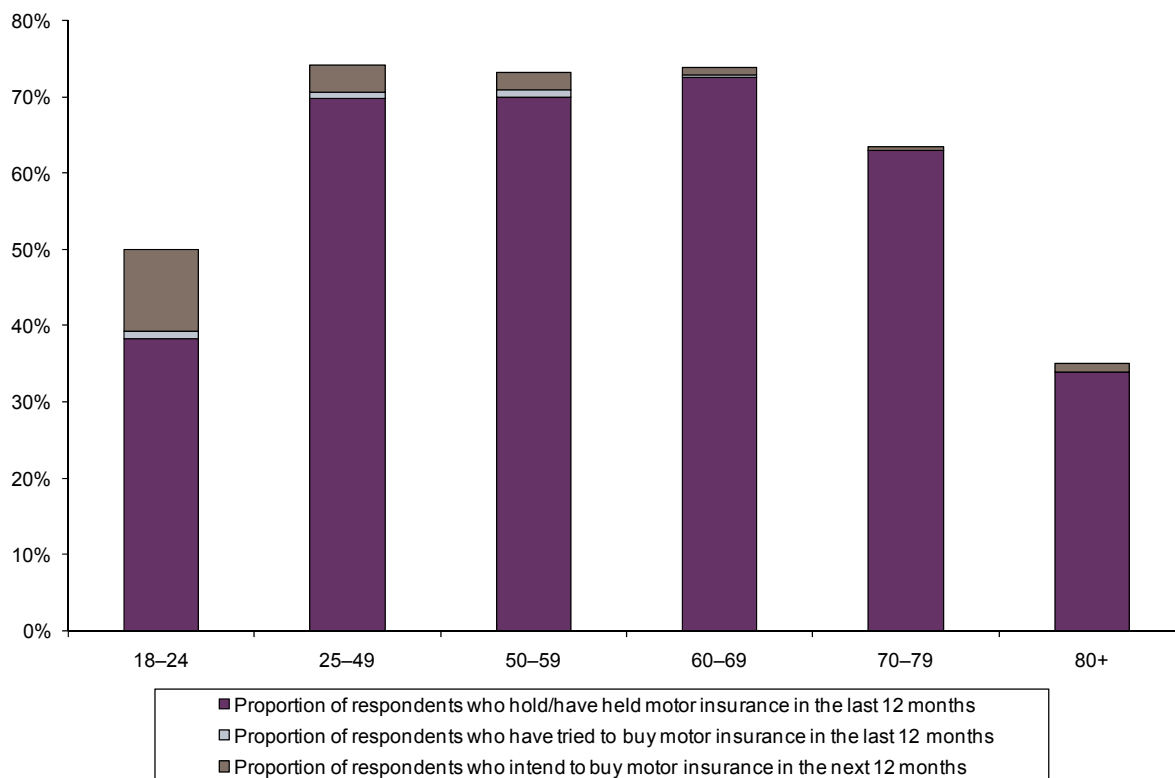
Base: The question on holdings of motor insurance in the previous year was asked of all respondents. The question on trying to purchase motor insurance was asked to those who did not hold/had not held motor insurance in the previous year. The question on intent to purchase motor insurance was asked to those who did not hold/had not held and had not tried to purchase motor insurance in the previous year.
Note: Figure excludes respondents who answered 'Don't know' or who refused to give an answer.
Source: Oxera survey.

As Figure 3.1 shows, demand for motor insurance is highest among the 25–49-year olds, and it is lowest among the over 80s, at around 35%. The majority of the demand for motor insurance is made up of respondents who hold or have held the product in the last year. A very small proportion of respondents tried to purchase the product but did not proceed (or succeed)—with no 70–79-year olds or over 80s in this group.

3.1.2 Travel insurance[9]

As reported by Age Concern and Help the Aged (2007), older people have significant demand for holidays—in particular, 71% of 65–74-year olds, and 63% of people over the age of 75 take at least one holiday a year. Using ONS population figures from 2007, this would imply that around 6.57m people over the age of 65 take at least one holiday per year, which is around 10.8% of the UK population (ONS 2007). Many of them would also have demand for travel insurance, as only a small fraction of older people go on holiday without travel insurance (at least if they go abroad). GfK NOP figures produced in 2004, and quoted by Age Concern and Help the Aged (2007), show that only around 11% of people aged over 60 had been on holiday without travel insurance in the previous year. However, it is not clear whether this relates to any holidays or only holidays abroad.

This is consistent with the results of the Oxera survey. Figure 3.2 shows the proportion of respondents who hold, have held or have tried to purchase travel insurance, or who intend to do so in the next year.

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[9] This refers to both single-trip and annual travel insurance, unless otherwise stated.

Figure 3.2   Demand for travel insurance, by age group
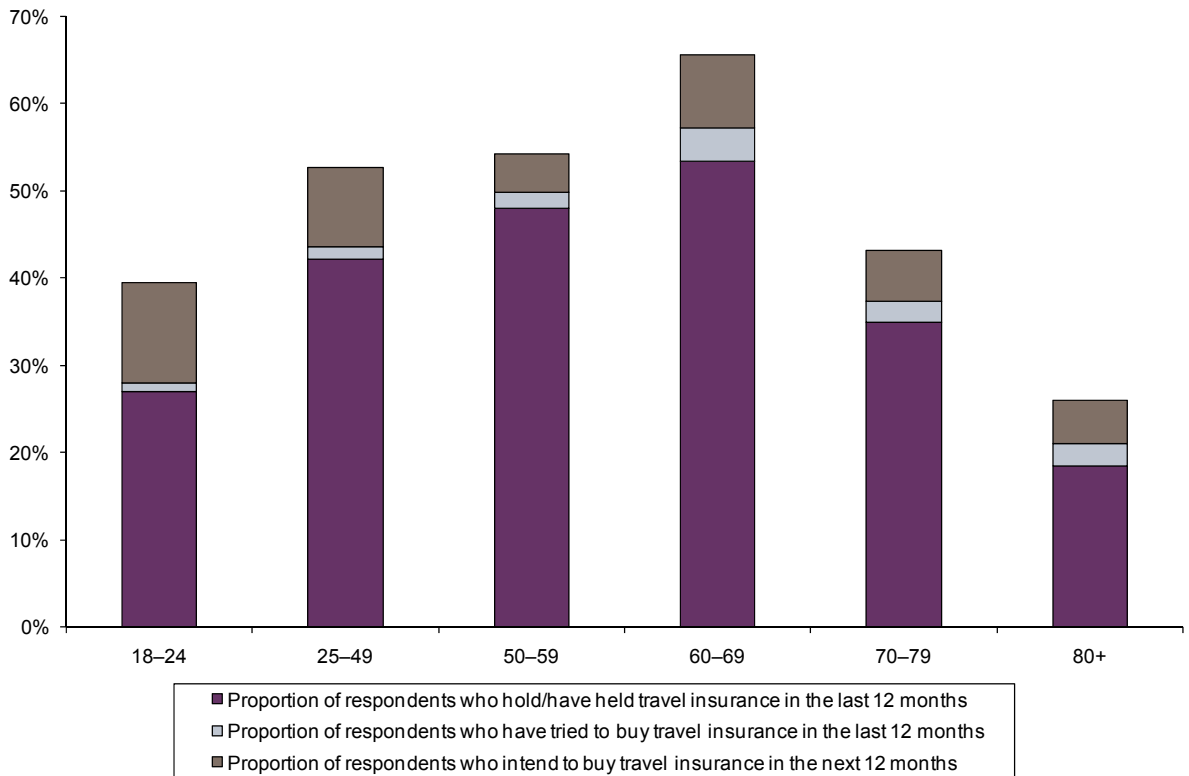
Base: The question on holdings of travel insurance in the previous year was asked of all respondents. The question on trying to purchase travel insurance was asked to those who did not hold/had not held travel insurance in the previous year. The question on intent to purchase travel insurance was asked to those who did not hold/had not held and had not tried to purchase travel insurance in the previous year.
Note: Figure excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

As Figure 3.2 shows, demand for travel insurance is highest among the 60–69-year olds, and lowest among respondents over the age of 80, at around 26%. The majority of the demand for travel insurance is made up of respondents who hold or have held the product in the previous year. Only a small proportion of respondents tried to purchase the product but did not proceed (or succeed)—with 2.5% of over 80s in this group.

3.1.3   Personal loans

The results from the Oxera survey show that there is relatively low demand for personal loans among older people. Figure 3.3 shows the proportion of respondents who hold, have held or have tried to take out a personal loan, or who intend to take out a personal loan in the next year. It demonstrates that demand for personal loans is highest among the 25–49-year olds, and lowest among older respondents. Older people have relatively low demand for personal loans, at around 1.5% of respondents aged 80 and over.

Figure 3.3   Demand for personal loans, by age group
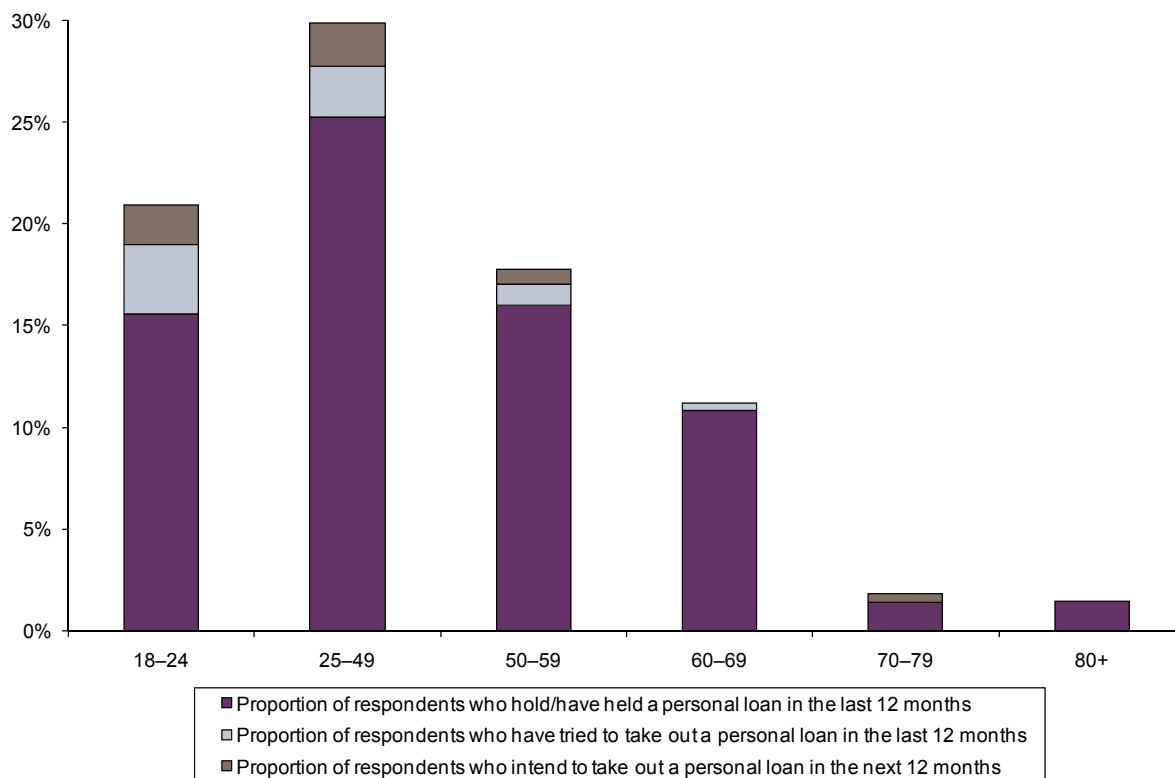
Base: The question on holdings of personal loans in the previous year was asked of all respondents. The question on trying to take out a personal loan was asked to those who did not hold/had not held a personal loan in the previous year. The question on intent to take out a personal loan was asked to those who did not hold/had not held and had not tried to take out a personal loan in the previous year.
Note: Figure excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

As Figure 3.3 shows, the majority of the demand for personal loans is made up of respondents who hold or have held the product in the previous year. A very small proportion of respondents tried to purchase the product but did not proceed (or succeed)—with no over 80s in this group.

Overall, the results suggest that the level of demand for personal loans among the older age groups is low. While those in the older age groups may demand specific credit products (eg, equity release schemes), few older consumers currently hold or seek to take out a personal loan. This finding is consistent with a range of other studies on the use of credit and attitudes to debt across age groups. For example, a report by the Personal Finance Centre (2007) concludes that the use of credit by older people is rare; borrowing is most common among consumers between the age of 20 and 50, thereafter reducing significantly with age.

Thus, unlike for motor and travel insurance, demand for personal loans among the older people is very low. Correspondingly, any concerns about lack of availability or access to personal loans are likely to be limited.

3.2   Product availability and rejections by age group

Motor insurance is compulsory for all drivers in the UK. It presents the single largest general insurance type, with gross written premiums of about £8.6 billion (or about 22% of all business written) (ABI 2009a). Around 60 ABI members serve the motor insurance market, although some providers may be offering policies under several brand names, as there are

more than 60 policies available to most age groups (ABI 2009a)—see Figure 3.5. The largest five companies held around 64% of net written premiums in 2007.[10]

The travel insurance market in the UK is significantly smaller, with gross written premiums of £642m in 2007. Around 36 companies offer travel insurance, but given the small size of the market, only few have premiums over £100m (ABI 2009a).

The personal loan market in the UK forms the largest component of unsecured lending, with £66,956m outstanding in December 2007 (compared with £31,657m of outstanding credit card debt in the same month) (BBA 2009). 46 providers were active in the unsecured personal loans market in May 2008, down from 57 in May 2007 (Datamonitor 2008).

Against this background, the following presents evidence on the degree of product availability across age groups. The distribution of prices across age groups is examined separately in section 4.

3.2.1 Product availability

Motor and travel insurance
There are many motor and travel insurance providers, but concerns have been raised that products are not being supplied to certain age groups—eg, with providers applying maximum or minimum limits on the age of consumers they accept as customers. Figures 3.4 and 3.5 give an indication of product availability by age for motor and travel insurance. They show the number of quotes available to consumers in different age groups from a leading price-comparison website and a specialist provider.[11]

Figure 3.4   Number of motor insurance quotes by age
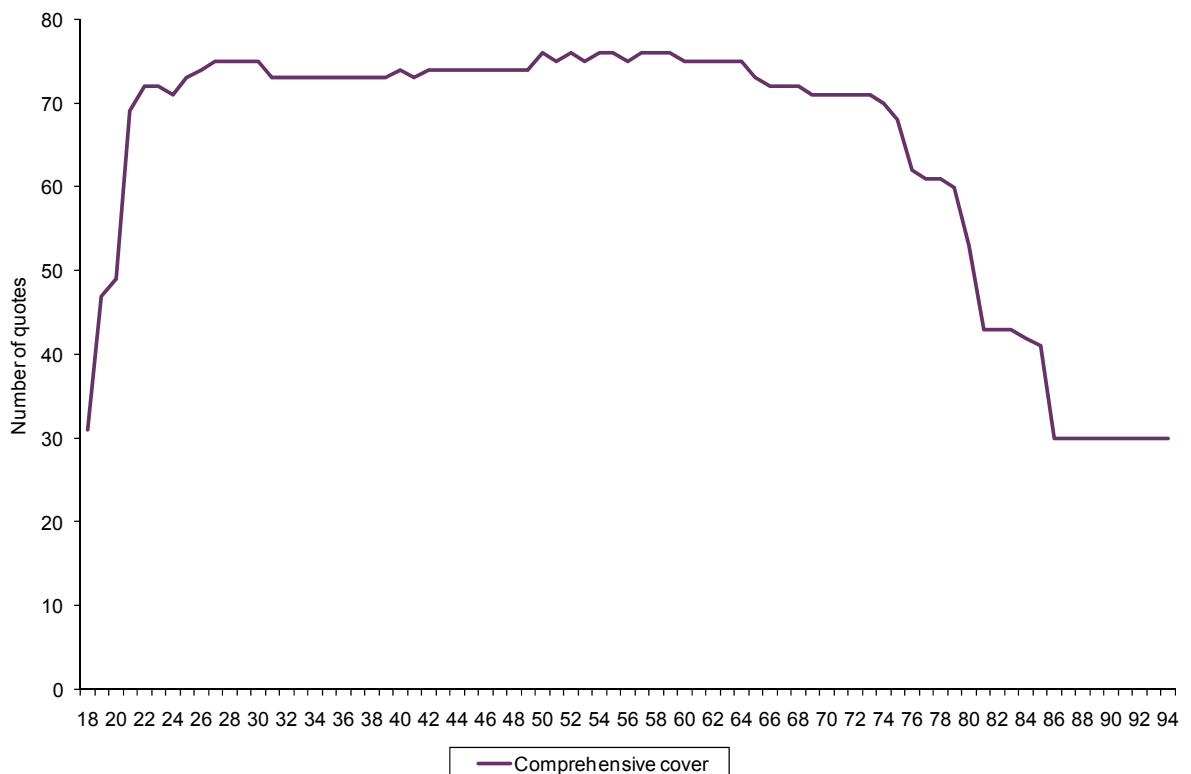
Source: Oxera analysis based on quotes obtained from websites. See Appendix 2.

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[10] http://www.abi.org.uk/Display/File/524/General_Net_Rankings_2007.xls.

[11] See Appendix 2 for a description.

As Figure 3.4 shows, the number of policies available to customers below the age of 21, and over the age of 80, is significantly lower than that available to customers between the ages of 21 and 80. However, even for these groups, some 30 quotes for motor insurance are available from these websites alone.

Figure 3.5   Number of travel insurance quotes by age
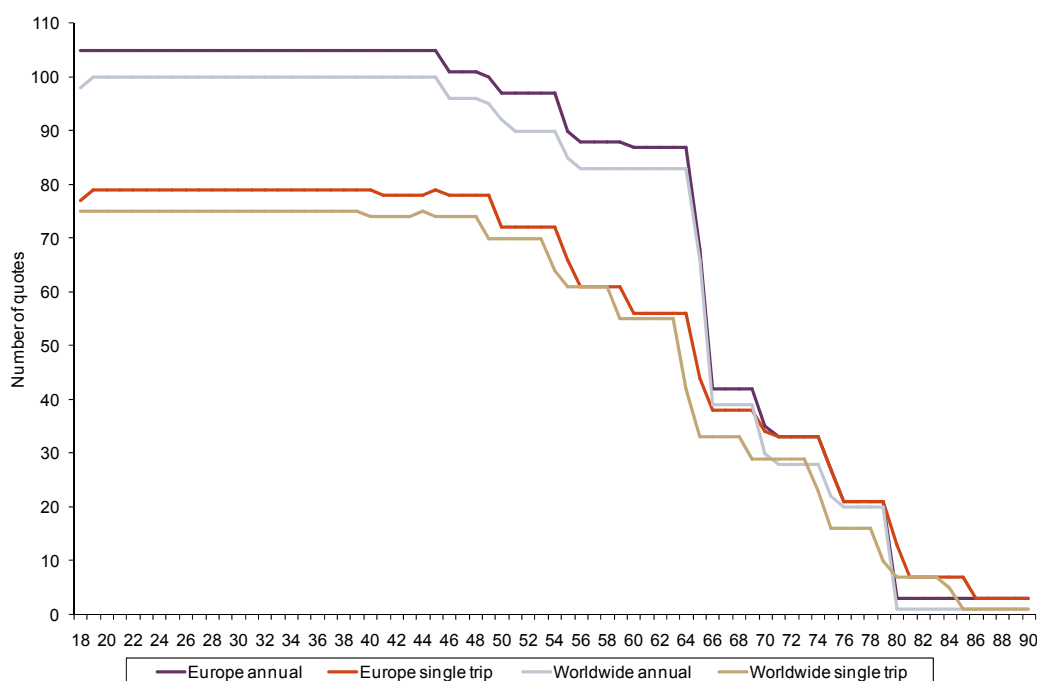
Source: Oxera analysis based on quotes obtained from websites. See Appendix 2.

As Figure 3.5 shows, the decline in the number of travel insurance policies available for older people is more significant than in the case of motor insurance, based on the number of quotes available from the websites. Nonetheless, an 80-year old would still have about 20 policies to choose from, and even a 90-year old is quoted a price for travel insurance on the Internet.

Similar findings using data from price-comparison websites have been obtained in other studies, including the ABI (2009a) and HMT (2008) reports. However, the above evidence is not an accurate reflection of product availability across age groups—it gives information from two sources only (a price-comparison website, and a website catering for those over 50), and as such is not based on a full screening of the market. That is, the evidence underestimates the number of policies available for the older age groups since not all products are being offered via these websites.

Defaqto monitors the availability of travel insurance providers and products.[12] Information from Defaqto suggests that travel policies are available across age ranges and many providers do not set a maximum age limit on their policies.

–   66 single-trip policies from various providers are listed as being available for customers up to the age of 85, of which 26 policies have no maximum age limit. These policies are available from specialists (eg, Saga and Age Concern), travel agents (eg, Thomson and Cosmos), banks (eg, NatWest and Royal Bank of Scotland), the Post Office, as well as more traditional insurers and their brands (eg, Direct Line and Globetrotter).

–   Similarly, of 23 annual policies listed for people aged 85, 18 have no maximum age limit.

[12] Defaqto market data as of early 2009, made available for this study by Defaqto via the ABI.

Put differently, although fewer providers are supplying the age sector, travel insurance cover is in principle available, including for older people.

Defaqto also screens the motor insurance market. The data reviewed shows that 60 motor insurance policies (with comprehensive cover) are available for an 85-year old; 38 of the policies listed are available for a 99-year old; and 16 policies are reported to have no age limit.

It is also worth noting that even if many of the providers have upper age limits for new customers, they may not have any upper limits on existing customers who are renewing a policy. For example, in the motor insurance market, nearly all insurers do not apply a maximum age limit for existing customers, but some may decide to screen their new customers on the basis of age (and, for example, not take on new customers aged 85+).[13]

Personal loans
There does not seem to be any evidence to suggest that unsecured personal loan products are not available to any particular age groups. In particular, the price-comparison websites consulted do not give any indications of maximum age limits, and a screening of provider websites also suggests that upper age limits are not applied in the first stage of filtering customers. Interviews with several large providers confirmed this, also highlighting that if a limit applies, it is the minimum age limit of 18 which is in place for legal reasons. However, some specific products may not be available to all ages, or there may be restrictions to the terms. For example, an 80-year old may not be able to obtain a 15-year unsecured personal loan, but may obtain one for a shorter time period.

In addition, the Experts' Working Group report (HMT 2008) confirms the finding that personal loans appear to be available to all ages. However, as with insurance, using a survey of a sample of providers on a price-comparison website in June 2008, a smaller number of loan products are counted to be available to older people and to younger people.

3.2.2   **Consumer experience of refusals to supply because of age**
Although financial services products appear to be available to all ages, a small proportion of consumers are being refused insurance cover or personal loans because of their age. In particular, the Oxera survey shows that a relatively low proportion of adults have been refused motor insurance because of their age (see Figure 3.6). As the figure shows, around 1.4% of younger respondents (aged 18–24), and 1.5% of over 80s have been refused motor insurance because of their age in the last year.[14] The figures are lower for 25–79-year olds. The percentages are calculated relative to all respondents, but even if measured as a proportion of those who demand motor insurance (Figure 3.1), the proportion of people refused remains small. Moreover, the rejections may not have been made on the grounds of age alone—eg, some providers may turn down (or restrict cover for) an 18-year old who wants to insure a high-performance car not because of age but because of the interaction of the age of the driver and the type of car insured.

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[13] Oxera's interviews with insurers. See, also, ABI (2009a).

[14] Using 2007 population figures, this equates to 40,434 people over the age of 80 who have been refused motor insurance in the last year (or less than 0.1% of the total UK population).

Figure 3.6 Proportion of respondents who have been refused motor insurance because of their age
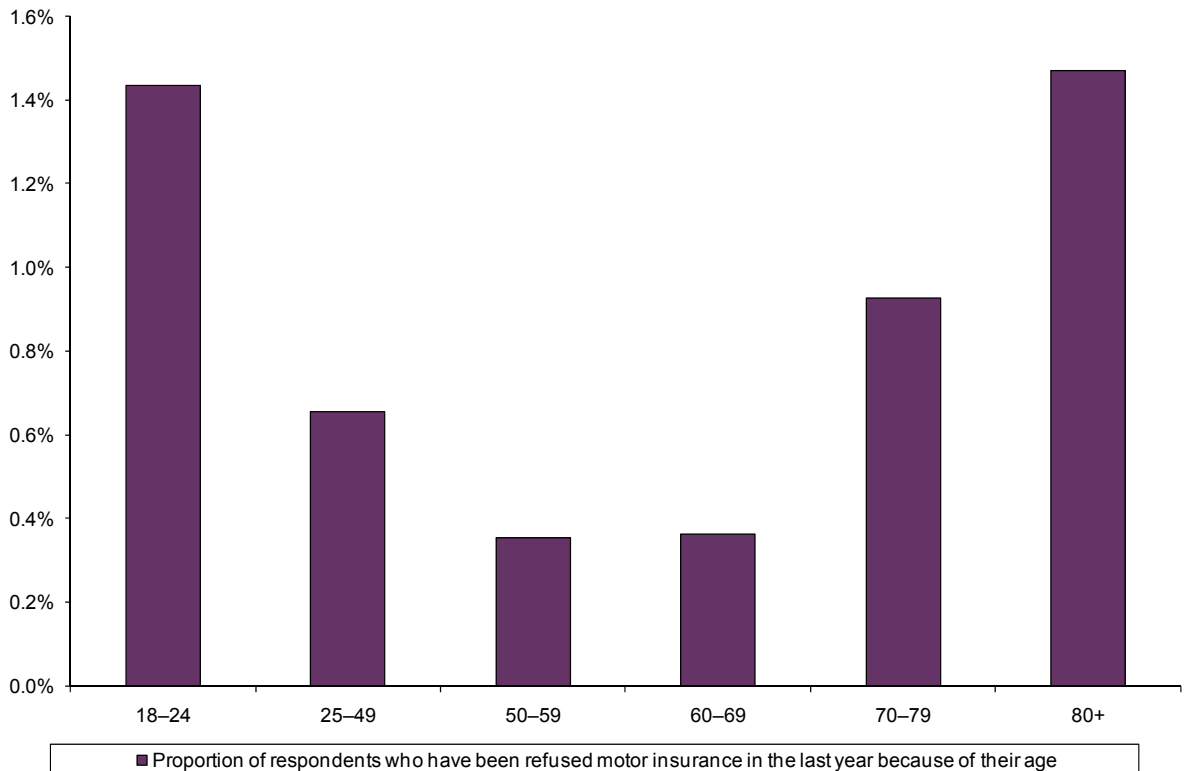
Base: All respondents.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

Similarly, the survey results show that a relatively low proportion of adults have been refused travel insurance because of their age (Figure 3.7). Older people are more likely to be refused, with around 3% of those aged over 80 having experienced a refusal in the previous year.[15] Again, the percentage is measured with respect to all respondents in the age group, rather than those who actually demand travel insurance, but even if adjusting for demand (Figure 3.2) the percentage remains low. Moreover, the rejection rates are not adjusted for the fact that many of the 80+ year olds might have been refused because of medical conditions rather than their age alone.

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[15] Using 2007 population figures, this equates to 81,668 people over the age of 80 who have been refused travel insurance in the last year (or around 0.13% of the total UK population).

Figure 3.7   Proportion of respondents who have been refused travel insurance because of their age

| | 18–24 | 25–49 | 50–59 | 60–69 | 70–79 | 80+ |

■ Proportion of respondents who have been refused travel insurance in the last year because of their age

Base: All respondents.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

This is lower than analysis undertaken by Age Concern in 2007 which states that 12% of over 45s have experienced age discrimination when buying (any kind of) insurance products (Age Concern 2008). Age Concern also looked at the number of respondents who had been discriminated against in the past year when purchasing motor and travel insurance specifically. It found that up to 2% of those who had purchased/tried to purchase motor insurance felt that they had been discriminated against, and up to 7% of those who had purchased/tried to purchase travel insurance felt that they had been discriminated against. However, Age Concern's figures consider all perceived age discrimination, not just refusals to supply insurance policies because of age. Therefore, the figures are not directly comparable.

Regarding personal loans, Figure 3.8 shows that overall refusal rates on the basis of age, as experienced by consumers, are low—a greater proportion of younger respondents (around 2.4%) state that they have been refused a personal loan in the last year because of their age than older people (around 0.5% of the over 80s).

Figure 3.8   Proportion of respondents who have been refused a personal loan because of their age
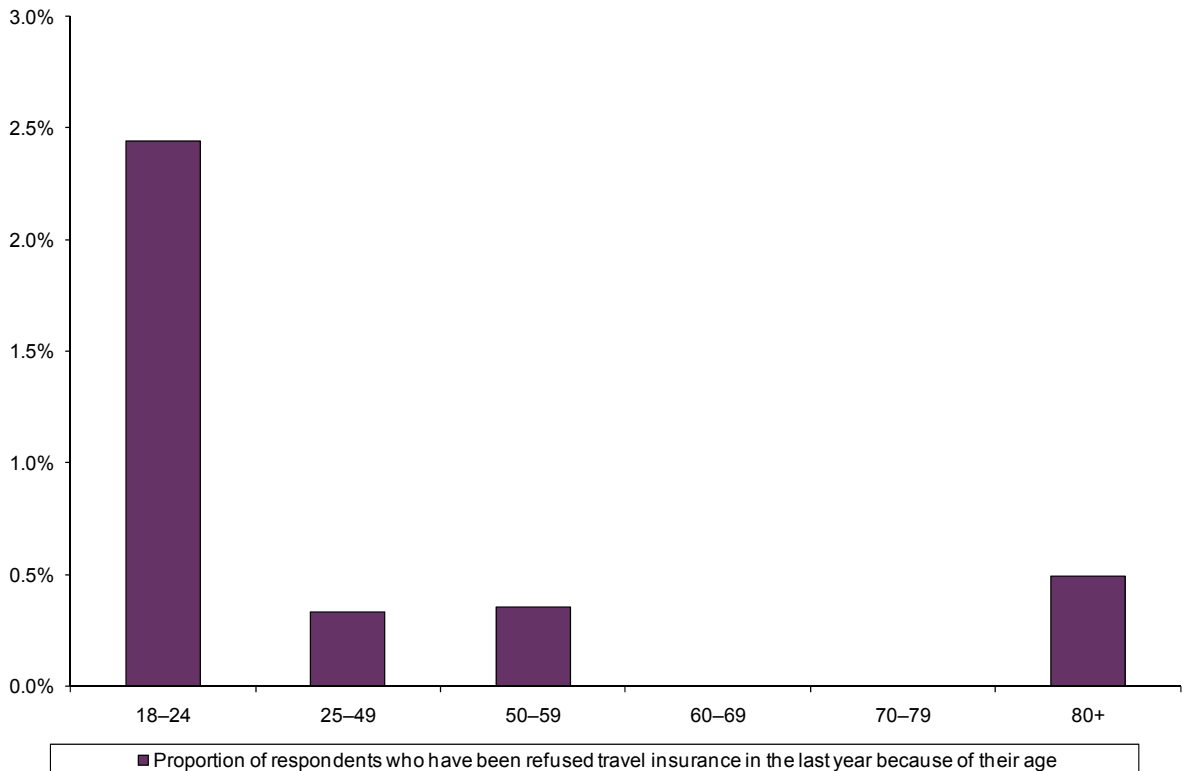
Base: All respondents.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

Thus, based on the survey, only a small proportion of consumers have experienced being declined insurance cover and rejected in their application for a loan because of their age. As these products are in principle available to all ages, this would appear to be a problem of access (if anything) rather than a lack of availability of products. Access to financial services products is discussed in more detail below.

3.3   Access to products by age group

While products are available across age groups, some age groups appear to be finding it more difficult to access the relevant products. In terms of motor insurance, the younger respondents in the Oxera survey were more likely to find it 'difficult' or 'very difficult' to find a suitable motor insurance policy (Figure 3.9). As the figure shows, a greater proportion of respondents over the age of 50 than respondents under this age found it 'easy' or 'very easy' to find a suitable policy. In particular, 98.4% of 60–69-year olds, and 89.5% of the over 70s found it easy or very easy to find a suitable motor insurance policy. There were no respondents, in any age group, who were unable to find a suitable policy.

Figure 3.9   Ease of finding suitable motor insurance, by age group
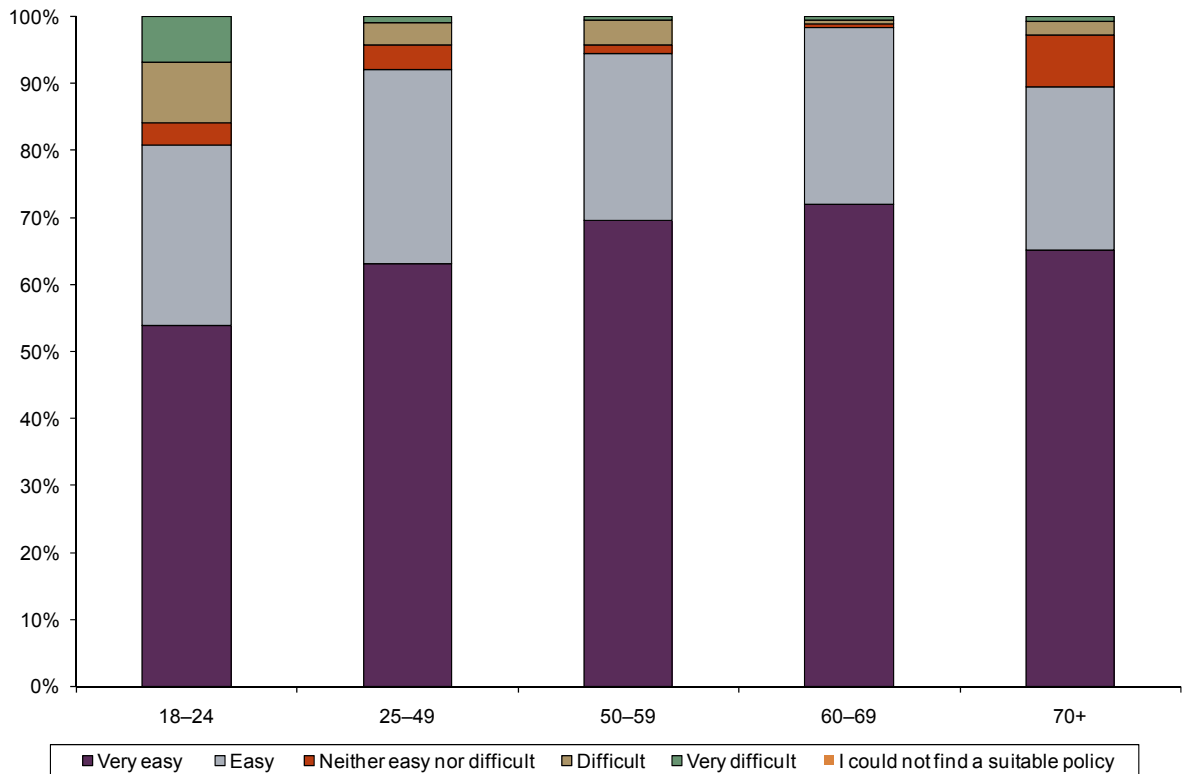
Base: Respondents who held/had held or had tried to purchase motor insurance in the previous year.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera analysis.

As regards travel insurance, respondents over the age of 70 were more likely to find it difficult or very difficult to find a suitable travel insurance policy (Figure 3.10). Around 21% of those over 70 (compared with 9% of 60–69-year olds) found it difficult or very difficult to find a *suitable* travel insurance policy. Although the majority still considers it easy to find travel insurance, the results indicates that there is a more pronounced problem of access to travel insurance policies for older people. Note, however, that the difficulties experienced by some may be due to medical conditions rather than age alone, and that hardly any of the survey respondents in the 70+ age group ultimately were unable to find a suitable product.

Figure 3.10 Ease of finding suitable travel insurance, by age group
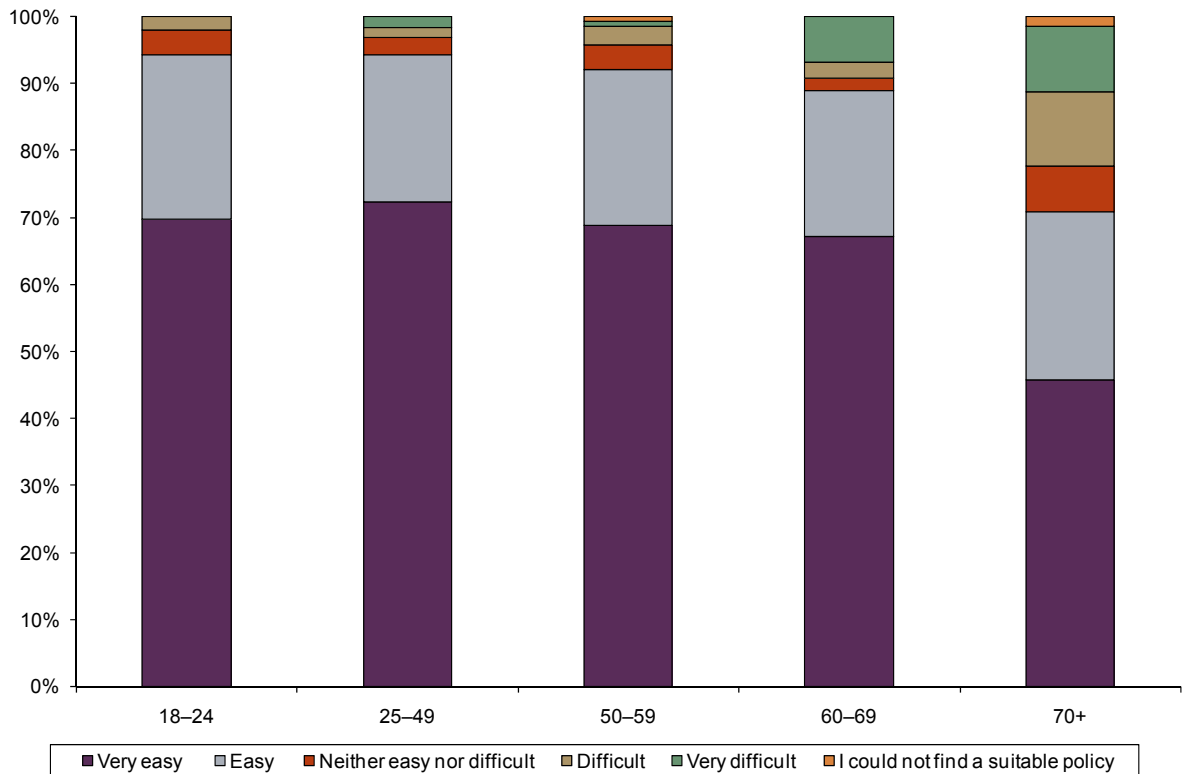
Base: Respondents who hold/have held or have tried to purchase travel insurance in the last year.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
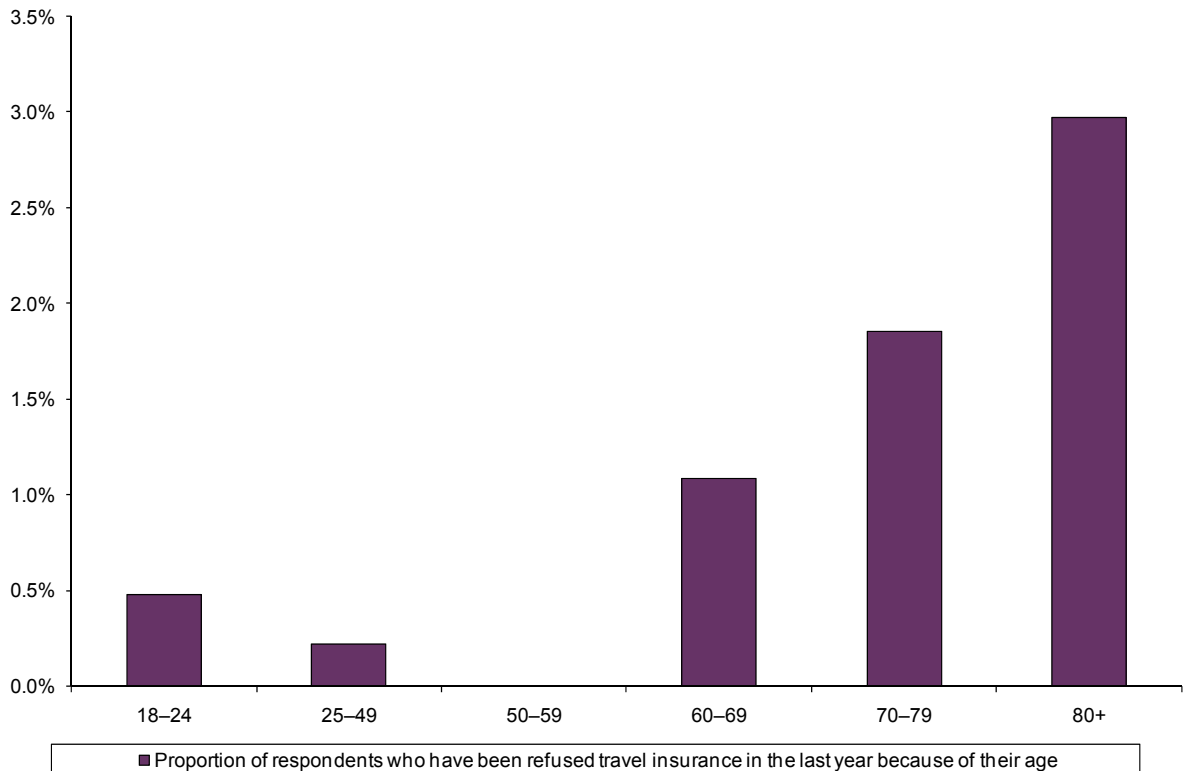Source: Oxera survey.

A similar chart cannot be produced for personal loans as the number of respondents who held, had held, or had tried to obtain a loan in the previous year is too low for the age groups of interest. However, of the (few) respondents over the age of 60 who had tried to obtain a loan, none found it difficult, very difficult or impossible to do so. The younger respondents on the other hand seem to have more difficulty in obtaining a suitable personal loan.

There may be several reasons why some have difficulty in finding a suitable insurance or loan product, one of which may be the distribution channels used. In particular, there may be a discrepancy between the number of products available and the number of products being distributed by a particular distribution route. For example, although travel insurance is available to all ages, one price-comparison website analysed did not offer travel insurance policies to customers aged 75 and above. These customers were referred on to other websites or given details of telephone numbers of providers who would be able to provide travel cover for them. Given that this requires at least one extra step (if not several), it might make finding a suitable policy more difficult.

Different ages tend to use different channels when purchasing financial services products. For example, Figure 3.11 illustrates the channels through which different age groups access motor insurance. It shows that drivers aged 80 or over are much less likely than younger drivers to use price-comparison websites to search for/purchase their motor insurance. Instead, older people are more likely to call up their insurers directly or renew existing policies. Nonetheless, some older consumers may try to use channels that are less commonly used by this age group (eg, price-comparison websites) and end up not being successful. Also, depending on the insurer they contact directly, they may be turned away if this insurer does not cater for the specific risks. The same conclusions can be drawn for travel insurance, the figure for which is presented in Appendix 3.

Any such difficulties at the distribution level indicate a problem of product access rather than availability because products are available to all ages (as shown in section 3.2).

Figure 3.11 Channels used when purchasing motor insurance
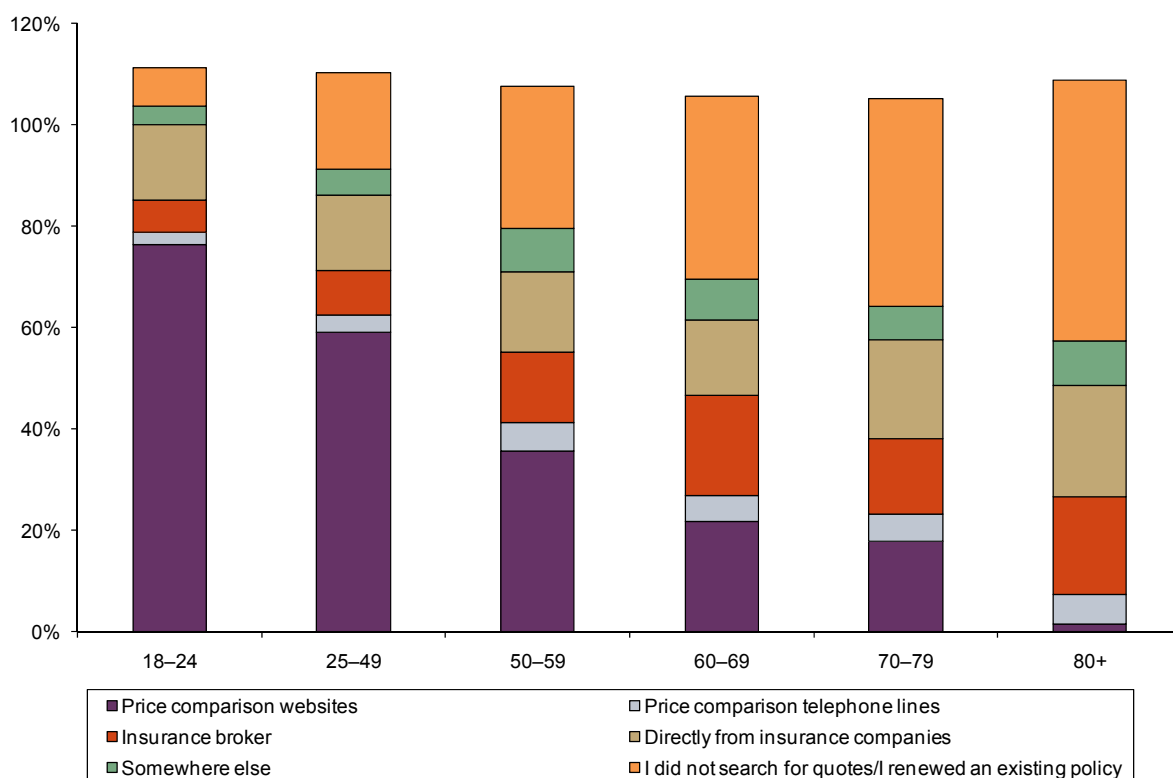
Base: Respondents who held/had held or had tried to purchase motor insurance in the previous year.
Note: Excludes respondents who answered Don't know or who refused to give an answer. Respondents were allowed to give more than one response if they used more than one channel in their search, which explains why the total adds to more than 100%.
Source: Oxera survey.

There may also be perceived barriers to access, in that people *think* that insurance and loan products are not available to them because of their age and hence do not even try to purchase them. Table 3.1 shows the proportion of respondents in each age group who do not intend to buy the relevant financial services product because they believe it is not available to them because of their age.[16]

Table 3.1   Age as the main reason why respondents do not intend to buy insurance and loans in the next year, by age group (%)

	18–24	25–49	50–59	60–69	70–79	80+
Motor insurance	1.0	0.0	0.0	0.0	0.0	1.5
Travel insurance	0.9	0.0	0.0	0.0	0.0	2.7
Personal loans	0.6	0.2	0.0	0.0	0.0	1.0

Base: Respondents who did not hold/had not held and had not tried to purchase in the previous year and did not intend to purchase each product in the next year.
Note: Excludes respondents who answered Don't know or who refused to give an answer. For all responses see Appendix 3.
Source: Oxera survey.

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[16] These questions were asked only to those respondents who do not demand the relevant financial services product (ie, do not hold/have not held it, have not tried to purchase it in the last year, and did not intend to purchase it in the next year), in order to find out why respondents do not demand the relevant products.

As Table 3.1 shows, for all three products, it is mainly the younger and older people, in a small proportion, who think the relevant product is not available to them because of their age and this stops them from trying to buy it. As shown in Appendix 3, the principal reason why respondents do not intend to buy the products is not intending to drive/go on holiday/not needing a loan. Some respondents do not intend to purchase motor or travel insurance, or a personal loan because they think it is expensive or poor value for money (but very few of those respondents are in the older age groups).

The belief that insurance and loan products are not available to respondents because of their age was selected by a number of respondents as a secondary reason (not the main reason). When looking at *all* reasons why respondents do not intend to purchase the relevant financial services product (respondents are allowed to state more than one response), the belief that the product is not available because of age was selected by 5–8% of respondents over the age of 80, depending on the product (see Appendix 3). This further suggests that there may be a (perceived) problem of access to motor and travel insurance and personal loans by some older people in the market.

3.4   Summary

Demand for financial services products varies by age as well as by product. Demand for motor and travel insurance is higher, at 25–35% in the case of over 80s, while it is significantly lower for personal loans, at around 1.5% for the same age group. Nevertheless, all three products share the characteristic, namely that demand falls significantly with age after the age of 60.

While product availability varies across age groups, there does not appear to be a lack of products that would result in certain age groups (above the age of 18) not finding any motor insurance, travel insurance or personal loans. Consistent with previous studies, the Oxera survey suggests that only a small proportion of consumers are turned down or unable to find insurance and loan products because of their age.

The reduction in the number of product offerings does not apply just to older people. For example, in the case of motor insurance, a reduction in the number of providers or products mainly applies to the young (eg, drivers under 21). However, all age groups are being supplied in the market, including by specialist providers that target particular age groups.

The fact that not all providers supply all age groups, or that fewer products are being supplied to certain age groups (ie, the very old or young, depending on the product) does not in itself imply a failure on the supply side. Product offerings and pricing from the perspective of the supply side are examined in section 4.

If there is a problem in the market, it appears to be one of access to the product rather than product availability—ie, there may be a problem in the way the market currently matches demand with supply. Although the products are being supplied, certain age groups may find it difficult to access those products—they may not have the relevant information or access to the relevant sources of distribution to acquire the products.

While significant for the individuals affected, from a market perspective the age groups in question tend to make up a fairly small proportion of the total demand for that product, either because the age group itself is small and/or because demand in that age group is small.

4 The use of age in the supply of financial services

This section examines the status quo in the market from the supply side. In particular, it:

– describes the current practices in the pricing of travel and motor insurance and unsecured personal loans (section 4.1);

– analyses the relationship between risk, price and age, in order to assess whether certain age groups experience significantly 'worse' outcomes and are being systematically overcharged (section 4.2);

– presents evidence on the effect of removing age from the risk classification and pricing models (section 4.3).

4.1 Age-based pricing of financial services products

An understanding of if, how and why providers currently use age in the supply and pricing of products is essential in order to assess current age-based practices and the potential impacts of restricting providers in how they use age. The following reviews current practices—with particular respect to pricing structures.

4.1.1 Current practices in the pricing of motor and travel insurance

While general insurance underwriting is a largely automated process based on statistical techniques, insurers' overall business models and strategies play a considerable role in shaping the supply of motor and travel insurance. Figure 4.1 illustrates the insurance pricing process.

Figure 4.1   Insurance pricing process

Source: Oxera, based on GRIP (2007).

Determining expected claims costs is typically the most demanding element in pricing insurance, requiring some sort of statistical modelling of the frequency and severity of claims to ensure that risks are correctly priced.

Elaborate statistical analysis based on large datasets is costly, and an insurer's ability to price in a fully risk-reflective manner is affected by modelling and data constraints. The benefits of full risk-based pricing will need to be set off against the cost of achieving this, and the prices that emerge may reflect a trade-off between risk and cost considerations.

The cost of insurance underwriting is also influenced by the size of the group within a risk pool. Large samples of individuals are required for risk modelling and determining risk-based prices. That is, there are certain economies of scale in underwriting for individual insurers, with the cost of insurance falling for larger risk pools. To some extent, this explains the existence of 'specialist' insurers that focus on particular groups of insured, especially those

groups which are relatively small or have 'unusual' risk.[17] Serving such groups of customers, which may be refused or face high prices with some insurers, enable these specialist insurers to reach a 'critical mass' necessary to realise economies of scale in data collection and risk estimation and underwriting, leading to lower insurance underwriting costs.

Decisions about product offerings and pricing structures are also affected by elements of judgement and strategic and commercial considerations. Examples include the following.

– A range of other costs are incurred in the provision of insurance, which need to be taken into account in pricing strategies (eg, claims handling and distribution).

– An insurer's business strategy may stipulate avoiding extreme prices (eg, for reputational reasons). One approach to achieve this is simply not to serve the high-risk end of the market. Another approach is to smooth pricing across customers by introducing an element of cross-subsidy between lower- and higher-risk groups.

– An important consideration is the responsiveness of demand to a change in a provider's price—there is indication that demand responsiveness in travel and motor insurance has increased significantly with the advent of price comparison websites, especially for some market segments (eg, younger customers); as a result, even small price changes by an insurer can now trigger large changes in volumes at the individual provider level.

Motor insurance

Prices for motor insurance vary significantly with the age of the consumer. Figure 4.2 reports price quotes for comprehensive cover collected from a price-comparison website and the website of a specialist provider. It shows the minimum and the median quotes available for different age groups, holding all other factors that determine the quotes constant.[18] As discussed in section 3, the number of quotes available via the two websites differs for different ages.

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[17] As an extreme example, consider travel insurance pricing for people aged over 80 going on a skiing holiday to the USA. This group is very small, and if dispersed among several insurers, it is highly unlikely that any single insurer would have enough data to undertake statistical modelling of the risks involved. This necessitates manual underwriting, which is more costly, hence the price of insurance for this group of insured would be higher. Furthermore, given the lack of data to estimate risks, insurers may either find it impossible to offer insurance to individuals from this group, or the premium offered could be very high, due to the significant uncertainty surrounding the estimated risk. On the other hand, if a specialist insurer emerged offering insurance to this specific and small group of customers, a critical mass of data could be reached lowering the cost of underwriting and allowing risk to be estimated more precisely.

[18] The median is a helpful measure of average prices, since it indicates that half of all quotes are at or below the median.

Figure 4.2   Median and minimum quotes by age: motor insurance
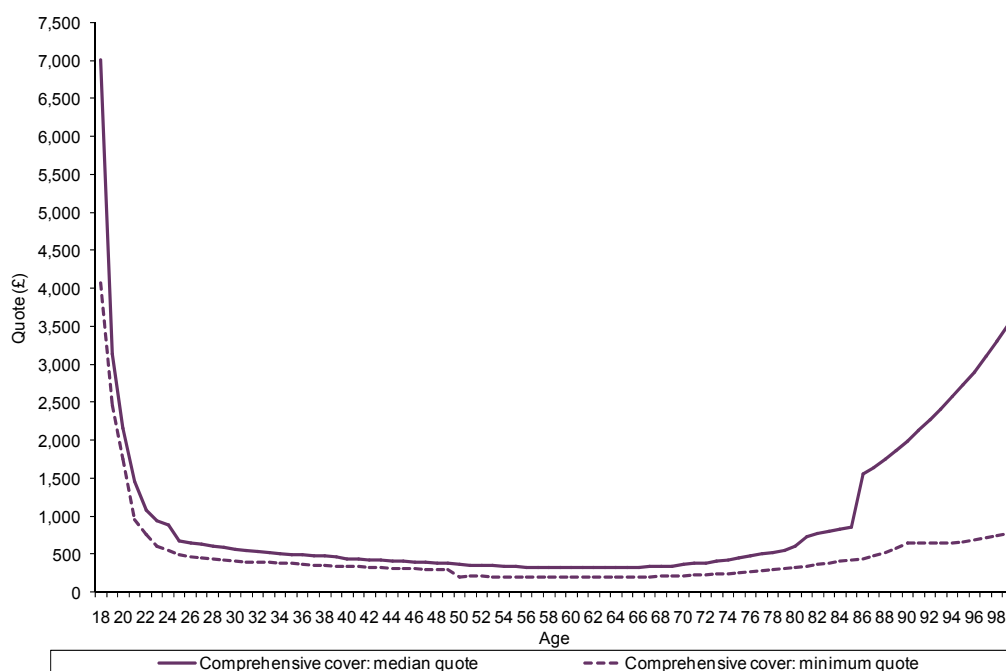
Note: The number of quotes available from the two websites examined differs by age, as shown in section 3. In particular, 18–20-year olds and those aged 80 or more have around half the number of quotes available via these websites than other age groups. The minimum and median quotes are therefore not calculated for the same sample of providers.
Source: Oxera analysis based on quotes obtained from websites. See Appendix 2.

The relationship between age and motor insurance quotes is distinctly U-shaped, a finding that is well established in other research.[19] Quotes are highest for young drivers, falling steeply to below £1,000 on average for drivers aged 23 or more. Median quotes for drivers in the 30–79-age group are between £325 and £565 (the quotes are the smallest for drivers in their early 60s). The price of motor insurance then starts to rise again for those aged 80 or more, with those aged over 90 facing average quotes of over £1,500; however, quotes of below £1,000 are still available.

Price analysis based on data from online aggregators should be interpreted with care, as it is not necessarily representative of overall prices in the market. It may also overestimate the insurance prices for older customers. First, the online prices are for new customers; it may be less costly to renew insurance with an existing provider, especially for older customers. Second, some insurers indicated that they provide motor insurance to older customers above a certain age limit via phone, but not online (eg, due to the way the IT system is set up, or because additional medical screening is required). On the other hand, some insurers also indicated that they offer online discounts, which are not available if insurance is purchased over the phone.

As already discussed in section 3, in terms of age limits, some insurers decide not to offer any motor insurance to customers of certain ages, or they may specialise in specific age groups only. However, any maximum age limits apply mainly to new customers—renewal customers will be offered cover.

While age is an important factor in motor insurance pricing, insurers also consider other factors to predict the claims frequency and severity. Table 4.1 summarises typical risk-rating factors used in motor insurance.

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[19] See, for example GIRO Working Party (2007/08),HMT (2008) and ABI (2009a).

Table 4.1   Typical risk rating factors for private motor insurance

Details on primary driver and other drivers, if applicable	Vehicle details
Age	Vehicle group
Gender	Vehicle value
Marital status	Immobiliser/alarm
Age of licence	Rating area
Type of licence	Overnight parking
Occupation	Excess
Residency	No claims discount (NCD), and whether it is protected
Convictions	Use
Accidents/claims in last n years	Policy duration

Source: GRIP (2007).

Age appears both as a stand-alone variable in the risk-classification and pricing models, but also in various and potentially complex interaction terms with other factors (eg, age in combination with gender and/or vehicle type). For example, an 18-year-old male driver wishing to insure a high-performance car may be subject to high premiums or indeed not be offered cover at all, not so much because of his age but because of how age interacts with the type of car for risk-based pricing purposes. Insurers may apply age limits or eligibility restrictions in conjunction with the vehicle group or car type, so the 18-year old would in principle be able to obtain insurance but is refused because of the nature of the car.

More generally, age can be embedded in pricing models or strategies in different and complex ways—eg, as a minimum or maximum age limit, an age-based eligibility requirement for the vehicle type, a factor influencing the excess or the premium levels on a stand-alone basis and/or in conjunction with gender, accident loadings, driving experience, NCD, or the other factors listed in Table 4.1.

Table 4.2 illustrates how factors other than age (but correlated with age) can have an impact on motor insurance quotes. It reports the median price quotes for young drivers of different ages and how these vary depending on the driving experience and NCD.

Table 4.2   Illustration of the effect of years with licence and NCD on motor insurance quotes for the young

	Median quotes (£)	
Age	Assume licence obtained at the age of 18, and NCD applies to all years since the licence	Assume one year since licence obtained, and no NCD applies
18	7,019	7,019
19	3,144	4,293
20	2,161	3,729
21	1,462	2,899
22	1,086	2,698

Source: Oxera analysis of quotes obtained from websites. See Appendix 2.

Thus, while age is one of the key risk-classification factors used in motor insurance, an array of other factors are also used. What is clear from the data presented above is that the highest prices are paid by the very young, rather than the older customers. While premiums rise for consumers aged above 80, the rise is nowhere near as steep as for the very young.

According to industry, the price differences reflect the significantly higher risk posed by young, inexperienced drivers (eg, in terms of accident frequency). The higher premiums for older ages reflect the higher average cost of claims for older people compared with middle-aged drivers. The relationship between age, risk and premiums is examined in section 4.2.

Travel insurance

Age sector organisations have expressed particular concerns about the market for travel insurance, including the high prices paid by older people for such insurance (and the lack of availability, in particular of annual travel cover, as shown in section 3). The use of broad age bands is also seen as unfair.

According to industry, the higher prices for older people reflect the significantly increased risk of insuring older people. Claims increase with age, both in frequency and level, and the rate of increase accelerates with age for older people (eg, the difference in risk between an 85-year old and an 84-year old is higher than that between an 80-year old and a 79-year old).

Travel insurance uses significantly fewer risk-classification variables than motor insurance—age, purpose and destination of travel being the main ones. As such, it is a much simpler and more standardised product, which can partly also be explained by the smaller size of the market and the low premiums per policy (eg, less than £20 for a single-trip policy). Even if age is not the perfect indicator or proxy for health, according to industry the use of age helps to keep the costs of provision and distribution down. If (chronological) age were replaced—eg, by detailed medical screening or other tests to establish the true functional age of a consumer—the cost of travel insurance would significantly increase. Insurers also explain that the simple pricing structure adopted by some providers, including the use of broad age bands, helps to contain costs.

Figures 4.3 and 4.4 provide information on the level of travel insurance premiums and how they vary with age, for European and worldwide cover (including the USA) respectively. The data refers to travel insurance quotes obtained from a price-comparison website and a specialist old-age insurer.[20] As discussed in section 3.2, the number of quotes available via the two websites declines with age—this should be taken into account when interpreting median and minimum quotes shown in Figures 4.3 and 4.4.

As regards European travel cover, Figure 4.3 shows that the median single-trip quotes are below £20 up to the age of 65, rising increasingly after the age of 65 and reaching £60–£80 for older customers; however, the minimum quotes indicate that policies below £30 are still available up to the age of 90. Annual travel policies for Europe are more expensive than single-trip policies, and follow a similar pattern by age. While median quotes for those aged 65 or more can be in excess of £60, quotes at or below £40 for older customers are available.

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[20] For a description of the data, see Appendix 2 and section 3.2.

Figure 4.3   Median and minimum quotes by age: Europe travel insurance
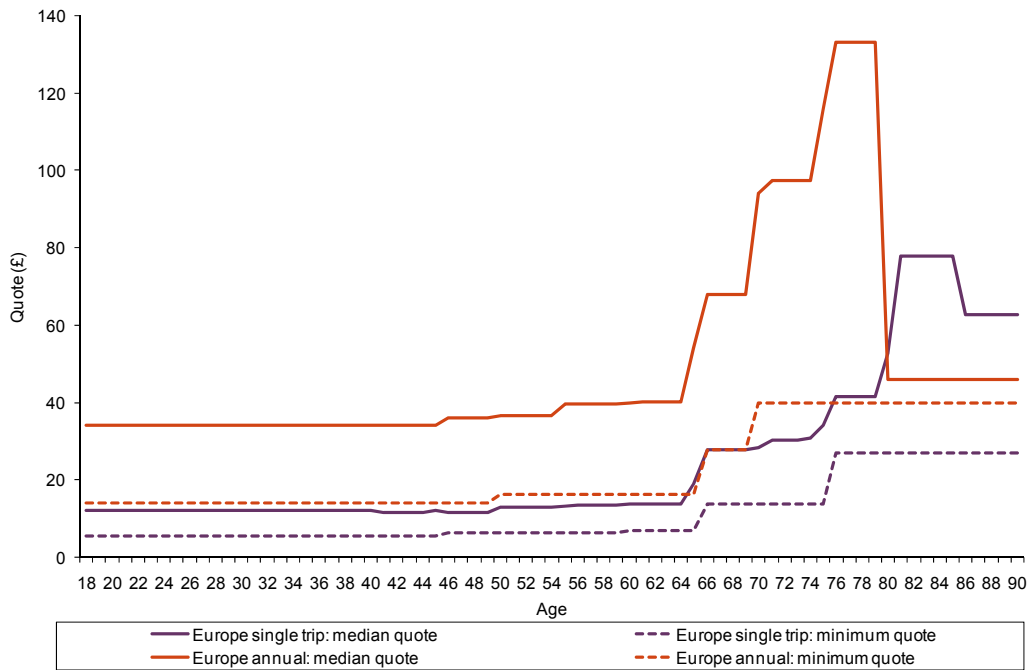
Notes: The fall in median quotes at older ages is due to the change in the sample of insurers that provide a quote for those age groups—as discussed in section 3, some insurers stop offering travel insurance via price-comparison websites for customers in the age sector, so the medians after the age of 75 or 80 are calculated for a different (and smaller) sample. For example, up to the age of 50, just over 100 quotes are available via the two websites, declining to under 40 quotes for those aged 70 or more, and declining to fewer than 10 quotes for those aged 80 or more.
Source: Oxera analysis based on quotes obtained from websites. See Appendix 2.

As Figure 4.4 shows, worldwide (including the USA) travel insurance quotes follow a similar pattern. Prices increase, in a step-wise manner, with the age of the insured. Starting from the age of 65, median quoted premiums rise more rapidly—eg, from under £50 for a single-trip policy to under £200 for the eldest customers, and from around £70 to around £400 for annual policies.

Figure 4.4   Median and minimum quotes by age: worldwide travel insurance
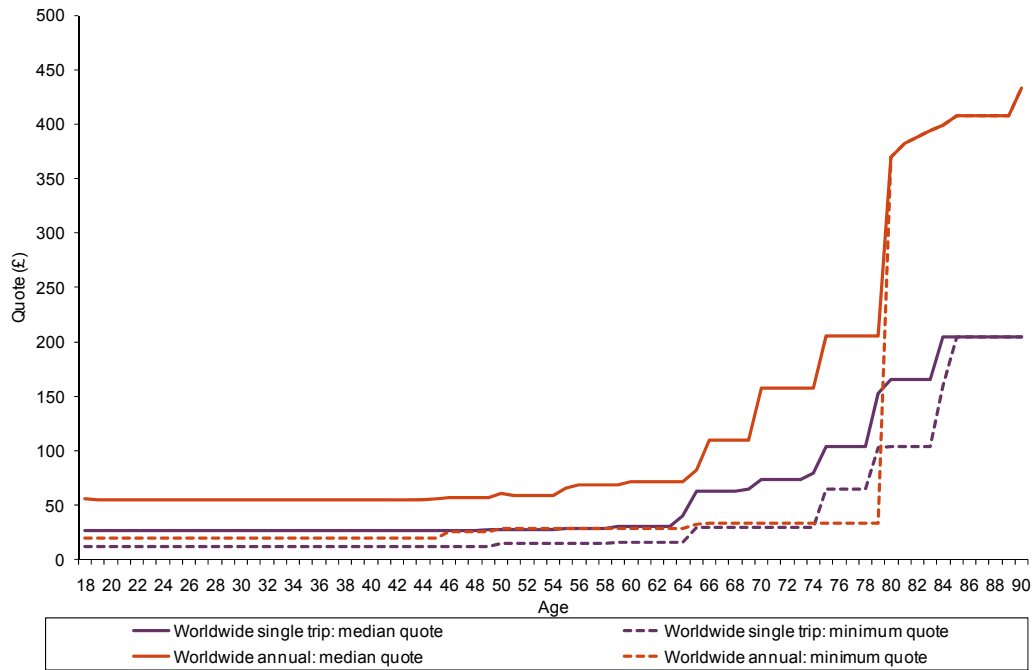
Notes: The median quotes for worldwide single-trip (annual) cover are the same as the minimum quotes from the age of 85 (80) because only one provider offers cover for those ages through the websites considered. As discussed in section 3, the number of quotes available via the two websites examined decline with age. For example, up to the age of 50, 70–100 quotes are available via the two websites, declining to under 30 quotes for those aged 70 or more, and to fewer than 10 quotes for those aged 80 or more.
Source: Oxera analysis based on quotes obtained from websites. See Appendix 2.

As in the case of motor insurance, a caveat to this analysis is that travel insurance quotes obtained from websites may not necessarily be representative of the prices faced by all segments of the market. While younger customers use Internet distribution channels, older people purchase insurance directly from insurers and over the phone more often. Some insurers do not provide quotes to older customers over the Internet, but only offer travel insurance over the phone. This may lead to slightly higher premiums via the phone distribution channel with some insurers (eg, interviews with insurers indicated that some of them offer 10% discounts over the Internet). On the other hand, many specialist providers— eg, those focusing on older customers and potentially having more attractive prices for that group than 'mass-market' insurers—are not necessarily accessible via online price-comparison sites, and hence their prices are not reflected in the above analysis.[21]

Insurers explain that higher premiums for worldwide or US travel insurance reflect higher average claims costs associated with trips outside Europe (eg, medical costs in the USA are very high, and most claims are health-related). One can also observe relatively rapid increases in quoted premiums of annual travel policies for older people, when compared with single-trip policies. The reason provided is the significantly higher risk of annual policies for older customers, since their health condition can deteriorate rapidly during the course of the policy.

In addition to the higher risk, the higher prices reflect differences in other costs, including administrative and distribution costs. For example, while the Internet presents the low-cost route to distribution, older people may prefer to phone (or indeed may have to phone to obtain a quote). The length of the phone call may be longer for older people—for example, if

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[21] For example, one of the price-comparison websites examined does not quote travel insurance prices for customers aged 75 or more; these customers are referred to other sources to buy the insurance. See section 3.2 and Appendix 2.

they need extra help to process the information, or if additional medical screening questions are required to understand their risk profile.

The relationship between age, risk and pricing is further examined in section 4.2. Figures 4.3 and 4.4 above indicate a step-wise increase in travel insurance quotes for the market as a whole. This is a reflection of the age bands that many individual providers apply in pricing their products. A selection of age bands for individual providers is reported in Figure 4.5, using a sample of single-trip and annual travel insurance policies available in the market.

Figure 4.5   Examples of use of age bands in travel insurance
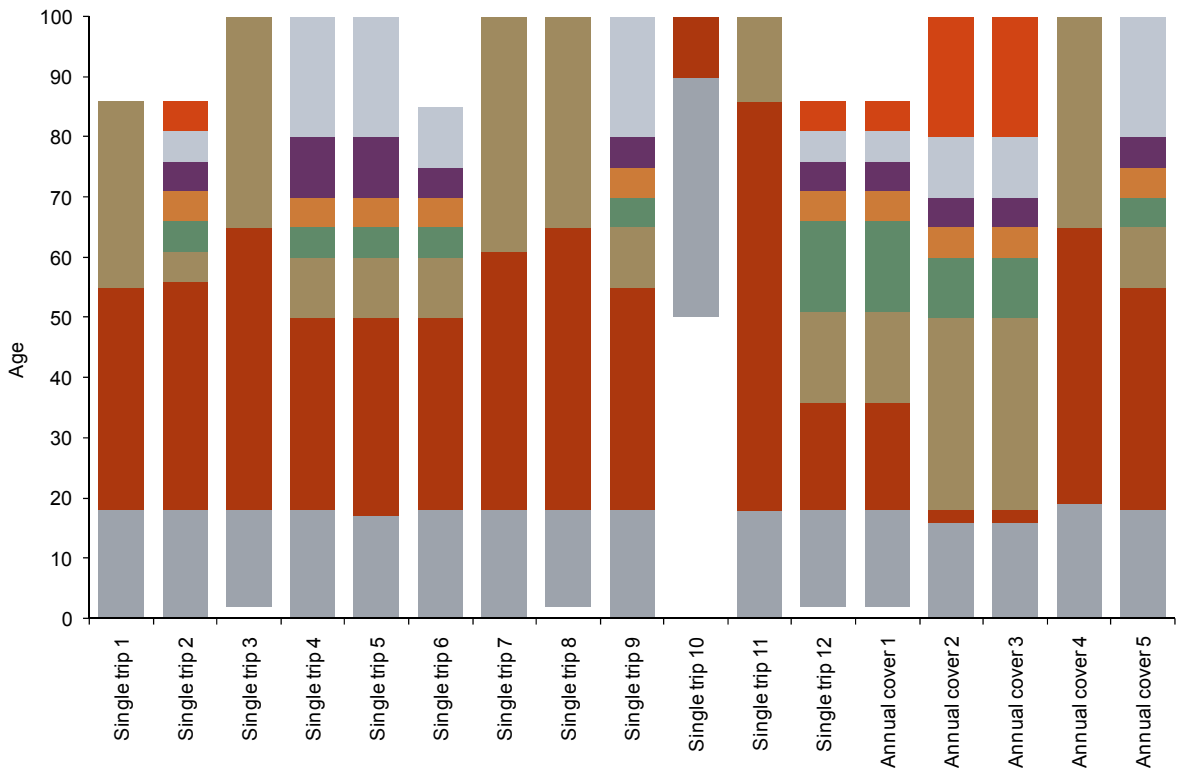
Note: Shows examples of the age bands used by travel insurance providers with respect to single-trip and annual policies. For illustrative purposes, only a sample of providers and their policies is shown.
Source: Oxera analysis, based on data from Defaqto (collected at the beginning of 2009).

Within an age band (eg, from 18 to 64), there is no price differentiation by age (eg, a 40-year old may pay the same as a 64-year old). Instead, prices increase in a step-wise manner from one age band to the next (eg, the 64-year old may experience a significant rise in premiums as they turn 65).

Such a pricing structure cannot fully reflect the underlying risks. Instead, as explained by insurers, it reflects an attempt to keep pricing simple and cheap, while broadly preserving differences in risk across age groups. At underwriting level, the relationship between age and risk may well be modelled on a more granular basis (eg, using integer ages), but the wider age bands are introduced for distribution purposes. Age bands make the products easier to understand by customers and less costly to distribute.

4.1.2   Current practices in the supply of unsecured personal loans
Personal loan offer, limit and pricing decisions by lenders in the UK are typically based on credit scoring. As described in section 2, credit scoring enables lenders to classify potential customers according to their default risk, and then to offer and price loans accordingly.

Credit scoring is usually based on statistical models to predict the probability of default according to various characteristics of the applicant. Typically, credit scoring is an automated

process, although manual risk assessment is also practised (eg, in cases where sufficient historical data is not available to assess the risk of default, or where a provider's loan policy is to do manual assessment if the automatically obtained credit score is below a threshold but above a lower bound for offering loans). The automated credit-scoring techniques weigh individual characteristics as determined by statistical models, based on large datasets of historical data on defaults, in order to assign a credit score. Manual credit scoring follows similar principles.

Credit-scoring models may be proprietary or developed by credit reference agencies for example (the main ones in the UK being Experian, Equifax and CallCredit).

Loan providers may combine the following data to form their credit score and make the loan supply and pricing decision:

– credit reference agency data, such as the amount of credit outstanding, number and value of current active credit accounts, previous County Court judgments or defaults;
– information obtained from the loan application forms (eg, demographic data);
– information on existing relationships with the potential loan customers.

Credit scores may be reflected in both the credit limit (including the refusal to sell an unsecured loan) and/or the interest rate payable on the loan, depending on the business model and product specifications of the loan provider.

According to the Experts' Working Group report, age is 'a strong enough predictor to be included in many scorecards'; however, it is 'rarely used in isolation as predictive of the risk of default' (HMT 2008, p. 156). As confirmed in the industry interviews conducted for this study, the use of age in credit-scoring models differs across lenders. While some include age as a characteristic in their scoring models, others do not. Some lenders indicated that age has neither a strong nor a weak predictive power for default risk if compared with other characteristics included in the scorecards that are correlated with age—eg, length of time at current address or on the electoral roll.

Generally, older people achieve higher credit scores, especially if they have a good credit history, and consequently may benefit from more favourable interest rates. Younger people tend to have lower credit scores, mostly due to their lack of credit history and more uncertain lifestyles; this may lead to limited or no availability of loans and/or higher interest rates. Unlike for motor and travel insurance, price information is less readily available. The relationship between age and credit scores (and risk) is further examined in section 4.2.

A potential borrower's age may be used not only in credit scoring, but also in lenders' policies regarding availability of a loan. That is, age limits may apply depending on the loan product specification and the lender's commercial and strategic approach. For example, certain loans are only available to young people or students. Based on information from large UK lenders, there are typically no minimum age limits (other than 18) nor upper age limits for unsecured personal loans. While providing personal loans to all ages, the loan terms may change or certain loan products may not be available—eg, the duration of the loans available may be reduced for people above a certain age.

Although not directly limiting supply on the basis of age, some lenders may request additional data and perform further assessments if a loan applicant's age is above or below certain limits (eg, below 25 or above 65), or if their credit score is below the 'automatic' approval threshold but above some lower bound. For example, lenders may examine additional income data in order to assess the affordability of a loan, as well as to comply with responsible lending obligations.

Thus, the use of age and of age limits in personal loan provision varies across lenders; however, in general, age limits are not formally applied, although the age of an applicant may 'trigger' further assessment, or only loans of shorter duration may be available to people

above a certain age, in order to comply with responsible lending practice or a provider's loan policy.

Overall, compared with motor and travel insurance, age is generally considered less important for loan offer and pricing decisions. Where age is seen as most important (other than to enforce that no loans are given to minors), is for identification and verification purposes—ie, data on the date of birth is critical in the loan application process to identify the individual and verify the information provided. Age can also serve as a simple trigger to examine additional (eg, income) data and to check affordability before granting the loan, in line with responsible lending obligations.

4.2   Relationship between risk, prices and age

The following presents evidence on one key area of contention in the policy debate—namely, whether age-related differences in product pricing can be justified. Here 'justified' is defined as consistent with differences in the risk (or costs) of provision across age groups. For example, according to a survey by Age Concern, around 5% of older customers perceive that they are being 'overcharged' for motor insurance due to their age, with the percentage rising to 15% in the case of travel insurance (Age Concern 2008).

Yet the higher prices paid by some age groups (which in the case of motor insurance includes the young as much as, or even more than, older people) may simply be a reflection of an efficiently functioning market—ie, higher prices are the result of the higher risk or cost of providing insurance cover or personal loan to certain age groups.

The analysis has been structured to look first at data on risk and prices by age (section 4.2.1). It proceeds to a more direct assessment, using new data from providers and aggregate data to test the hypothesis that certain age groups are being 'overcharged'—in particular, the question asked is whether there is a systematic bias in the profits being earned on products sold to old-age groups (section 4.2.2).

4.2.1   Analysis of risk and prices by age group
Aggregate data is available from the ABI and other sources on the frequency and value of claims for travel and motor insurance across age groups, but there is little direct evidence available on how the claims cost links to product pricing.

The following uses aggregate claims data and links it to the price information gathered as part of this study (and summarised in section 4.1 above). While subject to limitations, the analysis helps to illustrate the one-way relationships between age, risk and price. Furthermore, data available from individual insurance providers is analysed.

For personal loans, the analysis focuses on the assessment of the one-way relationship between age, risk and credit score, based on data provided by Experian for the purpose of this study.

Motor insurance
For motor insurance, extensive research has been undertaken on the way driving behaviour and ability and accidents are influenced by age. Young drivers' lack of driving experience as well as greater risk-taking behaviour can lead to the accident rate in this age cohort being significantly above that of the general driving population. As for older drivers, there is evidence documenting declines in cognitive abilities, reaction speed, eyesight and hearing with age, and increased use of medication—all these factors determine driving ability.[22]

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[22] An overview of evidence on age-related deterioration of abilities affecting driving is provided in Kelly and Nielson (2006), pp. 212–32. For example, evidence shows a decline in visual acuity and narrowing visual field with age, which leads to a reduction in time available to react to visual information. Furthermore, older people have a significantly decreased ability to divide attention in comparison to younger adults, which impairs their driving ability since many driving situations require divided

Insofar as age is correlated with characteristics determining driving ability and behaviour (ie, the functional age, as introduced in section 2), it may be indirectly causal to the higher risk; however, the relationship is not a simple one.

Consistent with these results, road casualty statistics indicate that young and older drivers are in the highest risk category. Figure 4.6 shows ABI statistics on road casualties: it report that drivers over 70 were at least 72% more likely to be killed or seriously injured in a road accident than 60–69-year olds; and the likelihood is even higher for drivers aged 17–29—this leads to the well-documented result of a U-shaped curve when risk is plotted against age.

Figure 4.6   Drivers killed or seriously injured, by age
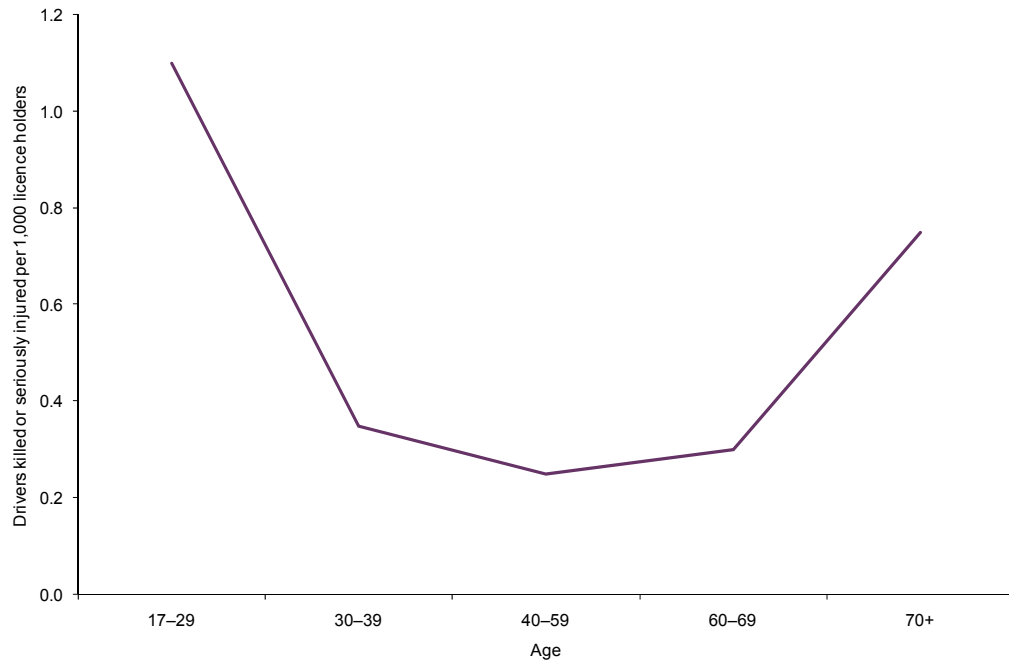
Source: ABI (2009b), Chart 3

The average cost of claims also tends to follow a U-shaped pattern, as younger and older customers tend to make higher claims.[23] This is illustrated in Figure 4.7 (top-left graph), which shows the average cost of claims based on aggregate ABI market data for private motor vehicle insurance in 2005—the average claims cost of 56–60-year olds was £1,174 (the age group with the lowest average cost per claim), whereas it was 2.5 times higher for those aged 80 or more and 3 times higher for the 17–18-year olds.

In addition to the average claims cost, Figure 4.7 (top-right graph) shows the frequency of claims by age group, using the same ABI data on private motor vehicle insurance in 2005. The data shows that claims frequency declines with age. However, this is largely because the data picks up the simple, one-way relationship between age and risk—if other factors were controlled for in this data (eg, mileage), the pattern would again be more U-shaped (eg, since mileage tends to be lower for older drivers).[24]

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attention. The increased use of medication with age is another factor linked to deteriorating driving ability and increased number of crashes.

[23] Increased frequency of fatal crashes for young and old drivers is likely to be one of the key reasons why the average value of claims increases for these age groups. For example, with reference to a USA study, Brown et al. (2007, pp. 103–114) report that 'with the exception of driver death rates among drivers 75 and older, teenage drivers posed the highest risks of death and non-fatal injury to themselves, their passengers, occupants of other passenger vehicles, and non-occupants'. See Brown et al. (2007) pp.103–114.

[24] Data provided by individual insurers (not disclosed) shows that older people tend to have lower mileages, drive lower-powered cars, and have owned their cars for longer. It also shows that the relationship between age and claims frequency, after controlling for mileage and other factors, tends to follow a U-shaped pattern.

Figure 4.7 also plots insurance price information (the bottom graph). The graph reports the median motor insurance quotes obtained from the websites (as also shown in section 4.1 above).

Figure 4.7   Motor insurance claims cost, frequency and price, by age group

Average cost per claim (£)

Frequency (claims per vehicle-years)

Median quote (comprehensive cover)
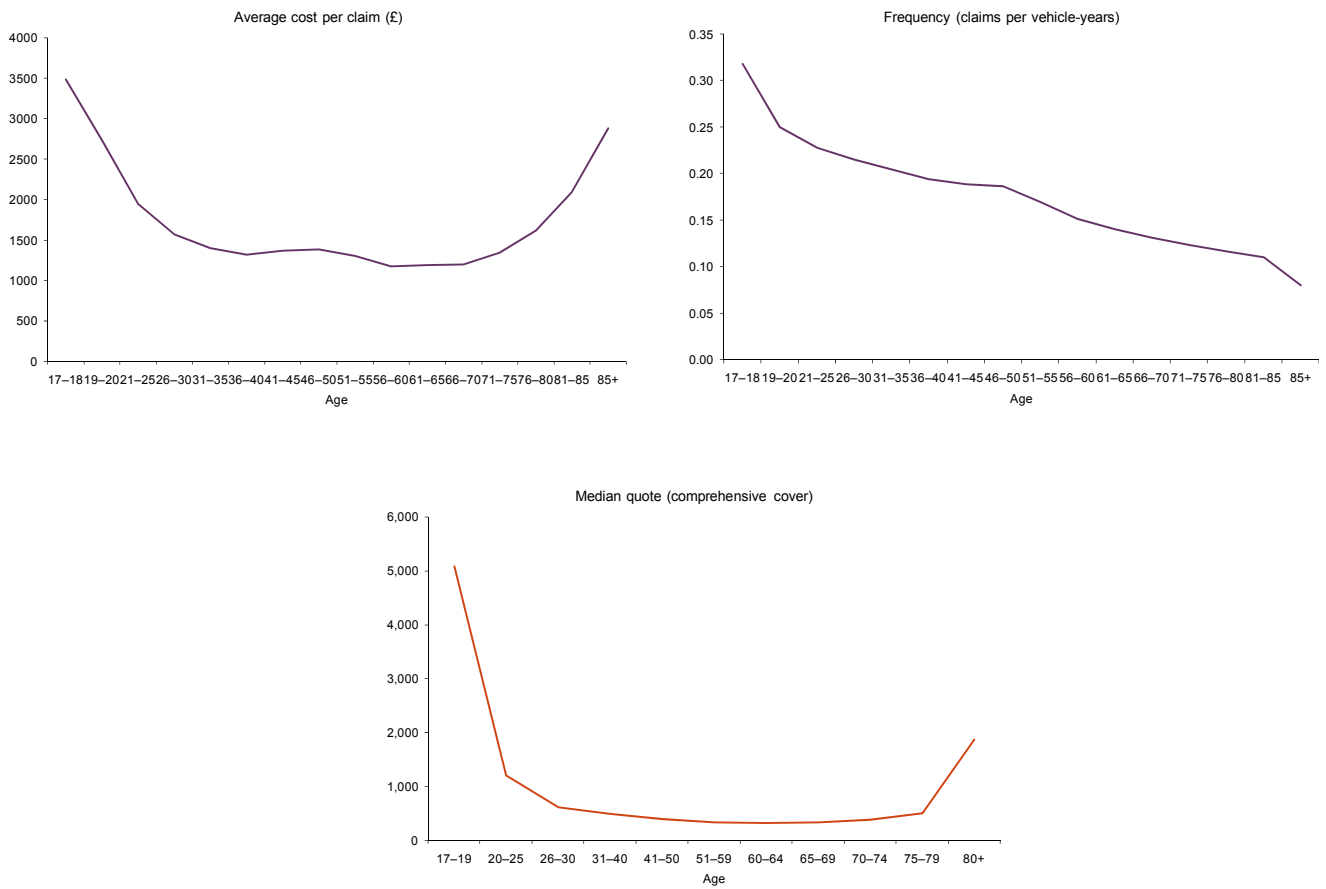
Note: The average cost per claim and frequency of claims is based on ABI aggregate market data for private motor vehicle insurance in 2005. The median price quote data corresponds to the price data shown in section 4.1.
Source: Oxera analysis of ABI data and price quotes obtained from websites.

The price information is not directly comparable with the data on the cost and frequency of claims. Nonetheless, the evidence presented in Figure 4.7 is consistent with risk-reflective pricing at an aggregate level, since price patterns vary with age in a similar manner to the claims pattern—in particular, the highest premiums are paid by young drivers who have the highest claims frequency and higher than average claims costs.

Travel insurance
Figure 4.8 plots data to show differences in the claims frequency, claims costs and prices across age groups, using different sources of data.

As regards frequency, the first graph shows the *relative* likelihood of making travel insurance claims for different age groups, using ABI aggregate market data in 2007 (top-left graph in Figure 4.8). The data confirms that the likelihood increases exponentially with age—eg, the group of 75-year olds is around four times more likely to make a travel insurance claim than the 35-year olds, and the 85-year olds are over eight times more likely to make a claim.

An increased frequency of travel insurance claims for older people is confirmed by data from a large travel insurance provider, based on single-trip policies written under its major travel insurance scheme in the three years 2006, 2007 and 2008 (top-right graph in Figure 4.8).[25]

Figure 4.8 also shows the average claims costs incurred by the insurer in the same scheme in the three years (bottom-left graph). Average claims costs increase with age— ie, older people are not only more likely to make an insurance claim, but they also tend to make claims that are more costly for the insurer.

Finally, Figure 4.8 (bottom-right graph) plots the median travel insurance quotes obtained from websites for three types of travel insurance policy (using the data described in section 4.1). It shows that, in line with the greater frequency and higher cost, quoted premiums increase with age.

Figure 4.8   Relative likelihood of travel insurance claim, average claims cost and frequency, and travel insurance quotes, by age group
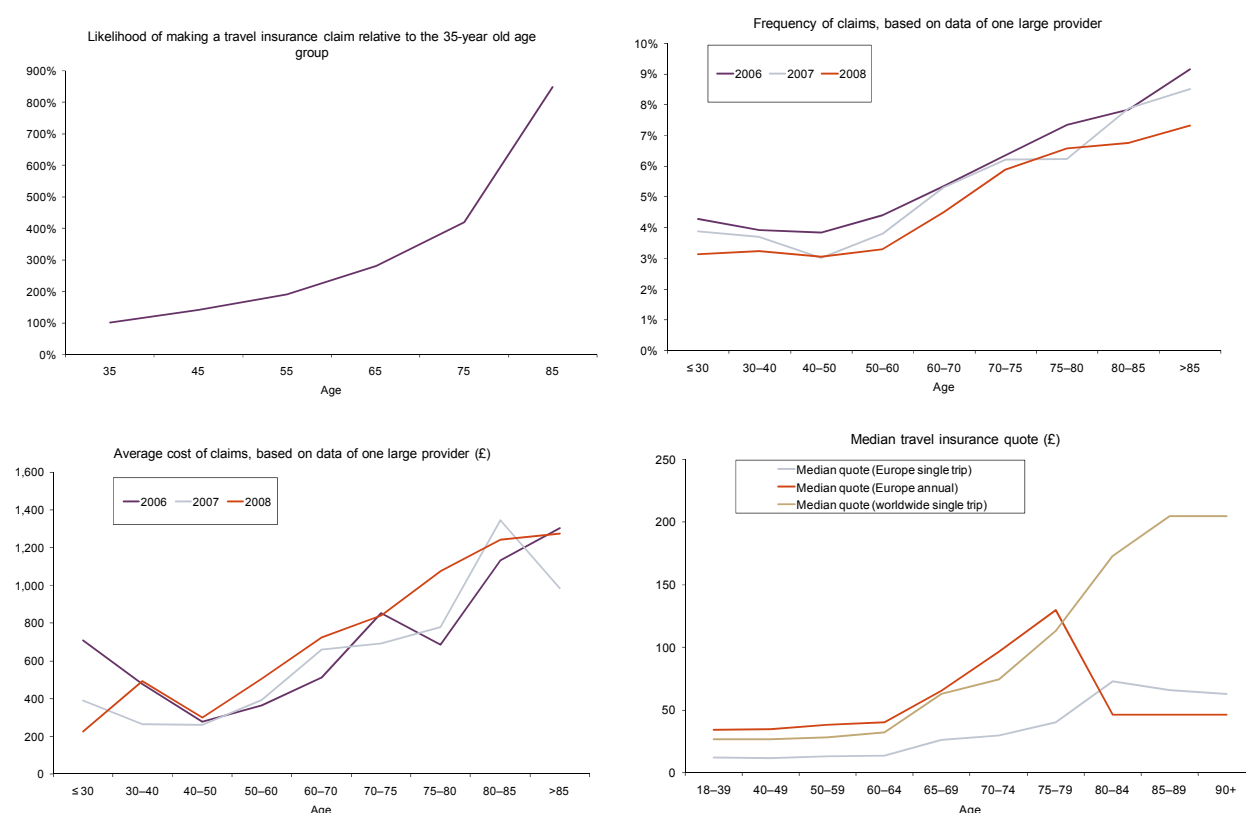
Note: Relative likelihood of making a travel insurance claim is based on ABI data collected in 2007. Average claims cost and frequency data are based on data from a large travel insurance provider, and relate to single-trip policy data for one of the insurer's major schemes in 2006, 2007 and 2008. Median quotes for different travel policies are based on websites; the drop in single-trip premiums above the age of 80 is due to the change in the sample of insurers that provide a quote for those age groups (see section 3 and note to Figure 4.3). Source: Oxera analysis of data from a travel insurance provider and of price quotes obtained from websites; ABI (2009b), Chart 1.

The pattern of an increasing claims frequency and cost with age is confirmed by the data obtained from another travel insurance provider, shown in Figure 4.9. The data refers to policies sold under a large travel insurance scheme during a one-year period (2007/08).[26] For

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[25] This data shows the frequency in absolute terms (rather than the relative frequency reported in the top-left graph using aggregate data).
[26] In this particular scheme, less than 2% of policies are for customers (lead policyholders) aged above 70. The proportion of older insured is significantly smaller than in the scheme reported in Figure 4.8 (and Figure 4.10 below).

example, the average claims cost for the youngest age group is just over £500, whereas it is nearly twofold (£986) for the 60–64 age group, and more than five times larger (£,2560) for the oldest age group (see top-right chart).

Figure 4.9   Travel insurance claims frequency and severity by age group
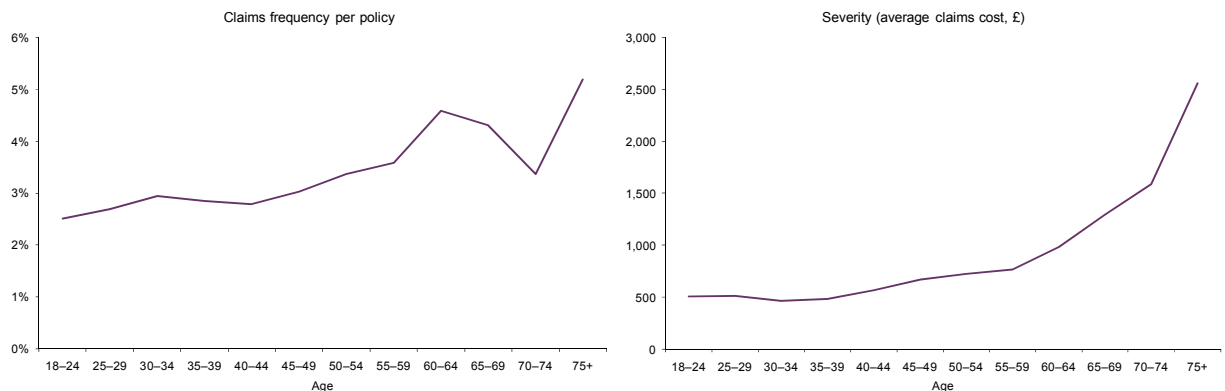
Note: Based on large sample of both single-trip and
annual travel insurance policies sold by the insurer during June 2007 to May 2008.
Source: Data provided to Oxera by a travel insurer.

Figure 4.10 splits the average claims cost and frequency into medical and non-medical claims, based on single-trip data for the travel insurance scheme of a large travel insurance provider. [27] The data illustrates two issues highlighted by providers during interviews:

– medical claims costs represent the majority of travel insurance claims cost, and are significantly higher for older people.
– the frequency of medical travel insurance claims increases with age.

The result is significantly larger travel insurance claims costs for older people. Age is strongly correlated with health and the risk of making a more expensive medical claim.

While the data reported so far has been separate for average claims cost and claims frequency by age group, the bottom graph in Figure 4.10 combines the two data series to report the 'expected' average claims cost by age group. Here, the average cost of a claim has been multiplied by the frequency to obtain an estimate of the 'expected' average claims cost per policy in each age group. The expected average medical claims cost per policy rises particularly sharply with age (eg, from less than £3 in the group of policyholders under 30 to £69 for the group of those aged 85 and over), but even the expected average non-medical claims costs per policy tend to be higher for older people (eg, £24 for those aged over 85 compared with £4 for those under 30).[28]

These higher claims costs explain the higher premiums paid by older people for travel insurance. As directly evidenced in the data analysis shown in section 4.2.2 below, there is no evidence of overcharging of older people—in fact, prices for older people do not appear to increase as fast as the (expected) claims cost would suggest.

[27] The data refers to the same insurance scheme as the one reported in Figure 4.8 (but shows 2008 data only). In this scheme, about 30% of net premiums earned on single trip policies in 2008 are for the 70+ age group.
[28] In this sample, considering medical and non-medical claims combined, the expected average cost for those aged over 85 is 13 times larger (£93) than for those aged under 30 (£7), and nearly six times larger than for 50–60-year olds (£17).

Figure 4.10 Frequency and (expected) average claims cost by type: medical and non-medical claims in travel insurance (2008)
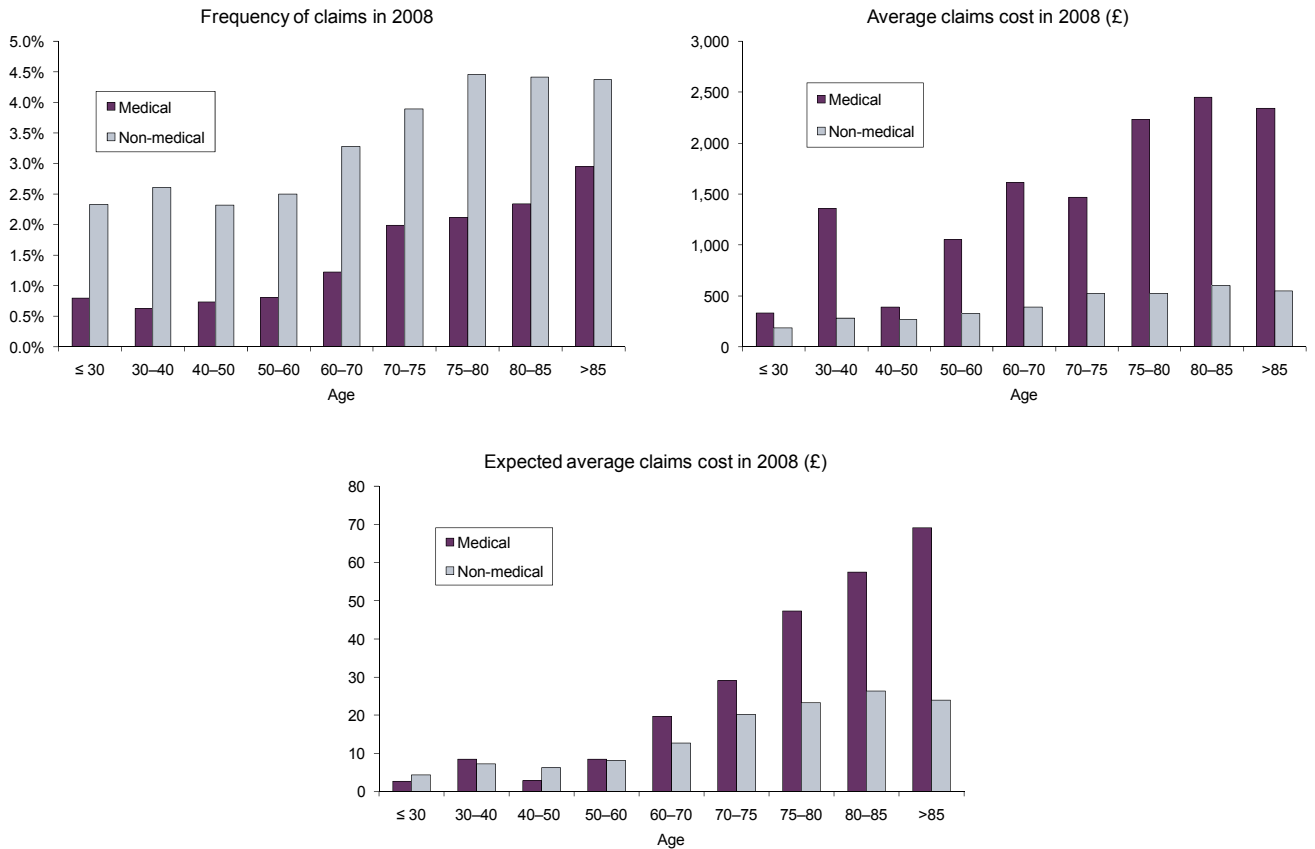
Notes: The bottom graph shows the 'expected' average claims cost obtained by multiplying the average cost of claims made by the frequency of the claims occurring in each age group.
Source: Oxera analysis based on data from a travel insurance provider.

Personal loans

Lack of data makes a similar illustration of the relationship between risk and the pricing of personal loans for different age groups more difficult. Nonetheless, evidence is available to show that age is related to default risk, which in turn affects lending decisions. For example, some useful evidence is contained in the Experts' Working Group report based on data from 'a major lender':

– for the 18–25-age group, the predicted rate of bad loans is 4.7% (compared with the overall average of 3.6%), and the loan offer rate is 38.8%;

– for those aged 60 or more, the predicted rate of bad loans is only 0.4%, and the loan offer rate is 97.7% (HMT 2008, p. 55).

This indicates that loan offer rates are reflective of risk, and that risk differs across age groups. Furthermore, it is the younger, rather than the older customers, which are higher-risk and therefore have lower loan offer rates.

Further and more detailed evidence on the relationship between age, risk and credit score (which feeds into lenders' loan decisions) is available from data analysis provided by Experian for the purpose of this study. The analysis is based on credit-score data for a sample of the credit-active population.[29] While the analysis does not capture the loan

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[29] The data sample does not include any shared data, which is the payment performance data hosted by Experian (and by the other credit reference agencies) on behalf of financial institutions and cannot be disclosed. The sample selection and analysis presented are not affected by the exclusion of shared data.

decisions ultimately made by the lender, the results support the correlation between age, risk and credit score.

Figure 4.11 shows how default risk (as measured by the bad rate[30]) varies with age. There is a distinctly negative (one-way) relationship between age and the bad rate, indicating that younger customers have the highest risk, and older customers have the lowest risk.[31]

Figure 4.11 Bad rate (%) by age group
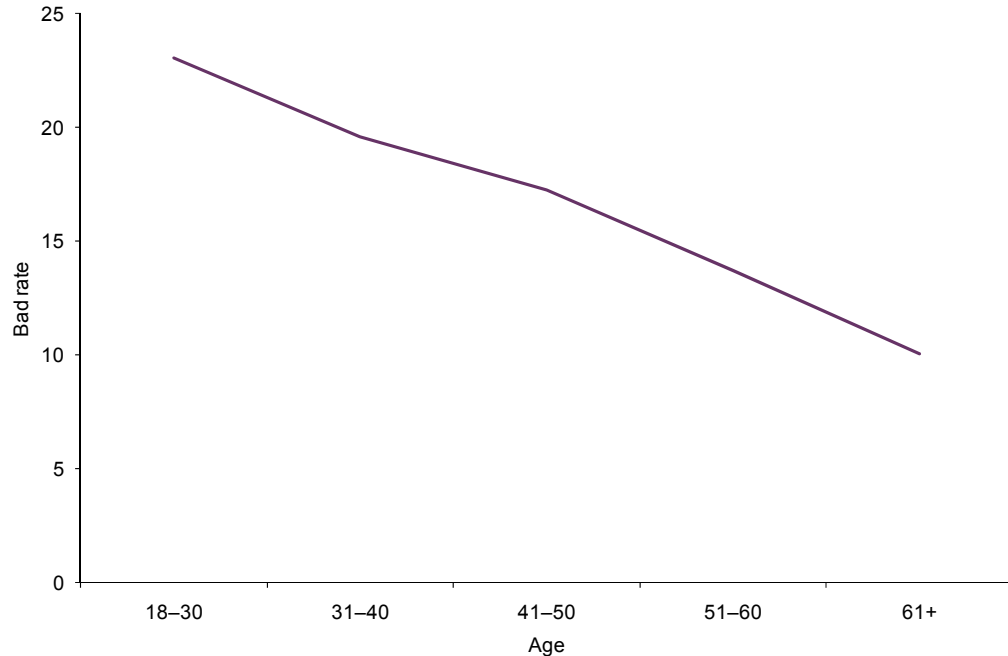
Note: Bad rate is measured as the proportion of accounts that have defaulted in the outcome period or have been three or more payments in arrears during the outcome period or are heavily 'over-indebted' at the outcome point.
Source: Data provided by Experian.

Figure 4.12 below shows the distribution of credit score by age, based on a generic credit-scoring model of Experian. For each age band, the proportion of the sample with a given credit score is shown, with the colour changing from dark to lighter as the score increases. These results show that younger people tend to have lower credit scores, whereas older people tend to have higher scores—29% of 18–30-year olds are in the lowest score band (low–700), compared with only 12% of those aged 61 or more, and only 12% of the youngest age group are in the highest score band (926–high), compared with 37% of the oldest age group.

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[30] Measured as the proportion of 'bad' accounts in the total number of accounts analysed. A 'bad' account is an account that has defaulted in the outcome period or where there have been three or more payments in arrears during the outcome period, or which is heavily 'over-indebted' at the outcome period. Thus, this relates to different types of credit, not only personal loans.
[31] The analysis shows the one-way relationship with age and does not control for other variables that influence the bad rate.

Figure 4.12 Distribution of credit score by age
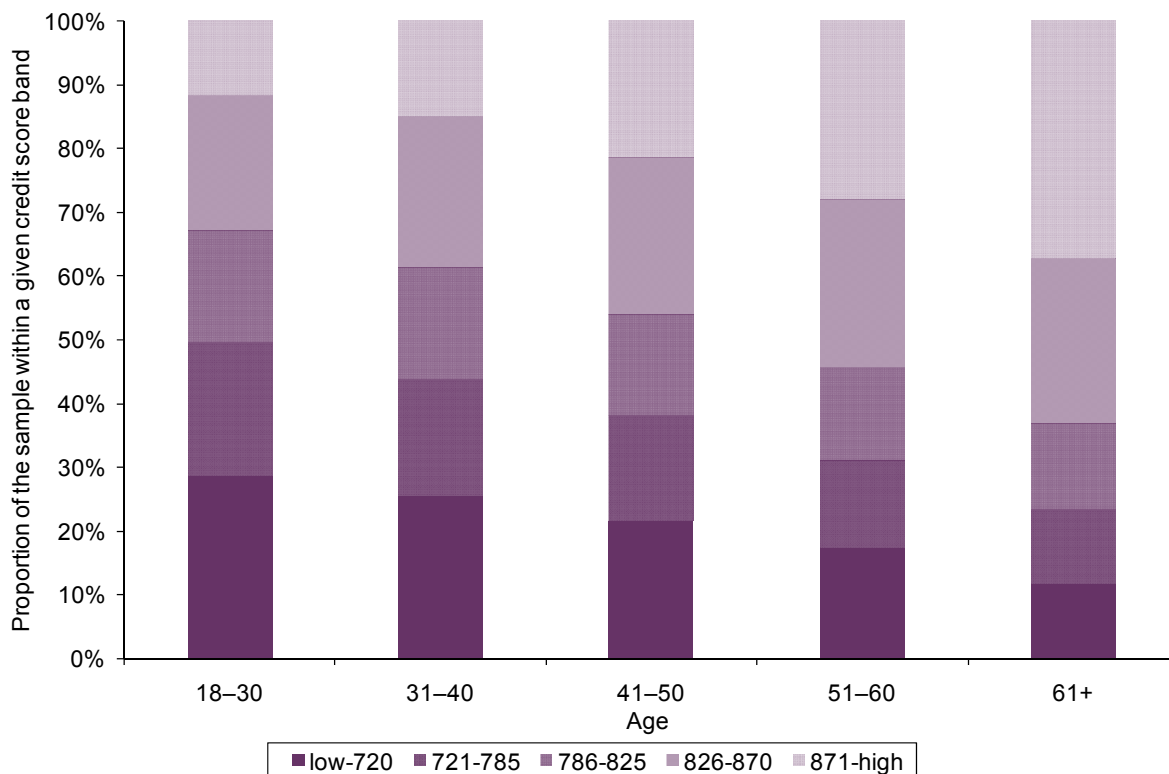
Source: Data provided by Experian.

The results present the one-way relationship between age and credit scores. As noted above, they do not provide any direct evidence on lenders' credit decisions.

Nonetheless, the available evidence is consistent with age being correlated with both default rates and the credit scores that are used in lending decisions. It shows that it is younger rather than the older customers who are of higher risk and have worse credit scores. Consequently, loan pricing and availability are likely to be more problematic (if at all) from the perspective of younger people rather than older people.

4.2.2   **Evidence based on loss ratios in insurance**
If particular age groups were systematically being overcharged by providers, this would show in the profits earned on products sold to different age groups. In insurance, one simple indicator of profitability is the loss ratio which measures claims costs relative to insurance premiums. If examined across age groups, loss ratios can provide direct evidence on whether some age groups are consistently being overcharged compared with others (ie, whether premiums exceed the claims costs and result in profit levels that are high compared to other age groups).

Loss ratio analysis for travel and motor insurance is reported below, showing a simple one-way relationship between age and loss ratios (ie, not controlling for other factors). If a loss ratio for an age group is systematically below (above) that of other age groups, this could be interpreted as evidence of overcharging (undercharging) of that group given its risk compared with other age groups. On the other hand, if loss ratios are similar across age groups, this indicates that premiums are set in proportion to claims costs across age groups.

Loss ratios do not apply in the personal loans market, and no profit analysis is presented. More generally, the relationship between age, risk and price is also more difficult because of the two-stage approach where age first feeds into the credit score and the credit score then influences lending and pricing decisions. Nonetheless, the analysis presented in section 4.2.1 is indicative of risk-based pricing as it shows that credit scores tend to be consistent with default risk (or 'bad' loan rates), and that these vary across age groups.

Motor insurance

Aggregate motor insurance data is available from the ABI on the total gross written premiums and total claims costs for different age groups in the underwriting year 2005. Figure 4.13 shows the aggregate loss ratio calculated on the basis of this data.

Figure 4.13 Loss ratios calculated from aggregate private motor vehicle insurance data, by age group (2005)
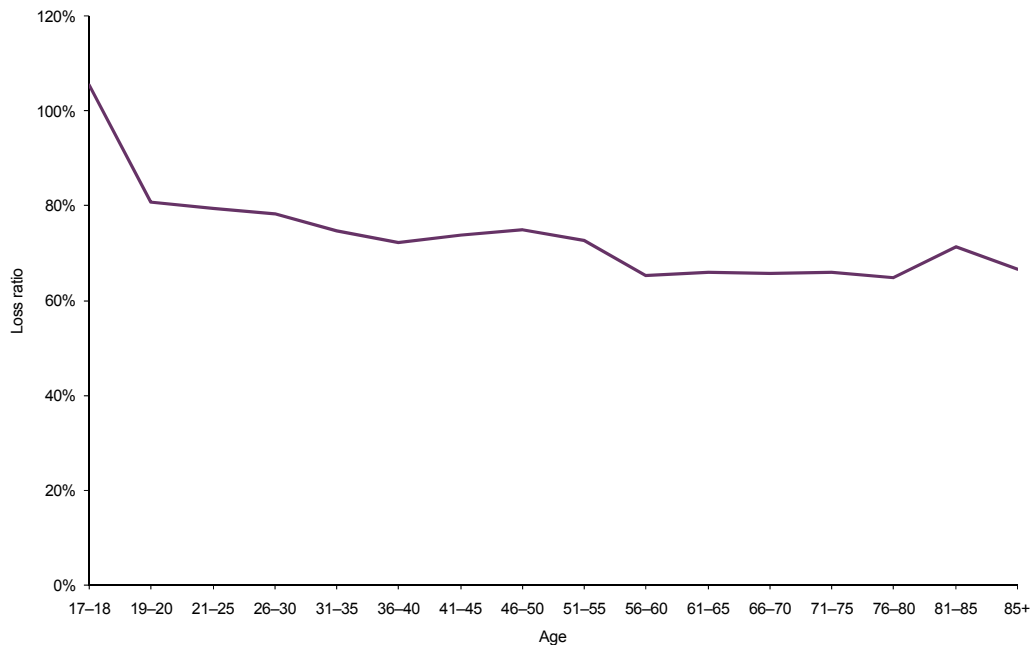
Notes: Loss ratio calculated by dividing total claims costs by total gross written premiums for each age group. Data refers to underwriting year 2005 and captures more than 90% of the market.
Source: Oxera analysis based on ABI data.

Loss ratios are similar across age groups, except for younger drivers. In particular, the loss ratio for the 17–18-age group exceeds 100%—ie, claims costs exceed the premiums earned on the policies sold to this group. But with the exception of this 'undercharging' of the youngest drivers, there is little evidence of a systematic bias in pricing against (or in favour of) certain age groups. For example, the loss ratios vary between 65% and 75% irrespective of whether the two age groups of 31–40-year olds are considered (4.8m policies are included in the data) or the 51–60-year olds (4.3m policies) or indeed the 81+ year olds (0.4m policies).

There is some variation across age groups, but this can partly be explained by the nature of the data. In particular, claims costs include a random element, so there will always be variability (also between underwriting years). Moreover, the simple one-way analysis does not pick up other risk characteristics that may be correlated with age, such as mileage and type of car.

Even if the loss ratios for older age groups were somewhat lower than for younger age groups, this would still not imply that higher profits are being earned on policies sold to those age groups. Rather, there are differences in transaction costs associated with different age groups. In particular, to the extent that distribution costs are higher for older people (eg, because they tend to make less use of cheaper Internet distribution or because the telephone call to process the application may take longer), this would increase the costs of providing the insurance over and above the claims costs that are picked up by the loss ratio.

Overall, the aggregate data is not consistent with a systematic overcharging of older drivers. If there is a bias in the pricing, this works in favour of the youngest drivers. In general, the

similar loss ratios suggest that premiums earned vary in proportion to claims costs across age groups—ie, pricing is risk-reflective.

Additional data was provided by a sample of individual motor insurance companies (and made available to Oxera via actuarial consultancy firm, EMB). While the aggregate loss ratios in Figure 4.13 above are calculated from ABI data that captures more than 90% of the market in underwriting year 2005, the additional data is more recent but applies to a smaller sample (albeit one representing more than 25% of the private motor vehicle insurance market in terms of premiums).

Figure 4.14 shows the (sample average) loss ratios by age group, calculated by dividing the estimated incurred claims occurring in 2006 and 2007 by the associated (gross) earned premiums.

Figure 4.14 Average incurred loss ratios for a sample of motor insurers, by age group, 2006 and 2007
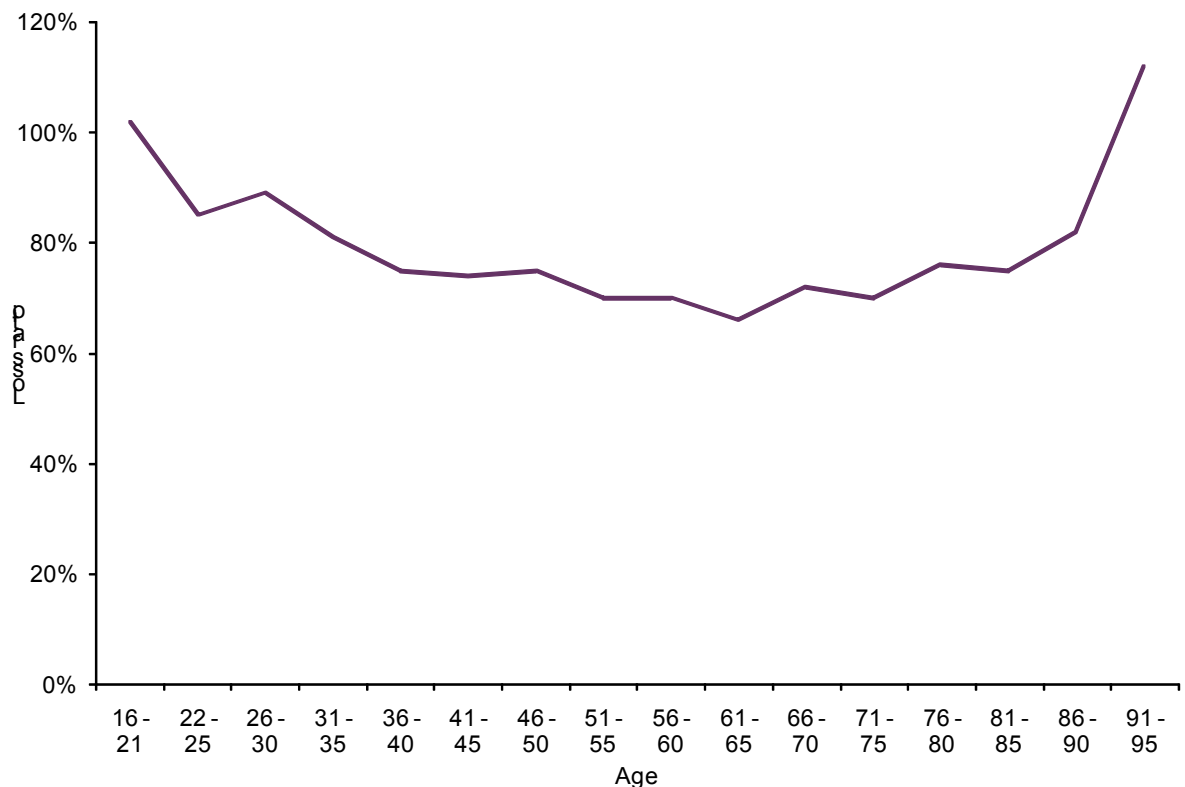
Notes: The loss ratio is calculated by dividing estimated incurred claims occurring in 2006 and 2007 by the associated earned premium (gross of reinsurance) during 2006 and 2007. The reported data is the average for a sample that represents more than 25% of the private motor vehicle insurance market.
Source: Provided via EMB by a sample of motor insurers.

As the loss ratios apply to a smaller sample of providers and a different time period, they are not directly comparable. Nonetheless, the results confirm loss ratios in the 65–75% range for most age groups, with the ratios being higher for the young and, in this sample, the very old. In the sample the loss ratios increase significantly in the two oldest age groups. In particular, unlike in the aggregate data (where all drivers aged 85 or over are grouped together), the loss ratio for the 90+ age group (disclosed as a separate group) is highest of all—on average, it exceeds well over 100%. This indicates that the (very small) group of oldest drivers pay premiums that tend to fall short of the claims cost incurred by this group.

More generally, Figure 4.14 shows that, in this motor insurance sample, compared with the other age groups the premiums for the two 'higher-risk' age groups do not increase enough to meet the higher claims costs. For younger and older drivers, there is evidence of

'undercharging' compared with other age groups. Put differently, if there is a bias in pricing (or a cross-subsidy) between age groups, this works in favour of the higher-risk age groups, in this case including both the youngest and oldest age groups. The price pattern is not necessarily the result of deliberate undercharging, but because the higher risks are more difficult to price. Overall, there is certainly no evidence of systematic 'overcharging' of older drivers.

Travel insurance

Loss ratio data provided by a travel insurer for one of its major travel schemes that covers different age groups is shown in Figure 4.15 (for single-trip policies).

Figure 4.15 Loss ratios by age group for single-trip travel insurance policies
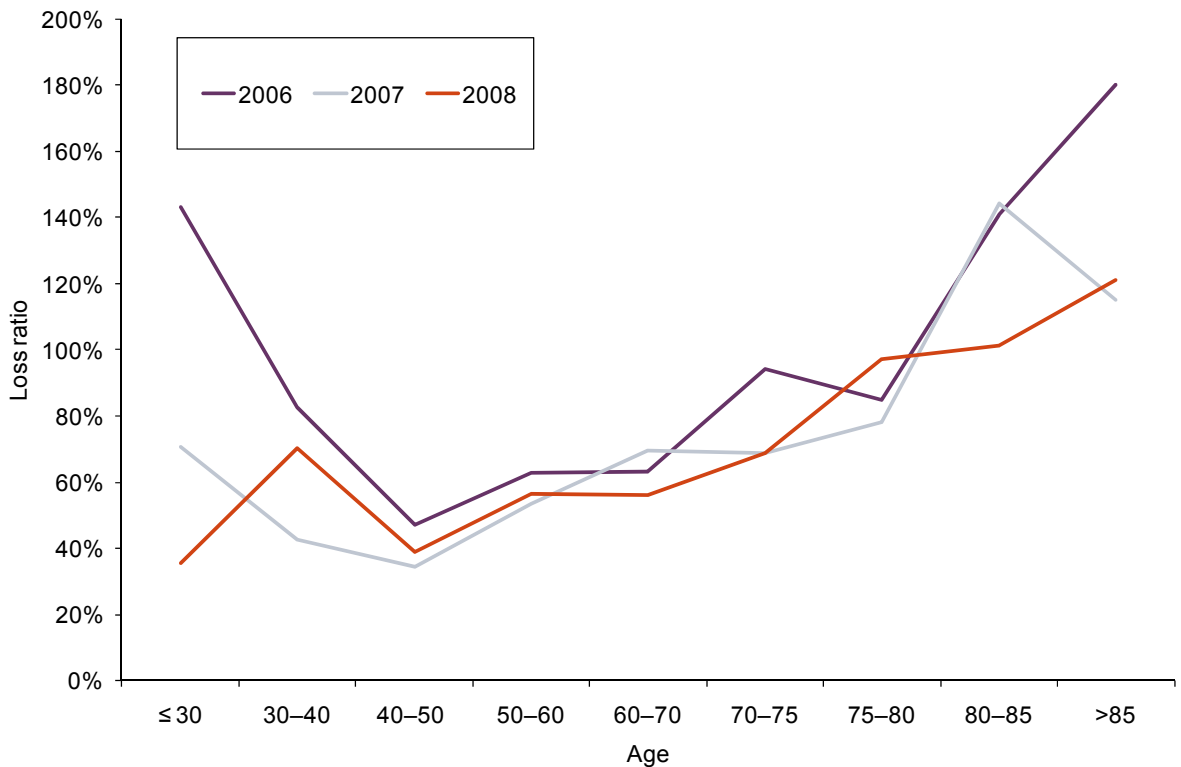
Note: The data refers to a major travel insurance scheme of one provider. It includes all single-trip policies covering pre-existing medical conditions and associated premiums, but excludes some family policies.
Source: Oxera analysis based on data from a travel insurance provider.

While there is some variation across years, there is a pattern of increasing loss ratios with age, with loss ratios in excess of 100% for those aged 80 or more. Put differently, although higher premiums are charged for this age group of customers, the premiums are not high enough to cover the claims cost in the group.

As explained by the insurer, the higher loss ratios for older people are mainly due to the high level of uncertainty around the claims cost of older people and the medical risks involved. Furthermore, customer groups aged over 80 represent a relatively small sample of the policies written under the scheme, making it more difficult for the insurer to underwrite in line with risks.[32]

Loss ratios from a travel insurance scheme of another provider are shown in Figure 4.16. The analysis is based on policies (both single-trip and annual) sold under the scheme during June 2007 and May 2008.

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[32] In terms of 2008 net earned premiums, the total 70+ age group makes up about 30% of this scheme, with the 80–85 group (85+ group) making up 5% (2%).

Figure 4.16 Loss ratios by age group for single-trip and annual travel insurance policies
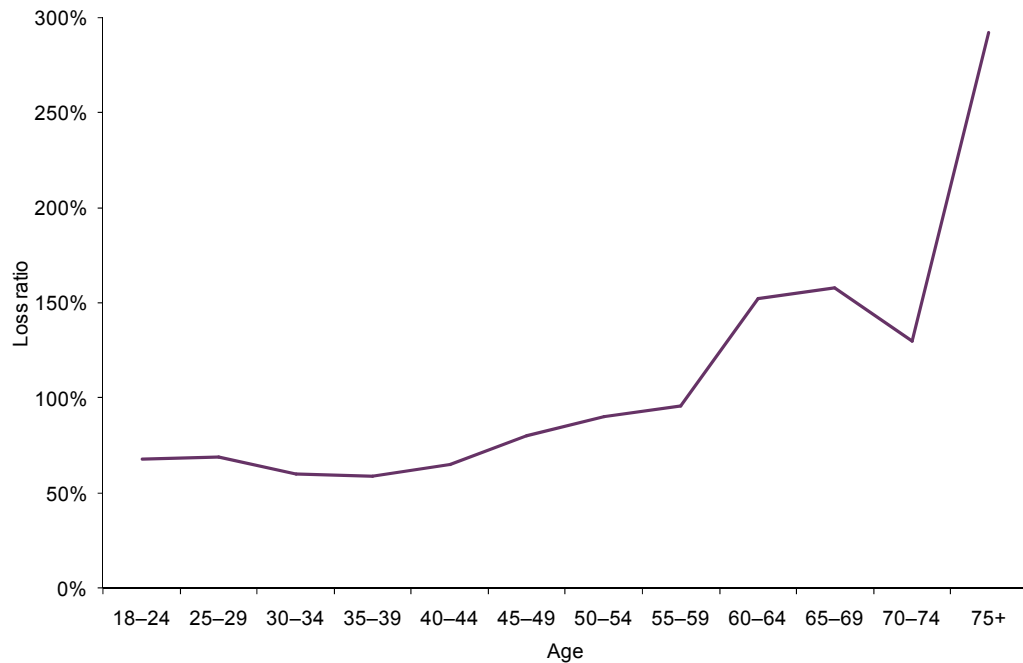
Note: The analysis covers policies sold during June 2007 and May 2008.
Source: Data provided by a travel insurance provider.

The results again show that loss ratios increase across the age groups covered by the insurance scheme, with the older age groups showing loss ratios in excess of 100%. According to the insurer, although older customers are not charged enough for the costs they impose, this particular scheme works overall because the group of older customers is relatively small (less than 2% of policies under the scheme are for customers over 70, and less than 25% are for those over 50) and the losses are covered by the premiums earned on the many younger customers who are, as a group, profitable.

Overall, based on this data and consistent with interviews conducted with other providers, there is no evidence of systematic overcharging of older people in travel insurance. To the contrary, there is evidence that the premium levels may not always be sufficient to cover the greater claims costs in the age group (and the higher uncertainty around those claims). Note that this is before taking into account other costs (eg, distribution) that need to be covered by the premiums and that tend to be higher for older customers. Put differently, in the insurance schemes for which data was available, there is evidence of undercharging of the group of older customers compared with the other age groups—ie, the data suggests that if there is a pricing bias (or cross-subsidy), it works in favour of the older age groups.

4.3   Removal of age from pricing models, or use of alternative factors

The importance of age as a risk factor can be further illustrated by examining what would happen if age were completely removed from existing risk models and pricing strategies. Although the complete removal of age is not one of the policy options considered (see section 5), such an exercise serves as a useful benchmark for assessing the importance of age and the impact of policy options that restrict the use of age as a risk factor.

The removal of age from risk-assessment models not only has the direct effect of removal of a significant explanatory variable, but the predictive power of other variables, with which age may be combined to improve risk assessment, is undermined. For example, in motor insurance, age in combination with the type of car may be a significant factor (eg, the risk associated with a high-performance car is very different for a 20-year old and a 50-year old).

In this case, the removal of age from the model reduces the ability to predict and price risks, because the age variable is removed and because the predictive power of the 'type of car' variable is weakened.

4.3.1 Removal of age from pricing models

Based on the academic literature, interviews with providers and other evidence, the removal of age as a rating factor that helps to predict risk will have negative implications for the efficiency of pricing and competitive dynamics (see section 2 and Appendix 1).

Moreover, removing age means that prices will become more similar across age groups. This implies redistribution effects between age groups—ie, some age groups would benefit, whereas others would be worse-off.

The following presents the results of motor insurance data analysis to illustrate these redistributive effects if age is removed from the pricing models (Figures 4.17 and 4.18). Some results on the impact of removing age from credit-scoring models are also considered.

Motor insurance

The GIRO working party examined the effect of removing the age variable from risk models as well as removing any multi-way interaction effects between driver age and other factors (GIRO 2007/08). The implied effect on premiums was determined by comparing the results from the models including and excluding age and the age interaction terms. Data from several major insurers was analysed for this purpose, and the results were aggregated.

Figure 4.17 shows the average percentage change in motor insurance premiums faced by different age groups resulting from the removal of the age variable from the claims models. There are clear redistributive effects between age groups, since drivers aged 41–75 would face increases in premiums of up to 24%, whereas those aged 40 or under and those aged 76 or over would see their premiums fall by up to 20%.[33]

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[33] This evidence does not enable conclusions to be reached as to whether any age groups are currently being overcharged; however, if current prices are risk-based, it shows that drivers aged 41–75 would be overcharged if age were removed from this claims model. Similarly, assuming that prices are currently cost-reflective, the removal of age would imply that the young and old experience significant reductions in premiums, financed by increases in premiums for the middle age groups.

Figure 4.17 Percentage change in average risk premium if age is removed from motor insurance pricing models, by age
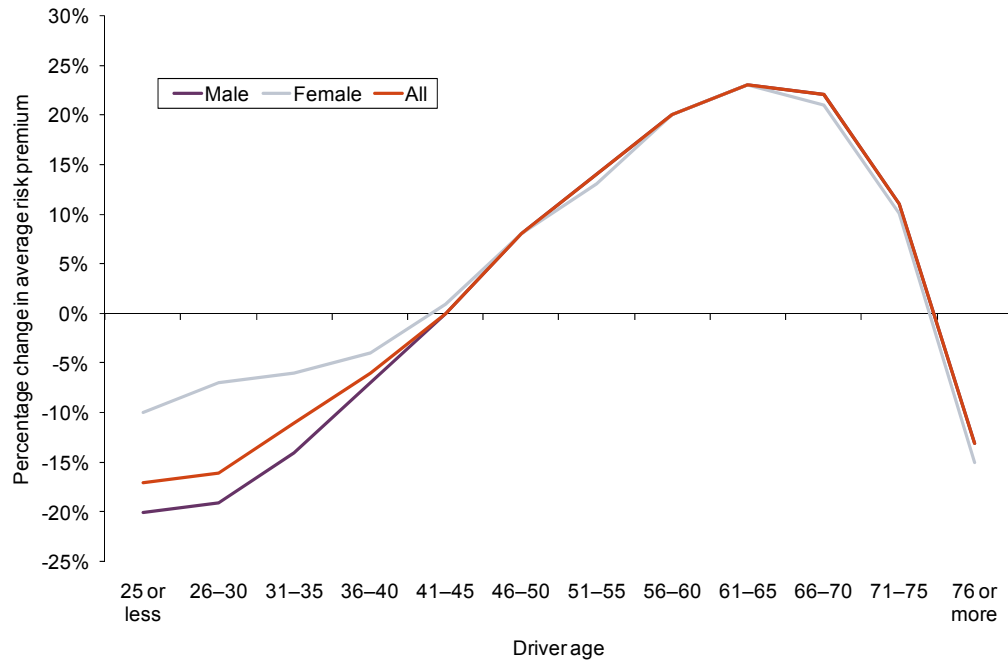
Source: Based on data from GIRO (2007/08), Graph 1.

Figure 4.18 illustrates the distribution of changes in premiums by driver age, as estimated by the GIRO Working Party. The chart shows the percentage of insured that would experience a given increase or decrease in premiums when age is excluded from the claims models, and shows the split by age (the colour changing from dark to lighter as age increases). This confirms that, overall, the policyholders who would see a decrease in premiums tend to be younger, and those who would experience an increase in premiums tend to be older.

Figure 4.18 Distribution of changes in average risk premium if age is removed from insurance pricing models
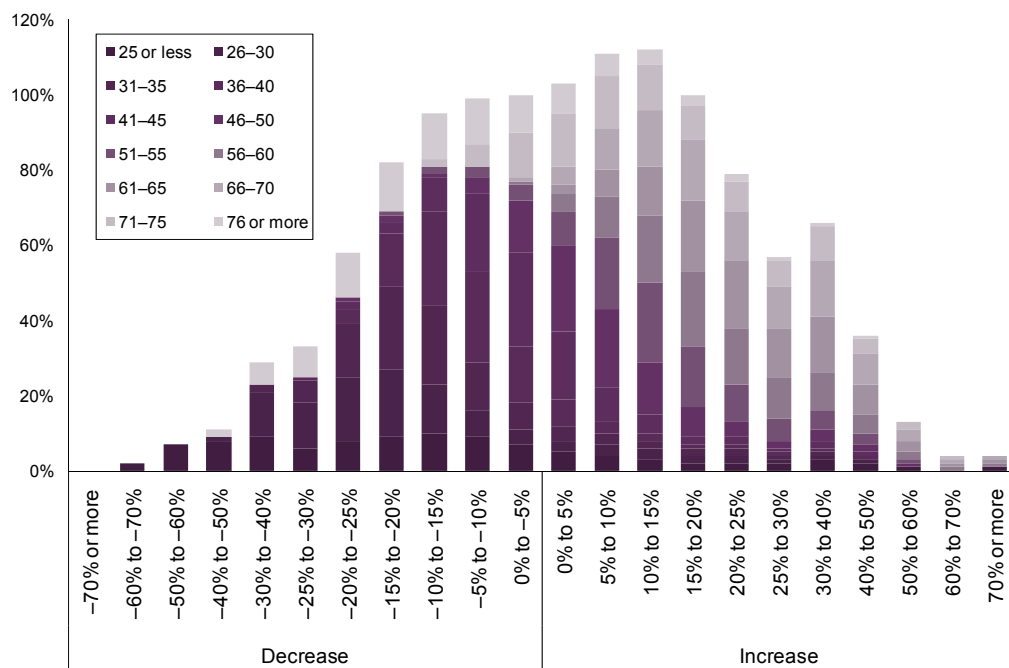
Source: Based on data from GIRO (2007/08), Graph 2.

In effect, this evidence demonstrates that, on average, if age is not used in the risk-classification and pricing models of motor insurers, the young drivers would be cross-subsidised by the older drivers. The GIRO Working Party also notes that this analysis assumes unchanged mix of business; however, changes in premiums are likely to lead to different behaviour by the insured, both in terms of uptake of insurance and, potentially, in terms of behaviour. In particular, it is likely that the proportion of younger people and hence road accidents and fatalities would increase as more younger people respond to decreased premiums by buying insurance and starting to drive (perhaps in more high-performance cars); this will have the effect of more risk in insurers' portfolios and exacerbated premiums for all age groups.

Loans

The Experts' Working Group contains results of the analysis of removing age from credit-scoring models, conducted by a major UK lender (HMT 2008, pp. 166–7). As this analysis shows, the removal of age has an adverse effect on providers' ability to assess an individual's ability to repay a loan. This is shown to result in either a reduction in the loan offer rate by 1.7% if the proportion of 'bad' loans is kept constant, or an increase in 'bad' loans by 0.1% if the loan offer rate is held constant.

The analysis also illustrates the effect on loan availability to the 18–25 age group ('the young') and those aged 60 or more ('the old'). If age were removed from the credit-scoring and decision models, the loan offer rate would increase by 2.3 percentage points for the young (ie, an additional 2.3% of the applicants in this age group would be offered loans), whereas the offer rate would decrease by 1.4 percentage points for the old. The lender notes that this needs to be interpreted in the context of the young having the highest predicted 'bad' loan rate (4.7%) and the old having the lowest rate (0.4%).

Analysis of credit score data provided by Experian for the purpose of this study confirms that a credit scorecard without age variable leads to overall higher credit scores in the younger age groups (which tend to have worse credit performance) and lower credit scores for the older age groups (which tend to have better credit performance).[34]

Therefore, removal of age from credit-scoring and loan decision models is likely to lead to a 'cross-subsidy' from the older customers to the younger customers, as was observed in motor insurance. Moreover, the effect of removing age as a risk factor can lead to worse outcomes overall (eg, either more 'bad' loans or fewer loans being offered). This conclusion is also supported by academic evidence from the USA.[35]

4.3.2 Use of alternative factors in risk classification

A related question is whether any alternative factors could be used instead of age for risk-classification purposes. For example, in motor insurance, number of years licensed could be used, since driving experience is likely to be indicative of driving ability. Both in motor and travel insurance medical screening or testing results could be used as indicators for driving ability (motor insurance) and the likelihood of medical claims (motor and travel insurance).

However, the use of characteristics other than age can be considered problematic for two main reasons.

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[34] In the analysis, Experian compared the scores by age group from two credit-scoring models—one without age variable (a generic scorecard used by Experian), and the same model but with age included as a risk-classification variable. The results showed that, although the difference in scorecard performance is not significant overall (because characteristics correlated with age are included in the model even if age is not, such as years on the electoral roll), including age in the scorecard results in a closer alignment of the score with bad rates.

[35] See, for example, Board of Governors of the Federal Reserve System (2007). The analysis in which considers how exclusion of age or age-correlated characteristics affects credit scores, when compared to credit-scoring models which do not allow use of age but may use age-correlated factors. The conclusion was that, in the absence of age or age-correlated factors, the young receive higher credit scores, whereas the older customers have lower credit scores. See also Appendix 1.

–   First, other characteristics may not be able to capture risk as well as age. For example, in motor insurance, number of years licensed captures the learning element, but does not capture driving ability as such—a 40-year old and a 80-year old, both holding a driving licence for 20 years, are likely to have very different driving ability (eg, reduced vision, reaction speed) and likelihood of large medical claims.

–   Second, the use of factors other than age may be significantly more costly to implement. Medical screening or testing is costly, especially given that those tests would need to be applied to consumers in all age groups. By comparison, (chronological) age is a readily available and easily verifiable indicator for everyone, and it proxies relatively well the functional age of individuals.

The use of alternative risk-classification characteristics has been examined in academic research, such as in Kelly and Nielson (2006) with respect to motor insurance pricing in the Canadian and US markets. Examples of two specific findings contained in their study include the following.

–   Using the number of years licensed, but not age, in risk-classification and pricing models is associated with higher injury rates and motor accidents, suggesting greater risk-taking behaviours when age is not used.

–   Use of driving record but not age is likely to lead to higher premiums for 25–65-year old drivers, and lower premiums for the younger and the older drivers.

Overall, Kelly and Nielson conclude that the age variable is capturing real differences in risk of drivers over and above what is captured by the alternative factors: 'in the end, none of the variables examined captures a driver's risk with the same degree of accuracy as can be achieved by age.' Also, outcomes for some age groups, and for society overall, are worse if age is not used in the classification and pricing models. The Kelly and Nielson paper, as well as other evidence from academic literature, is summarised in Appendix 1. The academic evidence is consistent with the points made by insurers that age is a critical risk factor in insurance pricing.

4.4   Summary

Current age-based practices in the provision of financial services vary across products and providers, and mainly relate to the age characteristic being used in risk classification and pricing models, the implementation of specific age limits in product offerings, and the use of age bands in product pricing.

–   Age is a key risk-classification factor in both motor and travel insurance. Age works as a proxy for driving ability, health, medical conditions and other factors that determine the frequency and costs of making an insurance claim. At least in the case of motor insurance, age also works through a complex interaction with the many other factors used in the pricing models.

    The use of age in credit scoring and loan provision varies—some scorecards include an age variable to determine the riskiness of the applicant, whereas others do not, but include variables strongly correlated with age (eg, years on electoral roll). Separately, age (date of birth) is considered critical at the loan application stage for identification and verification purposes.

–   Some motor or travel insurance providers impose minimum or maximum age limits (at least for new customers) so as to not underwrite the higher or special risks associated with older customers (in the case of travel and motor insurance) or the young (in the case of motor insurance). Other insurers cover these age segments, including specialist providers with the expertise and scale needed to underwrite the risk.

Even where age limits apply, these often are not absolute, but work in interaction with other factors. For example, an 18-year old driver may be refused motor insurance not because of their age alone, but because the provider has made the commercial decision not to insure high-performance cars for drivers of this age. Similarly, a travel insurer may impose an age limit on annual cover or the travel destination, but nonetheless supply single-trip cover for all ages.

As regards personal loans, while providing loans to all ages (above the legal minimum), lenders may adjust the loan terms or product offerings for certain age groups. Also, lenders may change the application process or increase the level of credit checks if a loan applicant's age is above or below a certain age limit, so as to assess affordability and comply with responsible lending obligations.

– The use of age bands (mainly in travel insurance) can be understood as a supply practice that seeks to minimise transaction costs (eg, to facilitate easy distribution) while overall preserving a pricing structure that reflects risk (ie, simple step-wise changes rather than fitting a smooth curve).

Analysis of the relationship between price, risk and age shows that pricing is risk-reflective. For travel insurance, both the cost and frequency of claims increase with age, and this is reflected in premiums. For motor insurance, the youngest and the oldest drivers have the highest risk, and these age groups pay higher premiums compared with the rest of the driving population. As regards personal loans, direct data from lenders on price and loan offer rates is not readily available. However, there is evidence to show that, overall, credit scores increase with age, which is consistent with the observed decline in default rates with age—ie, older people tend to have higher credit scores and default less on their loans.

Direct analysis of loss ratios in insurance confirms that there is no systematic bias in pricing against older people—ie, there is no evidence of overcharging of this age group compared with others. On the contrary, in travel insurance there is an indication that premium levels do not always rise sufficiently with age to cover the increased claims costs. More generally, if there is a bias in pricing at all, it appears to be in favour of the higher-risk age groups, including older customers (particularly in the case of travel insurance) as well as younger customers (for motor insurance only). For some risks, claims costs are subject to significant volatility and difficult to predict based on limited actuarial data, which leads to difficulties in setting appropriate premiums.

Analysis of the effect of removing age from risk-classification and pricing models indicates that this will, in the first instance, have significant redistributive effects, with cross-subsidies being introduced from the lower-risk to the higher-risk age groups. Moreover, removing age results in poorer risk-classification performance and reduced pricing efficiency overall, with wider consequences for risk-taking behaviours and market functioning. While other rating factors are available for risk-classification purposes, the consensus is (also in the academic literature) that, at least in motor and travel insurance, the other factors either do not capture the risk as well as age, or are more costly to implement.

5 The impact of limiting the use of certain age-based practices in financial services

The potential impact of limiting the use of age-based practices in the provision of insurance and personal loans is considered in this section. After some general observations on the likely implications of measures that limit the use of the age factor in these markets, drawing from the assessment of the status quo (section 5.1), the impact of specific measures proposed in the recent policy debate around age discrimination legislation in financial services is considered. This looks in particular at:

– the removal of age limits and narrowing of age bands (section 5.2);
– the objective justification requirement (section 5.3);
– signposting and referrals (section 5.4).

5.1 General observations based on the status quo in the market

The assessment of the status quo in the market, from both the demand and the supply side, suggests the following.

– Products are being supplied across the age spectrum, including by specialist providers that target particular age groups. While product availability varies across age groups, there does not appear to be a lack of products that would result in certain age groups (above the age of 18) not being able to obtain motor insurance, travel insurance or personal loans on the grounds of age alone. Only a small proportion of consumers are turned down or unable to find insurance or loan products because of their age.

– The reduction in the number of product offerings does not just apply to older people. For example, in the case of motor insurance, a reduction in the number of providers or products is also observed for the young (eg, drivers under 25). Similarly, as older people show little demand for unsecured personal loans, so any concerns about age-based differences in supply would mainly centre around the young.

– The lower number of providers or products available for some age groups (eg, travel insurance for older people), and the higher prices that they pay, does not necessarily imply that these age groups receive a bad deal in the market and/or are being overcharged by providers. There is no evidence of systematic overcharging of older people (or, depending on the product, the young)—ie, prices are risk-based and cost-reflective. In fact, if there is a bias in the prices paid, it may work in favour of the old (or young).

– Some age-based practices may appear unfair or arbitrary, such as the imposition of specific age limits or the use of broad age bands. However, these practices can often be explained by a complex interplay of risk considerations and transaction costs, where simple age rules are being used to minimise transaction costs while preserving a pricing structure that reflects risks overall. Also, the decision not to supply a particular age segment in the market can be explained by providers specialising in some but not other classes of consumers on the basis of differences in the risk and cost of provision. Moreover, the age limits that are being applied may interact with other variables—eg, in the case of motor insurance, age-based restrictions may apply only for certain vehicle types.

– Although there is a clear differentiation in terms of the market experience with reference to the age of the potential customer (for motor and travel insurance), the differences

appear to be driven by the real differences in the costs of supply (and the level of the demand) across age groups. The specialisation of suppliers, combined with differences in the economics of supply, seem to explain most, if not all, of the variation experienced by potential customers of different ages in the market. Whether this outcome based on economic reality is acceptable is not a question that can be answered by economic analysis.

Overall, from a market perspective, there is no evidence of significant unmet demand by certain age groups that can be attributed to a failure in supply. If there are failures, they are more likely to be in the way the market currently matches demand and supply. There is evidence of some consumers having difficulties in finding the relevant products or providers. The age groups in question tend to make up a fairly small proportion of the total demand for the product (either because the age group itself is small and/or because demand in that age group is small).

However, from the perspective of individual consumers, the fact of being refused access to products by a supplier on the basis of age may be perceived to be detrimental even if another supplier can be found in the market. Also, some consumers may be put off by the transaction or application process even if they would ultimately find product cover, and some may simply perceive that they are being denied access or otherwise discriminated against because of their age.

Various measures are available to limit the use of age-based practices in order to address these concerns and/or achieve other policy objectives. Sections 5.2 to 5.4 set out the implications of a specific set of measures discussed as part of the recent policy debate on age discrimination legislation in financial services.

At the general level, there is significant evidence in the academic literature and elsewhere to show that any restriction on risk-based and cost-reflective pricing leads to distortions in the operation of insurance and loan markets and overall higher prices (or lower quality) for consumers. There is also considerable evidence on the importance of age as a proxy for many risks.[36]

In a competitive market, any legal restriction on a risk factor currently being used by providers is unlikely to result in more efficient product offerings or pricing structures. Providers may be forced to use alternative proxies, but if these were 'better' alternatives the providers would have already introduced them to remain competitive in the market. At best, a legal restriction will have no efficiency effects because the restricted factor is redundant. Instead, a legal restriction on the use of age (or any other important risk factor) is more likely to lead to efficiency costs in the market as a whole, resulting in higher prices in the market overall.

The measures proposed in the policy debate do not go as far as completely removing age-based practices in financial services provision. Nonetheless, the following general principles apply (see also section 2).

– Changes to insurers and lenders' the risk underwriting practices will impose costs. While the pure administrative or IT system costs of complying with the new requirements are easier to quantify, they are often small. The more significant source of cost is likely to be any unintended impacts of these changes on the efficiency of pricing and wider functioning of the market.

– To the extent that any limitation on the use of age in financial services cannot make the supply of the products cheaper or more efficient, the outcome in the market cannot be 'more or better products for consumers at a lower price'. If product offerings and prices

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[36] See Appendix 1 for an overview of the academic literature.

are risk-based and cost-reflective, as the evidence on the status quo in the market suggests, any increase in the risks or other costs of provision (eg, due to a requirement to supply a higher-risk age group) will ultimately be borne by the provider's customers.

– While some age groups may benefit from a change in age-based practices, this may be at the cost of other age groups. For example, older people currently pay higher prices for travel insurance, and an 85-year old is likely to find it more difficult to obtain annual travel insurance cover—in particular, if the policy covers trips outside Europe. This may be considered unfair, and a more 'equitable' outcome could be obtained by requiring providers to reduce the price differentiation on the basis of age and supply the same products across all age groups. However, for the insurance activity to remain economically viable from the provider's perspective, this would require cross-subsidies and hence price increases for other age groups—even then, the pricing structure may not be sustainable in the market.

– Any form of policy intervention must be evaluated not only from the perspective of the consumer group that it directly seeks to protect (eg, older people). Unless the intervention reduces a market failure and delivers overall efficiency benefits, any improvement in the outcome for one age group (eg, older people) will be to the detriment of other age groups (eg, younger people).

– The (chronological) age of individuals is correlated with many risks that are relevant for financial services pricing (eg, health). While correlation is what matters for the underwriting and pricing process, some may consider the use of age unfair because of a lack of a causal relationship between age and risk.[37] By subjecting all consumers to a set of tests or questions in the product application stage, it may be possible to develop a measuring device that is causally correlated with risk—eg, a factor that may be referred to as functional age.[38] Under these circumstances, chronological age would have no additional correlation with risk once functional age had been taken into account.

For insurance pricing purposes, individuals would then be assigned to functional age classes. Since the total risk of the complete group (say, the over 60s) would not change, the premiums needed to cover the risk would stay the same. Thus, those whose functional age was lower than their chronological age would see their premiums fall and vice versa. In addition, the costs of establishing functional age would need to be added, raising total premiums to cover this additional cost.

Again, the change might result in a 'fairer' and more accurate (causally correlated) proxy for risk being used in product supply, but the outcome for consumers would be largely redistributive in nature, and the additional costs imposed could increase prices overall. Some consumers would be offered cheaper insurance, but some (or indeed more) consumers would be offered more expensive insurance. In principle, premiums could also rise for all if the additional costs eradicate the gains made by those whose premiums would otherwise fall. More generally, as set out in section 2, there is a trade-off between efficiency, fairness/equity and feasibility considerations.

The following describes the impact of specific policy measures along the different impact dimensions (see also section 2):

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[37] For example, in the case of motor insurance, it is likely to be possible to obtain a general agreement (and there is significant evidence in support of this) that, above the age of 60, as an individual ages their characteristics will change, and, holding all other factors constant, the probability will increase that the individual in question encounters an outcome that would lead to an insurance claim on a motor policy. However, notwithstanding the general direction of risk and time (chronological age) for each individual, two individuals of the same age do not necessarily have the same risk, nor is their risk changing at the same speed. Therefore, any age group is likely to show significant within-group variation in risk. Under these circumstances, chronological age will be well correlated with risk at the group level, but not particularly at the individual level because there is a wide spread of individual risks at any age.

[38] See section 2 for a discussion of chronological and functional age in the context of insurance pricing.

- the benefits for consumers in the relevant age groups;
- the direct costs to industry;
- the wider (unintended) consequences on the market in terms of pricing efficiency and competitive dynamics;
- the distributional implications.

No judgement is applied on how to trade the different benefits off against the costs. This is a matter for policy. Rather, the aim here is to highlight the main consequences of the options and the potential trade-offs, so as to inform the policy decisions to be made.

5.2 Restrictions on the use of age limits and age bands

The first set of possible policy measures implies direct changes to the use of age in the provision of insurance and personal loans, at least for providers currently engaging in such practices.

With the removal of age limits, providers would no longer be able to refuse to supply consumers on the basis of their age, but instead would be required to offer products to all age ranges, rather than only to specific age segments of the market. In addition, such a requirement could extend to the terms and conditions of the product, so that a particular product feature (eg, the level of excess in an insurance policy) could not be restricted to certain age groups, and would have to be offered to all age groups.[39]

Furthermore, if the requirement to abolish age limits also applies to the transaction process itself, suppliers may be required to process all age groups in a similar fashion. In particular, age could then no longer be used as a trigger to require a different transaction process (eg, to require the production of medical information only for those above a particular age).

Age limits can currently be observed in all three product markets, although in the case of personal loans this relates mainly to changes in the application process rather than specific product availability. In motor insurance, there has been a clear trend of suppliers increasing their age limits; also, upper age limits are not usually applied for existing customers (ie, renewal is possible across all age groups). For travel insurance, maximum age limits are still prevalent (particularly for annual cover), and a trend of suppliers expanding the age range they cover is less clear. Therefore, the removal of age limits on the provision of the service at all can be expected to have more impact within the travel insurance market. However, age-based product differentiation (as opposed to product availability) is also observed in motor insurance, where dimensions of cover are changed for different age groups (eg, young drivers may not be able to obtain insurance for high-performance cars), so a ban on the use of age limits would also have an impact.

In both motor and travel insurance, some degree of age-based specialisation is also observed where suppliers target their offerings to specific age groups only (eg, older people), rather than the more mainstream market. Such specialist supply would no longer be possible if age limits were banned.

As regards age bands, where wide bands are used for pricing purposes, prices are flat within the band but then jump in what appears to be an arbitrary and risk-unrelated way when the customer moves from one band to the next. Narrowing the age bands (eg, to a single year) would be expected to smooth out the price changes such that there are smaller, but more frequent, price adjustments as customers get older.

Wide age bands can currently be seen mainly in the travel insurance market. There is less banding of this nature in motor insurance, where integer (or shorter) age is already used.

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[39] The product offering may, however, still be set subject to another customer characteristic—eg, different levels of excess could be conditional on, say, how long the driver has held a driving licence.

Hence, a requirement to price (and justify that price) on narrow age bands is likely to have most impact on the travel insurance market.

5.2.1 Benefits
The main sources of potential benefits of a ban on the use of age limits and a narrowing of age bands are:

– the benefits from consumers obtaining the insurance or loan product where the product was previously not available, or the customer did not find it;

– the benefits from reduced search time for consumers who did manage to buy the product;

– the potential availability of a wider range of ancillary product characteristics as the restrictions on offers to specific age groups are removed; and

– the benefits from smoother price changes from the narrowing of age bands.

For individuals who can now access products previously unavailable to them, the benefits might be large.

– The availability of motor insurance may have a significant effect on an individual's mobility and therefore provide substantial value. In principle, this can be estimated by considering the benefits derived from driving, over and above those of using alternative transport. For situations where no other means of transport are available, the value of motor insurance will be even greater, and can be considered to include the value of activities in which the consumer was unable to partake.[40]

– The value of travel insurance is slightly different. Unlike motor insurance, which can be tied directly to the value of driving, the absence of travel insurance does not necessarily prevent the individual from taking the holiday. Although not a legal requirement, the absence of insurance may still act as a barrier to travel (or certain types of foreign travel) for many people. This is illustrated by consumer survey evidence, which shows that around 13% of people over the age of 80 had not travelled because of the cost (or fear of the cost) of travel insurance, or lack of access to it.[41] Therefore, it is appropriate to consider the value of travel insurance as the difference between the benefits derived from taking a holiday while covered by travel insurance and those derived from either taking the same holiday without insurance, or spending the money on other products.

– In the case of unsecured personal loans, for many older individuals similar substitutes are often available, such as secured finance. In such cases, the value to an individual of being able to obtain an unsecured personal loan product may be low.

Despite the potentially sizeable benefits accruing to individuals now able to obtain insurance or loan products, the number of individuals currently excluded from these markets purely on the basis of age is low (as discussed in section 3). Importantly, since there appears to be no systematic overpricing of any of the age groups that may have experienced access problems in the market, removing age limits would be highly unlikely to reduce the price of the products. Exclusion from the product market as a result of price, or fear of price, would therefore not be improved. Instead, the beneficiaries of a ban on age limits would be confined to those consumers who have been unable to *locate* a suitable product where that product currently exists in the market.

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[40] Quantifying the value of any good or product is not simple. Estimates can be based on surveys of consumer's willingness to pay, and/or approximated by the prices currently observed in the market.
[41] Age Concern and Help the Aged (2007), p. 26.

In addition, if suppliers react to the ban of age limits by using other means of differentiation (eg, health checks) and then go on to limit the supply of their products along that dimension, the same dynamic of exclusion (ie, inability to find a product that does exist) may reappear for those on the wrong side of the new health-check line. Indeed, where the new criterion is correlated with age, the two different excluded groups may contain many of the same people. Therefore, especially if the impact on the potentially new excluded group(s) is taken into account, the net increase in the number of customers with better access may be small. Overall, when compared with the total size of the market, the aggregate benefits from increased product access as a result of a ban on age limits are likely to be low.

The benefits of improved searching include a reduction in the time required to find a suitable policy. There is also the potential opportunity to find a cheaper policy as a result of the easier search, although prices would be unlikely to fall even if more suppliers were to supply particular age-based market segments—indeed, they may in fact increase (see discussions on costs below).

The total benefits from increased product access and improved search for old-age groups have been quantified by CRA International in the ABI 2009 research report on motor and travel insurance (see Table 5.1).

Table 5.1   Estimated benefits from the removal of age limits—motor and travel insurance for consumers over the age of 65

	Motor insurance (£m)	Travel insurance (£m)
Obtaining insurance	3.3	4.8
Improved search	3.0	9.4
Total quantified benefits	**6.4**	**14.2**

Source: ABI (2009a).

On the one hand, these estimates do not consider how, in the absence of insurance cover, individuals will currently derive some value from substitute products—ie, they present estimates of the gross (rather than net) benefits. On the other hand, the benefits are calculated according to the value of the premiums that would otherwise be spent, rather than the consumer surplus arising from the holiday, or the mobility that car usage facilitates. A first approximation is that these two effects cancel each other out, although it may be that the consumer surplus from these products is so much higher than any alternative use of money that the estimates underestimate the benefit. However, for this to be the case, there would need to be very high willingness to pay for these products among consumers, which is not really borne out in the qualitative evidence available.[42]

The relatively small estimates of total benefits reported in Table 5.1 reflect the low numbers of consumers who, because of their age, currently cannot gain access to the insurance products (although these are actually available in the market).

In the case of motor insurance, the Saga Populus survey (which informed the analysis for ABI 2009a) estimates that only 3% of the over 65s were ever refused insurance from a supplier on the grounds of age, of which only 7% were unable to find cover through another insurer. This results in an estimate of less than 0.25% for the proportion of over 65s who cannot obtain car insurance on the basis of age. As reported in section 3, the new consumer survey conducted for Oxera supports these findings: the proportion of the over 60s who were refused car insurance on the basis of their age in the last year was less than 1% (with a refusal rate of 1.5% for the 80+ age group).

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[42] It was outside the scope of this study to conduct consumer research in this area or to present new benefit estimates.

Similarly, in the case of travel insurance, the Saga Populus survey finds that while 25% of those over 65 had experienced difficulties in finding travel insurance, only 7% of these were not subsequently able to find insurance cover, resulting in less than 2% unable to find cover at all (which was used to estimate the benefits presented in Table 5.1). Again, as reported in section 3, the Oxera survey supports these findings: the proportion of the over 60s who were refused travel insurance on the basis of their age in the last year was less than 2% (with a refusal rate of 3% in the 80+ age group).

The Saga Populus survey does not include personal loans or the young age groups. In the case of motor insurance and personal loans, it is the very young (eg, under 25) rather than older customers who can have more difficulty in obtaining the product because of their age. However, as shown by the results in section 3, products are available and only a small proportion of the very young has been refused insurance cover or a personal loan because of their age. The conclusion that only a few consumers would benefit from improved access and availability of products is therefore similar.

Estimates of benefits (or costs to older people under the status quo) are also provided by the age sector associations and published in the Experts' Working Group report (HMT 2008). These are significantly higher than those estimated in ABI (2009a), ranging between £35m and £1 billion in the case of motor insurance and between £96m and £170m in the case of travel insurance. While it was outside the scope of this study to undertake primary analysis to quantify the benefits, the following remarks can be made about the estimates presented in the Experts' Working Group report.

– The estimates are based on a concept of willingness to pay for travel and motor insurance that relates to the expenditure of the forgone holiday or forgone driving. In comparison, ABI (2009a) considers the willingness to pay for insurance to go on holiday or to drive.

– The higher estimate for motor insurance is based on statistics from the age sector organisations that 6% of over 65s currently cannot find insurance, and the (implicit) assumption that these individuals subsequently stopped looking and gave up driving. If there is no close substitute to driving, such that access to motor insurance brings significant benefits to the individual, it is reasonable to expect some persistence in product search, which would question this assumption. Further, the individual may not have to search far. As presented in section 3, even for the over 80s, 30 quotes are currently available from just one leading price-comparison website and one specialist provider. (Where a customer does not take up a product because of price, the removal of age limits is highly unlikely to deliver any benefits to them, as there is no evidence that the products that are available are currently overpriced. The removal of age limits does not imply a reduction in price, in which case there is no benefit to customers who do not buy the products because they consider them too expensive.)

– As noted above, it is appropriate to deduct from the gross benefits arising from increased product access the benefits currently enjoyed from the purchase of substitutes in the absence of motor or travel insurance availability. (Formally, the benefits should be calculated on the basis of the difference in consumer surplus from obtaining the product and in spending income on the next-best substitute.) This further complicates the quantification of benefits, and has not been included in the estimates presented in the Experts' Working Group report—ie, the benefits (or costs of the status quo) are significantly overestimated.

The benefits arising from the policy objective of better access are not equivalent to those from implementing a particular policy option. For example, it is not clear that the ban on age limits will achieve the desired access benefits for consumers in the relevant age groups. The policy may result in more products being offered to certain age groups, but this may not improve the product search or ultimate purchase decision of consumers, particularly those with other high-risk characteristics such as pre-existing medical conditions. In particular, if

providers (increasingly) use substitute characteristics in their supply decisions that are correlated with age, the same individuals who currently fail to access available products may continue to do so even after the ban is introduced. Moreover, the better access for some may be balanced by others who currently have access but will fail in the future. The estimates published in the ABI (2009a) report and the Experts' Working Group report (HMT 2008) do not account for this, but rather assume, at least implicitly, that all individuals currently refused product access on the basis of age will be able to obtain the product after the ban on age limits is introduced.

As regards the narrowing of age bands in travel insurance, at present individuals can experience steep increases in premiums from one year to the next when they move from one age band to the next (eg, a 69-year old may have paid the same for their travel insurance policy over the last few years, but may be asked to pay significantly more for the same cover upon turning 70).

Such price jumps may appear unfair, particularly if unexpected. With narrower age bands, these jumps would be avoided and replaced by a 'smoother' price structure (eg, using integer ages). However, the change will result in a redistribution of prices. Prices will increase for customers at the older ends of the current age bands (who at present receive a cross-subsidy from the younger ages within the same age band) and fall for the younger ages in each band (see section 5.2.4 below). In addition, as discussed in the following, transactional costs are incurred in moving to the smoother pricing structure, which may cause greater inefficiencies and higher prices for all.

Overall, while there may be significant benefits for some individual consumers, the aggregate benefits that can be expected from the removal of age limits or narrowing of age bands (or indeed any other restriction on the use of age in the underwriting process and pricing structure) are small.

5.2.2 Direct costs to industry

Any legislation that is effective in altering the market outcome will be likely to impose additional costs on firms currently active within the market. When faced with a ban on age limits and a requirement to supply products to all ages, providers could seek to avoid such changes and related cost increases by setting prohibitively high prices to the age groups they currently do not serve. Providers would then be complying with the rule by offering the product to all—but for age groups they currently do not serve they effectively would never sell anything. As a result, outcomes in the market (for consumers also) may not change.

However, in practice, such a response is unlikely to be possible, not least for commercial reasons. For example, providers may incur damage to their wider reputation from charging uncompetitive high prices (even if they reflect high costs). Also, even the requirement to provide quotes (that do not generate sales) will impose costs that would need to be recovered from other sales. In addition, the firm may be at risk of incurring legal costs if it subsequently cannot explain the high prices it charges for some age groups and therefore risks not meeting the objective justification requirement (see section 5.3).

Abstracting from the case where legislation is ineffective, the costs incurred by firms can be categorised into those incurred at the distribution level and those at the underwriting or production level, on a one-off or ongoing basis. The costs may be incurred by insurance and loan providers (including, in particular, specialist providers), downstream distributors, or firms offering insurance or credit as a side line to another main product (eg, free travel insurance with a banking product).

At the distribution level, the compliance costs are likely to involve one-off technical costs, such as those incurred in changing the quote system to narrow age bands or remove age limits. Depending on the flexibility of the existing quoting system, such costs may be substantial. For example, smaller travel agents with simple systems for selling insurance may be forced to exit the distribution market as a result (ABI 2009a). There may also be other

one-off distribution costs such as adjusting websites and marketing, and infrastructural changes to handle an increased volume of business.

Providers are also likely to incur additional ongoing distribution costs where:

– the inability to use age as a trigger to invoke a higher-cost transaction process (eg, medical examination, or just asking additional questions about health) may result in *all* potential customers being subject to the higher-cost transaction process;

– the scale of the activity required to distribute to specific market segments not currently supplied is too small to be really efficient. In particular, this would apply if the effect of banning age limits extends to indirect discrimination in terms of the preferred distribution routes. All (or most) suppliers would need to duplicate all distribution routes, as well as supplying all age-related segments of the market.

At the underwriting or production level, in order to price policies for age groups not currently served, providers may choose to purchase data and undertake actuarial analysis directly (either internally or by outsourcing the work). Interviews indicate that such data is commercially sensitive and therefore expensive, as can be the services of actuaries. Alternatively, providers may choose to avoid these costs and base their prices on the rates charged by others already supplying the relevant age groups. This exposes the provider to the risk that the prevailing market rates are not cost-reflective. In addition, if the rules on objective justification (see section 5.3) do not allow current market prices as a justification for price differences (but require price differences to be based on the provider's actuarial experience), there may well be a transitional cost in terms of mispricing of risks until providers can generate this information.

Compliance cost estimates for motor and travel insurance providers are available in ABI (2009a). Table 5.2 summarises the one-off costs as well as the average annual costs,[43] measured at aggregate level for the relevant providers.

Table 5.2   Compliance costs for motor and travel insurance—removal of age limits and narrowing age bands

	One-off costs (£m)	Average annual costs (£m)
Motor insurance		
Remove minimum and maximum age limits	10.6	2.2
Remove maximum age limits	5.3	1.1
Travel insurance		
Remove maximum age limits	1.3	10.8
Remove maximum age limits and narrow age bands	1.8	10.9

Source: ABI (2009a).

The Experts' Working Group report presents somewhat higher compliance cost estimates: around £462m for motor insurance and around £18m for travel insurance. In respect of motor insurance, the majority of the costs relate to the mispricing of risk, which is not taken into account in the ABI report. How much mispricing would actually occur is likely to depend on exactly how the justification rules were applied, and how much shared actuarial information was generally available to insurers moving into new risk classes. However, it is possible that insurers will misprice risk when required to insure consumers in age groups and with a risk profile that they have no experience of supplying. Where such mispricing occurs, the

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[43] The average annual cost includes one-off costs spread over five years plus the ongoing costs.

financial losses can be significant. These losses are to some extent balanced by benefits to customers, who obtain services below their cost (at least temporarily).

Regarding compliance costs for lenders, in general these can be expected to be low. It is apparent from the interviews undertaken that age limits (other than those legally imposed) are not commonly used. Thus, meeting the objective of legislation in terms of removing age-related product access problems would not involve substantial changes or costs. However, emphasis was placed on the importance of date of birth in obtaining and verifying credit-score information, and the lack of any easily available substitute. Moreover, age may be used as a trigger to request additional information to check the affordability of the loan—eg, individuals below 25 may need to provide income or other information before the loan is granted. While there are substitutes that correlate with age (eg, number of years at address or on electoral roll), date of birth is the simpler variable and readily available (and verifiable) to conduct additional credit checks required for the lender to meet responsible lending obligations. However, assuming that age (date of birth) can continue to be used for identification and verification purposes, the costs to lenders can be considered small, and lower than would be incurred by the providers of motor or travel insurance, where age limits in the provision of the service are more common.

Overall, for motor and travel insurance, the total compliance costs reported in Table 5.2 may appear relatively small in aggregate. However, relative to the estimated benefits (Table 5.1), they appear rather large—and they appear larger for travel insurance than for motor insurance, especially given the smaller size of the travel market. Moreover, the estimated costs mainly include the pure administrative or systems costs associated with complying with the ban on age limits or the narrowing of age bands. They do not, for example, include the direct costs to individual providers associated with the mispricing of risks. They also do not include the direct costs that may arise to other parts of the industry (eg, brokers, travel agents, price comparison websites and credit reference agencies).

5.2.3 Potential unintended market impacts
The total cost of compliance across all firms active in the market provides an estimate of the direct burden of legislation. It does not capture the indirect costs or unintended adverse effects of legislation. Such effects may arise for a number of reasons, including the following:

– the compliance costs of removing age limits and/or narrowing age bands may encourage some firms to leave the market, with negative implications for competition:

– removing age limits will require some providers to extend supply to new risk classes of consumers;

– removing age limits will require some (now specialist) providers to offer products to a large number of new risk classes of consumers.

As regards the first reason, compliance costs are not expected to be high (see Table 5.2), so the effect of firms deciding to leave the market should not be overstated. However, particularly for firms that currently provide or distribute insurance or credit along with other goods or services, compliance costs may be sufficient for them to decide to leave the market. For example, bank accounts with travel insurance as a 'free' extra may no longer be available since there is no effective pricing mechanism that could compensate the bank for the potentially much higher costs of having to offer the insurance to all age groups. Similarly, some travel agents may decide no longer to offer travel insurance if their transaction costs increase because systems have to be updated in response to the removal of age bands and/or because customers have to be categorised in ways other than by age. To the extent that the presence of such firms increases competition within the market, their exit may result in less competitive prices across all age groups.

As regards the second and third of the above reasons, these apply to insurance and loan providers rather than distributors—the second to all providers that currently impose any age

limits, and the third more specifically to providers that have chosen to specialise in the provision of insurance to a few, targeted age groups (eg, those aged 65 and over).

Not all providers have the expertise or capability of pricing the spectrum of risks in the market. This applies to age-related risk as much as to other kinds of risk. This explains why there is a degree of specialisation on the supply side. Thus, extending supply to cover all ages will not only require changes to the systems in place and building up the required actuarial expertise, but may also lower underwriting quality as providers will be underwriting risks for which they currently have no expertise.

There are three main options for providers to respond to the requirement to supply all ages:

–   offer prices that reflect expected costs inflated to account for the uncertainty. Such costs may be extrapolated from existing proprietary data, or from monitoring prices currently available in the market from providers already supplying the age group(s) in question;

–   limit the volume of additional business either by offering very high prices (in excess of the prices already available in the market) or imposing restrictions on other risk characteristics;

–   remove certain products entirely from the market to avoid supplying to higher-risk classes.

Under the second and third options, product access will not be increased. Even under the first, the gain to consumers is not clear: prices for the relevant age groups are unlikely to fall even for those age groups where the number of providers currently active in the market is relatively low. As analysed in section 4, there is no evidence of providers currently overcharging consumers in those age groups—indeed, the opposite may be the case. Prices may instead rise for at least two reasons.

–   Specialisation allows providers to realise economies of scale. To give a simple example, the market for insuring those aged 85 or more who wish to take a holiday in the USA is simply not big enough for all insurers in the travel market to provide quotes efficiently. Increasing the number of providers would result in a duplication of costs—both the costs incurred in building up the actuarial evidence to price policies accurately and the distributional costs associated with providing quotes (only a minority of which will ultimately be converted into sales).

–   Increasing the number of providers is likely to dilute the data which current specialist providers can use to assess risk accurately. Thus, the ability of specialist providers to price risk may also be impaired compared with the status quo where individual firms have a larger market share in the relevant age segment of the market. This may result in higher prices to account for the reduction in certainty and the increase in the volatility due to random variations in the claims rates (and claims cost) among a smaller sample of insured.

There may be other consequences of mispricing risk or reducing the efficiency of risk categorisation. For example, should risk be underpriced, the effective restrictions on high-risk customers accessing the market because they cannot afford the insurance are reduced. More high-risk customers will enter the market, which will raise the overall risk in the risk pool. If the efficiency of the risk categorisation reduces, more high-risk customers may enter the pool (because their price is effectively lower) and low-risk customers may exit (because their price is higher). The average risk of the pool rises, as does the average price. The overall outcome may be that fewer, but higher-risk, customers are served in the market. In the motor insurance market, for example, this may be observed through more higher-risk

drivers, driving faster and more expensive cars.[44] In addition to the costs to society as a whole, should providers have underestimated the costs of provision in the transition, the resulting losses may jeopardise their financial viability and hence their ability to compete— not just in the supply of the new risk classes, but also of the risk classes in which they were originally active.

An alternative response for the provider to control the problems of mispricing and/or reduction in risk-categorisation efficiency would be to avoid attracting any additional business with undesired risk characteristics—for example, by reducing the scope of the cover they do provide (or, if allowed, by pricing very high in these areas). Thus, rather than seeking to offer cost-reflective prices (ie, prices that reflect the expected risk inflated to account for uncertainty), the provider may impose additional restrictions on product access to their customer base, using criteria closely correlated with age. For example, rather than expand cover of high-performance cars to the young (an area where a motor insurer may not know the risks, or may not want to have to quote very high prices), the insurer may simply stop providing cover for high-performance cars to all age groups—ie, the insurer would continue not to cover young drivers in high-performance cars, but, given the ban on age limits, this is achieved by stopping cover for all, including customers in age groups currently supplied. In this case, the outcome is not greater access for the age group currently refused supply (ie, young drivers with high-performance cars), but restricted access for all age groups (ie, all drivers of high-performance cars).

In the travel market, an example would be increased screening for medical conditions, or a tightening of restrictions of insurance cover for pre-existing medical conditions. These could be imposed by providers in effect to minimise the risk associated with insurance cover for older people, but the impact would be felt across age groups through changes in the application process or in the terms and conditions.

These types of strategy may involve additional costs, such as quoting for products across age groups that are subsequently not sold, or establishing what risk characteristics other than age could be used to segment the market. If not absorbed by providers, these costs will be passed on to existing customers in the form of higher prices. Moreover, the outcome may be that providers continue not to supply services to largely the same group they do not supply at present. The difference would be that consumers are refused supply not because of their age but because of some factor correlated with age.

In addition, providers may respond to the legislation by removing certain products or product characteristics entirely from the market. Products targeted at certain age groups (eg, student loans, or the extension of motor insurance cover to drive other people's cars) may be removed. More generally, product characteristics may need to be adjusted (or simplified) to reduce insurers' risk exposure resulting from the requirement to offer a product to all age groups.

As regards specialist insurance providers, the risks associated with removing age limits and offering prices not based on accurate actuarial data are magnified by the number of new age-related risk classes to be covered and the sheer volume of new business that could be attracted. To accommodate this risk, the current customer base of specialist providers may face higher prices. The move away from specialised provision may also result in poorer quality for current customers.

Overall, there are several potential adverse market effects, depending on how providers choose to respond to the legislation. Aside from the problems associated with adjusting the IT systems of some distributors (eg, travel agents), these adverse effects mostly reflect the policy measure of banning age limits rather than narrowing age bands.

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[44] See Appendix 1 for academic studies which have found such effects to be significant in motor insurance markets where the use of age as a risk-classification variable is restricted.

The way in which the policy is implemented will also determine the wider market implications. For example, should loan providers no longer be allowed to ask an applicant for their date of birth, the ability to use and verify credit bureau information when assessing applications may be greatly impaired. This could have ramifications for the market, as it would affect different types of loan provider differently. For example, it would increase the difficulty of providers who do not already have a relationship with the potential customer. Moreover, from the customer's perspective, it would make obtaining a loan more difficult if that customer does not already have an ongoing relationship with at least one provider.

5.2.4 Distributional considerations

The removal of age limits may result in better access to the relevant products for some age groups, but the costs of achieving this (compliance costs and indirect costs arising from negative market impacts) may be borne by consumers in other age groups.

In travel insurance, the beneficiaries of such a policy are likely to be the oldest age groups. In motor insurance, the removal of age limits is likely to be most beneficial for the youngest and oldest age groups. That is, the same policy is likely to have different distributional consequences across age groups (although in all cases those in the 'middle' age groups tend to lose out).

As regards the narrowing of age bands, the direct costs and efficiency impacts are more limited, but there are redistributive effects that are worth highlighting. The broad age bands currently observed in travel insurance (see section 4.1) could in principle be replaced by a smooth curve where prices are set according to integer ages (ie, by singe year). The price within an age band is based on the average risk of consumers in that band. Therefore, if the risk of consumers in the age band is identical across all ages, narrowing the band will have no impact on the individuals because the price charged will remain identical. However, if there is a variation in risk within an age band, narrowing the band will result in different prices for consumers of different ages. Some will pay more and others less, but as a group they pay the same.

Figure 5.1 provides a simple illustration of these distributional effects. Here, risk increases with age, with greater variation at the older age bands. For example, take the age band containing 75–79-year olds. With age bands, all customers in this group pay the same, and the price reflects the average risk of consumers aged 75 to 79 (given the assumed risk distribution in the illustration, the price in the age band reflects the risk of a 77-year old). In this case, consumers aged 75 and 76 pay more given their risk, and cross-subsidise the 78- and 79-year olds who pay less. If the age bands are narrowed and integer ages introduced, this cross-subsidy is removed. The former will see their prices fall and the latter will see them increase.

This assumes that the transition to narrow age bands is costless, which it is not. The cost increase works to offset the removal of the cross-subsidy and to increase prices for all (although this effect can be expected to be small).

Figure 5.1 **Hypothetical illustration of the distributional effects of removing age bands**
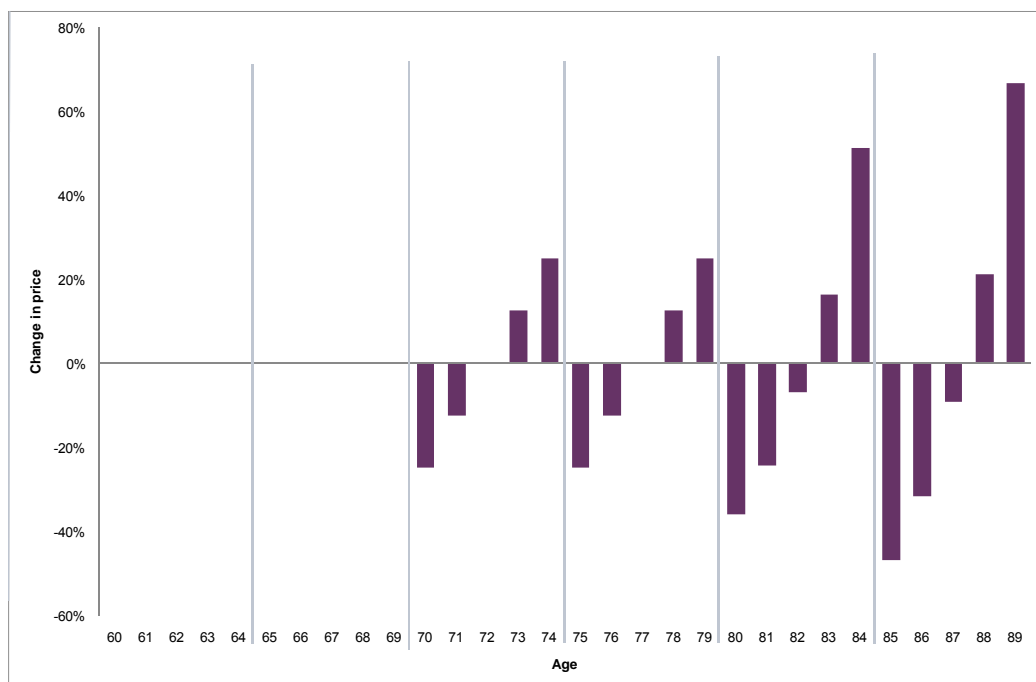
Note: In this example (designed to be illustrative only), risk-reflective pricing is assumed in the status quo (with prices equal to the average risk within an age band) and after abolishing the broader age bands and moving to integer ages (with prices equal to the risk in each year). Risk is assumed to increase at an accelerated rate with age. The status quo involves age bands with an increment of five years (eg, 60–64, 65–69), and there are equal proportions of each integer age customers within an age band. It is assumed that the 60–64 and 65–69 age groups have equal within-group risk; hence there is no change in price for these age groups when the age bands are removed.
Source: Oxera.

The illustration is a highly stylised example only. Nonetheless, in the context of the policy debate, it illustrates what the distributional effects would be if there were a requirement to narrow age bands in the market for travel insurance. In particular, given that travel insurance risk increases with age, it may be the very old (or more generally those hitting the upper end of an age band) who see their travel insurance premiums increase most if age bands are narrowed. That is, for those concerned about the level of premiums paid by the very old, a narrowing of age bands may not have the desired distributional effects.

5.3   Objective justification requirement

The second type of policy measure relates to the requirement to justify objectively the use of age-based practices. This option is not really independent of the measures described above. For example, without some form of a justification requirement, providers could just offer their products to age groups they currently do not serve at very high prices, which would effectively circumvent the objective of ensuring that all providers supplied all age groups.

There are several variants of objective justification, and different circumstances under which these may be required. The impact will therefore depend on which options are ultimately implemented. In particular, there will be a significant difference in impact depending on whether a refusal to supply a service to a particular age or age group can be acceptable if justified, and if so, what objective differences would have to be present to create an acceptable justification for the refusal to supply.

The impact will also depend on the answers to other questions, including the following.

– To whom is the justification provided?

- – Possible interested parties include individual consumers, lobby groups and regulators.
  - – In relation to this, should such justification be provided upon request, or made publicly available? Or is justification just intended to be used as a defence within the courts?

- – To what extent, and where in the value chain, does the use of age need to be justified?
  - – Will the requirement apply just to providers of services to end-customers, or to other parts of the value chain as well?
  - – Will justification be required for any differential treatment in the application process? For example, is it justifiable to require additional screening according to an applicant's age?
  - – Will justification be required for any differences in treatment on the basis of age (eg, different prices, policy terms, refusal to supply, use of age bands) or only certain activities?
  - – Will a provider need to justify charging a higher price than its competitors for a risk class, or just differential treatment between its own customers?
  - – Is justification required just to demonstrate that age-related groups are different— and hence different treatment is appropriate—or does it also need to underpin the degree of the differential treatment?

- – What form of information can be used to demonstrate justification?
  - – Can industry-wide data be used, or will there be a requirement to justify treatment using individual firm-level data?
  - – Do prices need to be justified as risk-reflective, or also reflective of other costs and commercial considerations?
  - – Does justification require statistically robust evidence, and, if so, how robust does the evidence need to be? What minimum confidence interval would be acceptable?
  - – Where insufficient data is available for statistical analysis to be robust, what other options are available to the provider?

There are examples of objective justification requirements from other jurisdictions where age discrimination legislation has been introduced. For example, superannuation and insurance products are exempt from the Australian Age Discrimination Act when:[45]

> a) the discrimination (i) is based upon actuarial or statistical data on which it is reasonable for the first-mentioned person to rely and (ii) is reasonable having regard to the matter of the data and other relevant factors.

> (b) in a case where no such actuarial or statistical data is available and cannot reasonably be obtained—the discrimination is reasonable having regard to any other relevant factors.

Here, caveat (b) is not applicable for credit products. That is, credit products are only exempt from the Age Discrimination Act when discrimination:

> (a) is based upon actuarial or statistical data on which it is reasonable for the first-mentioned person to rely; and

> (b) is reasonable having regard to the matter of the data.

In Ireland, insurance policies and 'any other matters related to the assessment of risk' can be provided on differential terms where such treatment can be supported by actuarial or statistical data, or other relevant underwriting or commercial factors.[46]

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[45] Age Discrimination Act 2004: Act No. 68 of 2004.

[46] Irish Equal Status Act 2000, Part 11: Discrimination and Related Activities.

In New Zealand, the Human Rights Commission (2007) guidelines suggest that the 'cost of assessing a high-risk application may be offset by higher loadings initially which may be reduced when information about the actual risk becomes available'. This has enabled insurers to levy a charge for researching and assessing high-risk applications which may not result in eventual sales. In addition, while insurers cannot refuse on demand an applicant on the basis of age, they can defer offering a policy for a 'reasonable time' to quantify and assess the risk.

5.3.1 Benefits

The overall benefits from objective justification, in itself, are not expected to be large since there is little evidence of 'unfair' practices in the market. For example, the loss ratio analysis presented in section 4 suggests that there is no evidence of systematic overcharging of certain age groups in the market (eg, older people in the case of travel insurance).

Although there is limited evidence of 'unfair'' practices under a market-wide assessment, there may still be cases of 'unfair' practices in individual cases. Granting individuals the right to legal redress, and requiring firms to justify their practices in the individual case, can be expected to reduce the incidence of such practices. However, to the extent that industry-wide practices appear overall 'justifiable' (ie, supply tends to be risk-based and cost-reflective), these benefits of protection in individual cases may require very detailed justification at individual firm level, rather than aggregate industry-level data. Put differently, a justification based on shared data and industry-wide information may deliver little benefit, in that such data would not necessarily provide the evidence needed to justify different practices in individual cases.

None of the existing studies seeks quantification of the economic benefits of the justification requirement on its own; rather, the assessment is generally qualitative and combined with other rules on specific age-based practices.

5.3.2 Compliance costs

The compliance costs associated with the justification requirement have been estimated as being relatively small. The Experts' Working Group report suggests that the cost of providing evidence to justify age-based pricing in travel insurance amounts to £328,000 for the market as a whole, with an additional £170,000 of costs to provide evidence for age-related medical conditions (HMT 2008). Similarly, the ABI 2009 report provides estimates of the increase in compliance costs associated with removing age limits in motor and travel insurance if the restriction were combined with a justification requirement (ABI 2009a). The results of the additional cost of justification are presented in Table 5.3.

Table 5.3   Compliance costs for motor and travel insurance—additional cost of justification requirement if combined with removal of age limits

	One-off costs (£'000)	Average annual costs (£'000)
Motor insurance		
Additional cost of justification requirement	500	200
Travel insurance		
Additional cost of justification requirement	300	200

Source: ABI (2009a).

The low estimates in these studies are explained by the fact that prices are currently set on a risk-reflective basis and, if challenged through courts, providers would simply provide details of their internal pricing approaches. Thus, these estimates are based on an assumption that the actuarial correlation between (chronological) age and risk at the insured class level is sufficient evidence to demonstrate justification. However, the costs of 'proving' that the age-based practices are justified may be significantly higher if this assumption does not hold. For example, and although this has not been put forward as an option in the policy debate, if it

became necessary to justify allocation to a risk class using, say, functional age rather than chronological age,[47] the costs of establishing the customer's functional age would have to be incurred. No estimates for this are currently available, but they are likely to be considerably in excess of the costs identified above. Even if the costs are just £1 per person insured, the total would go into the millions if all age groups were subject to such a requirement.

In addition, although no estimates are available, the costs of a requirement to justify age-based practices are likely to increase the more detailed or disaggregated proof is required. For example, the requirement on an individual provider to present evidence to prove that a certain price increase is justified for a 64-year old turning 65. Renewing a specific motor insurance policy with the provider is likely to be significantly more costly for the individual provider than a general rule which allows the provider to charge higher premiums for older people as long as the price difference is within a range based on aggregate evidence gathered and shared by industry.

Furthermore, if there are current practices which cannot be objectively justified, firms may incur costs associated with amending these practices.

5.3.3 Potential unintended market consequences

Depending on how the justification requirement is implemented in detail, the indirect effect of such a requirement can be expected to be considerably larger than the pure compliance costs associated with gathering the evidence to show that prices are risk-based and cost-reflective.

The following sets out possible adverse consequences, which in principle could be avoided by relaxing the evidence requirements for individual firms.

– At the level of the individual firm, especially in cases where there is little data to estimate the risks underwritten (eg, because the risk is specific to a small class of insured or the firm does not have experience in underwriting it), the statistical results will always be volatile and prone to error. Even if prices had been set in an actuarially fair manner at the time a risk was underwritten, the provider may not be able to provide evidence to this effect using the data available at the time the proof is needed.

– The objective justification requirement may result in the removal of certain 'fair' practices from the market. For example, should a motor insurer have insufficient evidence to meet the objective justification requirement only to provide insurance for high-performance vehicles for individuals between the ages of 25 and 80, the firm may need to extend this type of vehicle cover across all ages. However, should this pose too great a risk to the insurer, the product (insurance cover for high-performance cars) may be removed for all consumers.

– Where firms are required to justify using their own data price differentials across fine gradations of age from their own data, and the market size they serve is small, there could be an interaction with the competitive dynamics of the market that might make the provision of such services unstable if a justification requirement were introduced. The dynamics would work as follows: the volatility of actual claims in small customer groups means that where a firm has had (randomly) a low claims rate in the past, it will be forced to set a low price looking forward to meet the justification criteria. However, the new customers gained as a result of this low price are unlikely to have the same (randomly caused) claims rate—there will tend to be reversion towards the average. Hence, this group will be undercharged and will turn out to be uneconomic to serve. The converse (where the historical record indicates a high claims rate as a result of random variations which will permit higher prices going forward) will tend to result in

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[47] This could apply, for example, if providers were required to establish causality and not just correlation between age and risk (or other costs). See also section 2.

uncompetitive prices and will not therefore (if the market is working) be taken up by customers. Firms with relatively volatile claims rates (which are likely to include the smaller firms) may find it impossible to develop a commercial strategy that is both economic and can be justified on the basis of their own information.

– In addition, the justification requirement is likely to have an asymmetric effect on different firms in terms of the costs of generating the information required. In particular, firms that are better equipped to provide the proof that differences in price are justified because of differences in risk—eg, because they use more advanced actuarial techniques or have a longer history or better access to statistical data—are likely to have a comparative advantage. Hence, the justification requirement may present a barrier to entry for new firms in the market.

– The justification requirement can, in principle, pose a legal risk even for providers that do not explicitly differentiate on the basis of age in their product pricing if they make a mistake in pricing along a different dimension or as a result of random variations in claims. This could arise, for example, where the provider sets prices on the basis of another risk factor (eg, mileage) and this factor is correlated with age (eg, older people tend to drive less); if the other risk is mispriced (eg, mileage is underpriced), the evidence could suggest that the provider had been discriminating on the basis of age (eg, older people pay more). Given the multitude of risk factors in underwriting models, many of which are correlated with age, the risk of drawing wrong conclusions about 'true' age discrimination is a real one, according to some insurers and independent actuaries consulted as part of this study. Such a risk also applies in the personal loan market, given the multivariate models used for credit scoring. In general, in any multivariate model in which age is a factor, it may be quite complex to isolate the influence of just age on costs and prices if the requirement is to justify the age component of the difference in treatment. This could have an impact on the practicality (and costs) of private litigation.

– The risk of legal challenge may also trigger more cautious underwriting or force the provider to hold more capital for the same level of risk, resulting in costs that are passed on to consumers.

– The objective justification requirement could also affect the capability to differentiate between prices for existing and new customers, as this may correlate with age. This would tend to increase barriers to entry into new markets.

– Objective justification may have adverse effects on competition because the freedom to price competitively may be restricted if prices in all age groups have to be justifiably cost-reflective. This may result in a reduction of innovation in policy terms, as firms cannot mitigate risk by limiting availability to a specific risk class when piloting an innovative scheme.

Depending on how the requirement is implemented, however, it is possible to reduce or eliminate these adverse effects, for example by:

– exempting new firms from the justification requirement until they have built the experience or evidence base to justify their pricing (or, similarly, exempting new products to minimise the adverse effects on innovation);

– relaxing the evidence requirements for certain age-based practices, or indeed exempting certain practices completely from the justification requirement (eg, specialised provision to specific age groups);

– imposing the justification requirement at industry level or ensuring that the requirement can be met by shared data.

More generally, the adverse consequences can be reduced or avoided by relaxing the level of proof required for individual firms or having an industry-wide justification only. However, as discussed in section 5.3.1, this limits the benefits that can be expected from having an objective justification requirement at all. There is also the question of what happens if an individual firm's data differs from the industry average, or if the age-based practices adopted by the firm can be justified by its own data but not using industry-wide data (or vice versa).

Unless a considerable degree of approximation is allowed in any justification, risk-based evidence alone (ie, claims frequency and average claims costs) is unlikely to be sufficient for providers to justify these practices. The precise prices charged in the marketplace result from several factors, which include (as an important element) claims rate and claims value, but also include transaction costs, commercial strategy, state of the market and competitive pressure. Some of these costs may also vary with age (eg, distribution costs) and could be included in any justification (although this would complicate the justification process). Others could not be strictly justified on cost grounds, notwithstanding that some non-cost-based price variations are observed in fully competitive markets. How much leeway there is between relative costs and relative prices before a price difference becomes unjustifiable would therefore have an impact on both the costs of collecting the required information and the restrictions on price variations between groups that the justification requirement would imply.

As the permitted variation between relative prices and relative costs narrows, the extent to which information (eg, distribution costs) will need to be gathered along the value chain and the extent to which commercial pricing freedom is constrained will increase. Similarly, in personal loan pricing, to the extent that lenders use third-party credit scoring models which contain age, a lender may not be able to provide the level of proof required just from its own data. Again, a more coordinated approach (at industry level and potentially along the value chain) may be required in order not to increase the legal risk for individual providers of not being able to provide justification if they are brought to court.

5.3.4 Distributional considerations

Given that there is little evidence of systematic overcharging of older people or other specific age groups, the requirement for justification could be expected to have a relatively small impact in changing the relative prices paid by different age groups in the market. To the extent that there is some cross-subsidy in the current pricing structure (which if anything works in favour of the higher-risk groups), it is likely that any change would involve higher motoring prices for the young and higher travel insurance prices for older people compared with the status quo.

If, however, the justification requirement induces different methods to allocate customers to risk classes, there may be more extensive distributional consequences, with a redistribution of prices paid by different customers. It is possible that this will lead to a change in the total premiums paid by any age group, but the direction of the change will depend on the alternative factors used to assign customers to risk classes. If providers' current systems are reasonably technically efficient in assigning customers to risk classes, there are more likely to be changes in the distribution of prices between individuals within age groups, rather than large-scale changes in total premiums between age groups.[48]

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[48] For example, if the justification requirement were to operate so that providers would need to measure a consumer's functional age rather than simply use chronological age, and the variance between chronological and functional age is greater at higher ages, a move to functional age would tend to result in a higher premium variation within any chronological age group, rather than a general lowering or raising of the premiums in any chronological age group. That is, the prices paid by the group of over 70-year olds may stay the same overall, but instead the effect may be that those whose functional age is lower than their chronological age end up paying less and those whose functional age is above their chronological age pay more. See also section 5.1.

5.4 Signposting and referrals

Unlike the measures discussed so far, which all involve direct restrictions on the underwriting and pricing process or impose additional evidence requirements on product providers, the final set of measures examined seeks to improve market outcomes by changing the distribution process directly—either by requiring a signposting of relevant providers, or by explicit referral to providers that cater for specific age groups.

–   Signposting—consumers who are turned down at the point of sale because of their age would be given the contact details of other providers supplying to the age group, via the Internet, by post, telephone or email, or face-to-face, depending on the distribution method and signposting system adopted. Once this information has been received, the consumer would then be able to contact appropriate providers directly.

–   Referrals—providers would have contractual arrangements in place to refer consumers who they are unable to supply to other providers that would be willing to offer the products. Thus, a motor insurer that applies a maximum age limit for new customers could partner with a specialist provider for older people and refer business enquiries to that specialist.

This option is less relevant for personal loans as there is little evidence of any age-based segmentation of this market. The focus below is therefore on motor and travel insurance.

5.4.1 Benefits

The potential benefits are similar to the main benefits described in section 5.2.1; namely, signposting and referrals would lead to improved access to products for consumers who currently have difficulties in finding providers or products that cater for their age—it would help them to obtain insurance cover and reduce their search for this cover.

Instead of improving access by requiring all providers to supply all consumers irrespective of age (ie, by imposing a ban on age limits), signposting or referrals seek to deliver the same outcome by better matching demand with the existing supply. That is, they seek to tackle the access problem without requiring changes in the underwriting process and existing product offerings.

While the outcome can be the same—ie, those (few) consumers who currently are refused or find it difficult to obtain insurance because of their age are more likely to obtain cover—signposting and referrals do not directly address the concern of those who object to the fact that the process of seeking insurance or the buying experience differs between consumers because of age. Even if the outcome is the same, a signpost or referral would still imply a differential treatment in the transaction process.[49] As discussed in section 2.2, this objection depends on interpretations of the concept of fairness or equity rather than efficiency.

According to existing surveys, consumers are generally open to the idea of signposting and referrals. For example, the majority of older consumers surveyed for the ABI 2009 report said that they would consider purchasing insurance from the insurer to which they had been referred or signposted; with more consumers appearing to prefer the signposting solution to the referral option.[50] This is supported in a previous survey by Saga.[51] In particular, 83% of respondents in the Saga survey thought that signposting to an independently run website or helpline was a 'very good', or 'somewhat good' idea, while 68% of respondents thought that

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[49] Some may also object to the possibility that consumers may not be able to buy the brand or seek cover from the insurer which they originally approached to buy the insurance.

[50] Interestingly, the consumers surveyed seemed to prefer either signposting or referral solutions to an outcome where providers were required to give a quote (but were free to set the price when doing so). The question may, however, not have been understood, and deciding between the alternatives is difficult for consumers, especially when they do not know how much they would end up paying in each case. See ABI (2009a), Figure 25.

[51] Saga Populus survey, August 2008.

referral to another company was a 'very good' or 'somewhat good' idea. Only 1% (3%) of respondents thought that signposting (referrals) was a 'very bad idea'.

In addition, signposting and referral systems already operate in practice and are being used by consumers. For example, one of the price comparison websites analysed as part of this study (see Appendix 2) does not provide travel insurance quotes to consumers above the age of 75, but signposts alternative providers who do. As another example, a British Insurance Broker Association (BIBA) helpline refers consumers to appropriate brokers. Also, some insurers have implemented referral services in their systems.

Since referrals provide the more explicit means of directing consumers to the relevant providers and products, the referral option may be expected to deliver the desired outcome in terms of improved access somewhat better than signposting—ie, consumers are more likely to obtain insurance as they are directly referred to another provider rather than having to use the signpost information and take the next steps themselves. On the other hand, consumers seem to prefer the signposting solution. Also, while both signposting and referrals improve the information and search process for consumers, signposting may be considered to be more conducive for shopping around—ie, consumers can select among the list of providers on the signpost rather than being referred to the contractual partner of the first provider they had approached.

Overall, the difference in expected benefits resulting from either signposting or referrals is unlikely to be significant. Assuming that the services would only be introduced for those consumers currently refused supply on the basis of age, the benefits for either service are in any case limited to these consumers.

5.4.2   **Direct costs to industry**
As regards the costs of providing a signposting or referral services in the motor and travel insurance market, these include the costs of setting up a signposting database or referral arrangements with relevant partners. Once set up, there are annual running costs, which include, for example, increased call times, as insurers who cannot serve particular customers will need to provide such customers with information about alternative providers, higher postal or printing costs, or the costs of updating the information and IT systems.

Cost estimates vary, but are generally considered higher for a referral system than for signposting, especially if the signposting involves a simple posting of a list of alternative suppliers—eg, on the Internet or a standardised letter that can be sent to the customer.

Estimates of aggregate compliance costs for signposting and referrals in motor and travel insurance contained in the ABI 2009 report are shown in Table 5.4.

Table 5.4   Compliance costs for motor and travel insurance—signposting and referrals

	One-off costs (£m)	Average annual costs (£m)
Motor insurance		
Signposting	1.3	3.5
Referral	1.6	4.6
Travel insurance		
Signposting	0.5	2.9
Referral	0.7	3

Source: ABI (2009a).

While estimates can differ depending on the source, they are broadly consistent with, although slightly lower than (especially for referrals), the costs reported by individual insurers

in the Experts' Working Group report or in the interviews conducted for this study. In general, the two solutions are perceived to be less intrusive than other measures proposed in the policy debate—in particular, the ban on age limits—with signposting considered the least intrusive.

5.4.3 Potential unintended market impacts

Signposting or referrals seek to address the access problem experienced by some consumers directly, without requiring changes in the underwriting process or providers' pricing structures. This means that the potential adverse market impacts discussed in section 5.2.3 above—eg, indirect costs due to less efficient pricing—are avoided.

Signposting or referrals may be misinterpreted by consumers as advice, and there is a risk that consumers purchase an unsuitable insurance product. However, the risk of unsuitable purchases also applies—and indeed may be greater—under the status quo or compared with a world where age limits were banned and a greater provider/product choice made available to consumers.

From an economic perspective, the problem in the market seems to be primarily difficulty of access to the relevant products by certain age groups, rather than a lack of product availability or inefficient underwriting/pricing. Signposting and referrals (or other means of facilitating access or information) can tackle the problem at source and at the same time avoid the potential distortive effects on the functioning of the market at the underwriting/ provider level that may result from measures which directly change age-based pricing and other supply decisions.

5.4.4 Distributional considerations

Signposting and referrals impose costs and, as with all policy measures in this area, the age groups who benefit from a change are not necessarily those who pay for the cost. However, these solutions avoid many of the efficiency costs associated with the other options. They are directed at facilitating access for those (few) consumers who currently find it difficult to obtain insurance because of their age (rather than requiring wider-reaching changes in underwriting practices, product offerings or pricing structures). As such, the signposting and referral options tend to be less costly and have less redistributive implications.

A1 Overview of the relevant academic literature

This appendix reviews the literature of relevance to this study, starting with the general literature on the economics of insurance and loan pricing and then summarising academic studies on discrimination, including empirical evaluations of the impact of discrimination legislation in other countries (the USA and Canada).

A1.1 General literature on insurance and loan pricing

A1.1.1 Economics of insurance pricing

Several academics have studied in detail the economics of insurance markets: Rees and Wambach (2008) and Dionne (2000) provide comprehensive overviews of the literature. Some of the key papers include Rothschild and Stiglitz (1976), Wilson (1977), Miyazaki (1977), Spence (1978), Riley (1979), Ania, Troger and Wambach (2002), and Hoy (2005). An overview of some of the main concepts follows.

Demand for insurance

Demand for insurance arises from risk-averse individuals wanting to insure against the possibility of unfavourable events in the future. Aversion to risk implies a preference for smooth (rather than variable) income across possible future states, and the degree of risk aversion will determine individuals' demand for insurance.[52] Insurance theory typically starts with the assumption that individuals have the same aversion to risk. However, the market implications of different aversions to risk have also been considered. Where, ex ante, moral hazard exists (eg, insurance cover reduces the effort taken by the individual to avoid accidents), individuals who are more risk-averse will take greater care to avoid accidents and thus be of lower risk, but also demand a higher level of insurance than otherwise similar individuals.

Supply of insurance

To the extent that insurers can pool risk over a large number of individuals, their relative exposure to each individual contract falls. Thus, in comparison to consumers, insurers can be considered risk-neutral. This effect of 'risk pooling' is based on a mathematical principle known as the 'law of large numbers', which implies that for a sufficiently large number of insurance contracts, it is virtually certain that the actual loss per contract will equal the expected loss for that contract. Therefore, when the number of individual insurance contracts sold by an insurer becomes very large, the risk that the realised loss per contract will exceed the expected loss becomes vanishingly small. This mathematical concept is explained in the context of insurance markets in Rees and Wambach (2008).

Through pooling risk across a large number of individuals, insurers can price individual insurance contracts equal to a premium set at their expected loss—the 'actuarially fair' premium—and still have sufficient capacity to compensate a greater loss on an individual contract, if this arises. In the absence of barriers to entry, Rothschild and Stiglitz (1976) establish that, as with all competitive markets, profits will be competed away. Thus, at equilibrium, insurers will be willing to offer only 'actuarially fair' premiums to individuals. At a premium lower than the individual's expected loss, the insurer will expect to make a loss and consequently leave the market, whereas any contract that makes an expected profit can be undercut.[53]

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[52] Risk aversion implies that an individual values the avoidance of actual loss more than the expected loss.

[53] The impact of additional transaction costs on insurance markets has been considered in a number of studies. Raviv (1979) finds that if these costs are fixed, the efficient contract design will have a two-part tariff design, while if they are marginal, the

Rothschild and Stiglitz (1976) and Schwarze and Wein (2005) demonstrate that efficiency is maximised when the premium an individual is charged equals their expected loss—their 'actuarially fair' premium. To this extent, efficiency is maximised (insurance premiums on average are minimised) when insurers can classify individuals according to risk (ie, when they can accurately estimate expected loss).

Rothschild and Stiglitz also demonstrate that this is the only stable market outcome within competitive insurance markets. Insurers cannot cross-subsidise between different risk types because any contract that makes an expected profit can be undercut, leaving the insurer with only the loss-making contracts. Since their seminal paper in 1976, insurance theory has developed, and the implications of alternative equilibrium concepts have also been considered.

A1.1.2 Economics on the principles of loan pricing

Credit markets share many similarities with insurance markets, arising from the uncertainty about the future and the imbalance of information between the provider and consumer in these markets. These and other economic characteristics of the demand and supply of consumer credit are summarised in Bertola, Disney and Grant (2006).

Demand for credit

While insurance is purchased to smooth income between different possible future outcomes, credit is often purchased to smooth consumption between periods as a result of income fluctuations. Alternatively, credit may be sought as a consequence of fluctuations in circumstances or opportunities, encouraging a consumer to purchase now and pay later.

The concept of consumption smoothing was developed by Modigliani and Brumberg (1954) and Friedman (1957) and is embedded within the modern economic models for credit demand. In its simplest form, consumption smoothing (termed 'permanent income hypothesis' by Friedman) states that consumers' choices relating to their consumption patterns are determined not by their current income but by their longer-term income expectations. The basic model predicts borrowing to be highest for younger cohorts whose incomes are low, and that saving will increase with current income such that assets peak just before retirement when individuals start to draw on their lifetime savings (including pensions). Borrowing reduces future disposable income and, for most older people, their income will not increase in the future, but is fixed by a pension. Therefore, unless in exceptional circumstances, it is not clear why older people would choose to sacrifice future consumption for current consumption.

Attanasio (1999) notes that shifts in household size and demographics may significantly change the utility of consumption, such that a one-way correlation between income and age is not strong. Nevertheless, older individuals can be expected to demand less credit relative to middle-aged individuals.

Supply of credit

In their traditional role, banks act as intermediaries between savers and borrowers, using deposits from savers to finance the supply of credit to borrowers (Freixas and Rochet, 1997). By definition, credit is provided in advance of payment, exposing banks to the risk that the consumer has taken out a loan that they cannot finance.

Economic theory typically starts with the assumption that the borrower knows the probability that they will default, and the lender does not. Therefore, similar to insurance markets, the consumer has an incentive to imitate lower-risk individuals to access credit at a lower price. As with insurance markets, this asymmetry of information can result in adverse selection when providers cannot classify risk. If the price of credit reflects the average probability of default across the market, low-risk individuals will be discouraged from borrowing. Therefore,

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contract will include a deductible, such that, for sufficiently small losses, it pays the buyer to absorb the loss rather than pay the marginal costs of meeting the claim.

as the proportion of high-risk borrowers is increased, the average probability of default will rise, resulting in higher interest rates and attracting fewer and less reliable borrowers. In this way, higher contractual interest rates can actually result in a lower return on each unit of credit extended, as proven by Stiglitz and Weiss (1981). Stiglitz and Weiss also prove that higher interest rates increase the relative attractiveness of riskier projects.

In practice, many banks use credit-scoring models to measure statistically the probability that credit will be satisfactorily repaid and to classify risk. Such models are based on the premise that it is possible, using statistical techniques, to predict the future performance of applicants with similar characteristics to previous applications (either of the credit grantor itself or groups of credit grantors). Scoring calculates the level of risk and reduces the element of subjectivity in lending decisions.[54]

A1.2   Academic literature on discrimination legislation: theory

The academic literature identifies that the impact of anti-discrimination legislation will depend on both the actual legislation in practice, and the characteristics of the market into which it is introduced.

Discrimination can be defined as differential treatment between individuals of the *same* risk type; the difference in contract terms offered cannot be statistically justified and may be considered subjective.[55] Alternatively, discrimination can be defined as differential treatment between individuals of *different* risk type. Here the difference in contract terms offered can be statistically justified, and so may be considered objective, but can still be discriminatory against the individual if they differ from the assumed group behaviour.[56] In the case of the age variable, if age is not correlated with risk then discrimination on the basis of age leads to discrimination between individuals of the same risk type; if age is correlated with risk, such discrimination is between individuals of different risk type.

Theory suggests that, in competitive markets, systematic differential treatment between individuals of the same risk type cannot last, and for that reason there is no need for intervention to remove such discrimination.[57] Becker (1971), and Peterson & Peterson (1978) theoretically prove this principle in the context of markets in general. Becker's finding also translates to imperfectly competitive markets where, so long as one firm is willing *not* to discriminate, at equilibrium no firm will discriminate.

The findings from these key papers have been applied to both credit and insurance markets. Elliehausen and Durkin (1989), for example, consider the impact of the US Equal Credit Opportunity Act (ECOA), predicting that should membership to any of the ECOA-protected groups (eg, marital status, race, age) not provide additional information on the member's creditworthiness, the ECOA will only have a detrimental impact by increasing operational costs. Thus, legislation prohibiting the use of 'superfluous' risk classification factors (ie, factors that serve to discriminate between individuals of same risk) is unnecessary since, in competitive markets, no firm would use such factors for risk classification and pricing.

Rothschild and Stiglitz's analysis of insurance markets also establishes that, at equilibrium, insurers cannot cross-subsidise between individuals. Therefore, unless they charge each individual their risk-reflective premium, they will make a loss overall and be driven out of the

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[54] For a comprehensive review of the recent developments in credit-scoring models, see, for example, Thomas, Edelman and Crook (2004).

[55] In the case of insurance markets, contracts may be defined over the maximum payout, the activities covered, the premium price and the use of any deductible. In the case of credit provision, contracts may vary according to the interest rate charged, size of loan, duration of loan, and use of any collateral.

[56] Subjective and objective discrimination are identified by Andreeva, Ansell and Crook (2004).

[57] While Stiglitz and Weiss (1981) predict that lenders will ration credit in the presence of excess demand, they indicate that this rationing will be at random, rather than based on distinguishable characteristics.

market. In this way, this form of discrimination is unlikely to exist even in the absence of legislation.

In relation to a different objective of legislation—to restrict the extent to which individuals of different risk types are treated differently—in general, theory makes the following predictions.[58]

– Restricting firms' ability to price according to risk will create problems of adverse selection, driving up average prices (higher average premiums, or interest rates) and reducing the level of supply available in the market (a lower total level of insurance coverage, or credit). In the extreme, the market may collapse.

– The negative implications of adverse selection worsen as the proportion of higher-risk individuals in the market grows.[59]

– Given that, by definition, the high-risk individuals are more likely to default on their loans or to claim insurance, prohibiting risk classification may have a detrimental impact on those whom the legislation is intended to protect.[60] Due to higher transaction costs (even if for no other reason), the legislation is also expected to impose costs on other groups (Flanagan, 1985).

– Prohibiting risk classification will disadvantage low-risk individuals, but may (or may not) benefit high-risk individuals.[61]

Adverse selection

If insurers or credit providers cannot classify risk, adverse selection will arise, driving up average premiums or interest rates, potentially to the point where the market collapses. This finding was established as early as 1976 for insurance markets, within the seminal paper by Rothschild and Stiglitz in which they consider the implications of asymmetric information on behalf of the insurer, regarding the risk type of individuals. This is comparable to a situation where insurers are prohibited from classifying according to risk type.

Rothschild and Stiglitz (1976) draw the following conclusions.

– In competitive insurance markets, a pooling equilibrium (where all individuals are charged the same premium rate) is not sustainable.

– Instead, if a competitive insurance market exists, insurers will screen different risk types by rationing the coverage available at each given premium rate. In the absence of risk classification, this will achieve a 'second-best' (in terms of efficiency) outcome. However, if the proportion of high-risk individuals is sufficiently high, a competitive insurance market may not be stable, with the consequence that neither the low- nor the high-risk types will be able to purchase insurance.

– If insurers could classify risk, the high-risk types would still be offered the same contract as they would have been under no risk classification (full coverage at their fair premium), but a higher level of coverage could be offered to the low-risk type. Therefore, if risk classification is allowed, a situation could be achieved where there is overall improvement in outcomes without worsening outcomes for any one individual or group.

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[58] On insurance markets, see Rothschild and Stiglitz (1979), Wolgast (2005), Schwarze and Wein (2005), and Rees and Wambach (2008). On credit provision, see, for example, Avery (1981) and Phelps (1972).

[59] See, for example, Rees and Wambach (2008).

[60] In particular, see Andreeva, Ansell and Crook (2004).

[61] For example, Rothschild and Stiglitz (1979) find that prohibiting risk classification will not improve the contract terms available to high-risk types in competitive insurance markets. In contrast, Wilson (1977), Miyazaki (1977), Spence (1978), and Riley (1979) suggest different concepts for equilibrium such that, in some—*but not all*—cases, prohibiting risk classification may improve the outcome for high-risk individuals.

Over time, insurance theory has been developed further—in particular, alternative concepts of equilibrium have been put forward. Under these concepts, a sustainable market outcome in which risk classification is not permitted becomes more likely—ie, a higher proportion of high risks can be tolerated, but there is likely to be some cross-subsidisation from low- to high-risk individuals.

The principles are simple to transfer to credit markets, where a lack of risk classification will result in higher average interest rates as opposed to higher average premiums. Adverse selection problems in banking are described, for example, in Freixas and Rochet (1997).

Moral hazard

The insurance literature identifies two forms of moral hazard, distinguished by Rees and Wambach (2008) as ex ante and ex post. Ex ante moral hazard is used to describe situations where the provision of insurance coverage reduces the incentive for the insured to reduce the probability or size of an accident. Ex post moral hazard is used to describe the overconsumption of compensation after an event has occurred. Particularly relevant in health insurance, ex post moral hazard could result in a motor accident victim consuming a higher level of rehabilitation care than they would have purchased themselves in the absence of insurance.

Risk classification can help insurers to mitigate moral hazard. For example, Schwarze and Wein (2005) suggest that deductibles could be increased for those with greater control over their future. By requiring individuals to bear the cost for their actions, risk classification can provide incentives to mitigate risky behaviour and therefore reduce moral hazard. For instance, if insurance premiums do not reflect the expected loss, high-risk types will pay too low a premium and consequently have a reduced incentive to drive carefully, while low-risk types will be overcautious or too reluctant to drive, given their, comparatively too high, premium.

The potential for moral hazard within credit markets has also been well established in the economic literature, albeit more with reference to borrowing by firms (see, for example, Stiglitz and Weiss 1981).

Table A1.1   Summary of other papers on the theoretical implications of anti-discrimination legislation

Reference	Brief overview of paper
Becker (1971)	**Discrimination that cannot be justified with statistical data will be competed away** Becker provides a generic framework that can be applied to many different markets to assess the extent to which discrimination will persist at equilibrium. Becker considers that an individual has a taste for discrimination if they act as if they were willing to pay something, directly or indirectly in the form of reduced income, to be associated with some people rather than others. This is equivalent to discrimination that cannot be justified with statistical data. Becker finds that such discrimination will be competed away, even in imperfectly competitive markets, so long as capital markets are competitive, firms' assets were transferable, and at least one producer had no taste for discrimination.
Andreeva, Ansell, Crook (2004)	**The prohibition of certain risk classification in credit markets, in absolute terms, may worsen the outcome for the protected groups** The authors refer to empirical studies on credit markets which illustrate that the prohibition of certain risk classification: — does not preclude discrimination; — may not enhance access or availability to the protected groups. Moreover, to the extent that prohibition of certain risk-rating factors can weaken the predictive power of credit-rating models, thus resulting in higher interest rates, it may also be disadvantageous to the groups which the legislation is supposed to protect, due to their higher default rate. In conclusion, the paper finds that anti-discrimination laws on credit scoring serve a political objective to enhance human rights in credit markets, but cannot be justified from an economic standpoint.
Avery (1981)	**Theoretically, the ECOA will increase operational costs, and may disadvantage the protected groups** Considering the theoretical impact of the ECOA, Avery draws the following conclusions. — If group membership does not provide additional useful information, prohibiting its use has no beneficial impact on credit screening (although it may increase operational costs). — If group membership provides additional useful information that cannot otherwise be identified, prohibiting the use of group membership raises the probability of acceptance for a random applicant from the low-return (high-risk) group, and reduces the probability of acceptance for a random applicant from the high-return (low-risk) group. However, this may only be a relative gain to the low-return group. — Credit screening will be more costly (either because default losses increase, or a more costly screening process must be used). — If creditors use initial screening (where select information is collected at no cost), the ECOA may encourage this form of screening, particularly for the low-return group.
Phelps (1972)	**Prohibiting the use of information that enables an employer (or creditor) to identify a better-performing group may place the disadvantaged class at an advantage relative to the better-performing group** Phelps develops an early information theory, labour market discrimination model that can be readily applied to consumer credit markets. The model predicts that prohibiting the use of information that enables an employer (or creditor) to identify a better-performing group may place the disadvantaged class at an advantage compared with the better-performing group. However, this is not always an absolute benefit, particularly if evaluation costs rise.

Reference	Brief overview of paper
Crocker and Snow (1986)	**When risk classification is costless, even imperfect categorisation enhances efficiency compared with no categorisation** Crocker and Snow consider the efficiency consequences of categorical discrimination based on sex, age or race in insurance and similar markets. They find that when categorisation is costless (ie, the cost to the provider of obtaining the information required to categorise risk), even imperfect costless categorisation enhances efficiency compared with the counterfactual or no categorisation. However, when categorisation is costly, the market equilibrium may be no more efficient than without such categorisation. Thus, when information is costly to providers, such categorisation can be an inefficient mechanism for allocating resources.
Hoy (2005)	**Only when the fraction of high-risk types is sufficiently small is it possible that banning risk classification might enhance social welfare** Hoy and Guelph consider the efficiency and equity consequences of banning risk classification within insurance and similar markets. They find that only when the fraction of high-risk types is sufficiently small is it possible that banning risk classification can enhance social welfare. Hoy draws comparisons with the exclusion of genetic tests within health insurance. Where the group of high risks is large, negative social welfare effects will be more likely. To identify how 'small' the group of high risks needs to be requires empirical research on the particular insurance market.
Kelly and Neilson (2006)	**There is no alternative to age as a classification variable within the Canadian motor insurance market. Age cannot be eliminated from insurance processes without creating undesirable market disruptions and increases in moral hazard** Considering the use of age in the delivery of personal insurance to Canadians, Kelly and Nielson find that age is a reliable classification variable and one that can be implemented in practice. However, due to the heterogeneity in driving abilities for both younger and older ages, the paper emphasises that this relationship is one of correlation (rather than causation). Alternatives to age are explored (such as those that more closely identify sensory and cognitive ability). However, none of the variables examined is found to capture a driver's risk with the same degree of accuracy as can be achieved using age. On the basis of empirical evidence from different Canadian provinces with different motor insurance regulation, the authors conclude that age cannot be eliminated from insurance processes without creating undesirable market disruptions and increases in moral hazard.
Wiegers (1989)	**The lack of data on age, gender and marital status limit the extent to which the efficiency implications of eliminating such variables can be assessed** Wiegers explores the economic, legal and ethical issues related to the use of Canadian motor insurance classifications based on age, sex and marital status. The text identifies the concerns with such rating variables (including the apparent arbitrary nature of the variables from the individual driver's perspective, due to the absence of a causation link) and the economic efficiency implications of eliminating current variables. The adequacy of alternative variables such as the number of years the driver has held a driving licence, annual mileage, vehicle use and driving record are considered. The paper concludes that the accuracy of such variables is difficult to assess due to the lack of data on such variables.
Woodfield (1994)	**Banning gender in insurance markets will result in adverse selection** Woodfield considers the impact of banning gender classification in insurance markets. He finds that this will create problems of adverse selection and is an ineffective device for increasing the welfare of those who pay high premiums because of their gender-specific high risk. Not only may it fail to raise their welfare, but targeted tax subsidies are more efficient.

Reference	Brief overview of paper
Thiery and Van Schoubroeck (2006)	**This paper considers how policy objectives to prohibit the use of 'discriminatory' rating variables can be married with the economics of insurance markets, which by nature are selective in their pricing** The paper considers that the extent to which differentiation within insurance markets is 'fair' could be clarified by bridging the apparent conflict between an 'individualistic' human rights approach to equality and an insurance 'group' approach. To this extent, considerations concerning subsidy aversion are deemed important in the legal justification of risk classification. These considerations relate to the controllability of risks, the (im)possibility of establishing a causal relation between risk variables and the risk itself, scepticism of adverse selection in cases where price-inelastic markets are concerned, and the influence of tracing costs on the choice of risk variables.
Woolnough (2004)	**Restricting the use of gender as a rating variable within insurance markets will increase premiums on average** The context of this paper is the proposed European Directive on Equal Treatment Between Women and Men in the Access to and Supply of Goods and Services. It finds that inefficiencies will arise because the overlap in terms of risk is only 80%. These inefficiencies are sufficient to raise premiums on average.

A1.3 Existing impact assessments (empirical literature on discrimination legislation)

In general, empirical academic studies that consider the impact of international anti-discrimination legislation strongly support these theoretical predictions—see the examples below.

– In the context of the ECOA, Elliehausen and Durkin (1989) find minimal evidence of differential treatment between individuals of similar risk type, supporting the theory that such discrimination will be competed away.

– Kelly and Nielson (2006) cannot find an alternative to the use of age in the delivery of motor insurance to Canadians, and consequently conclude (on the basis of empirical evidence) that age cannot be eliminated from insurance processes without creating undesirable market disruptions and increases in moral hazard.

– In the context of the Canadian motor insurance market, Mullins (2003a) finds that the use of social risk pricing, whereby riskier drivers are subsidised by the other drivers, does establish the problems predicted by moral hazard theory. For example, Mullins predicts that, should Ontario adopt a public insurance system with social risk pricing, collisions for young people in the province can be expected to rise by 41%.

Further detail is provided below on empirical studies examining the impact of anti-discrimination legislation in the following markets: personal credit in the USA; motor insurance in Canada; and motor insurance in the USA. However, it is worth highlighting the general conclusions reached in the studies reviewed. On the impact of the US ECOA:

– prior to the ECOA there is minimal evidence of discrimination on the basis of age, gender, or marital status;[62]

– there is some evidence that, through prohibiting the use of certain applicant characteristics, the ECOA may have disadvantaged some of the groups it intended to protect;[63]

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[62] Elliehausen and Durkin (1989) provide a comprehensive overview of the preceding empirical studies.

– through limiting information in credit-scoring models, the ECOA has worsened adverse selection, reducing the proportion of good loans accepted, and increasing the sum of bad loans accepted (Shinkel, 1980).

Regarding the role of risk classification within motor insurance in Canada:

– there is no as effective alternative to the use of age in the Canadian auto insurance market (Kelly and Nielson, 2006);

– eliminating age from insurance processes has contributed to undesirable market disruptions and increases in moral hazard (Kelly and Nielson, 2006; Mullins, 2003);

Regarding the impact of motor insurance regulation in the USA:

– the experience of Illinois, the only State without an auto-insurance rating law, compared to other States with such regulation, suggests that rate regulation for automobile insurance adds an unnecessary burden to insurers (D'Arcy, 2001).

– the substantial easing of regulation within South Carolina's auto insurance market doubled the number of insurers writing auto insurance and overall rate levels continued to fall (possibly reflecting declining claim costs) (Grace, Klein and Phillips, 2002).

A1.3.1 The US Equal Credit Opportunity Act

The federal Equal Credit Opportunity Act (ECOA) introduced in 1974 and amended in 1976 bans discrimination against credit applicants on the basis of race, colour, religion, national origin, sex, marital status, age, or because an applicant receives welfare support.[64] This was implemented by the Federal Reserve Board (FRB) through Regulation B, which bans creditors from using any of the prohibited factors within credit-scoring models.[65]

The impact of the ECOA has been considered in a number of papers and the overriding finding is that, at the market level, there has been minimal improvement for the protected groups.

Explanation 1: Membership to one of the ECOA-protected groups does not indicate that the applicant has a higher default risk

One explanation is that most assessments of the US credit markets do not find that membership to one of the ECOA-protected groups is correlated with a higher probability of default. In fact, there is weak evidence (listed below) that some of the protected classes are actually *more* creditworthy than the non-protected groups. The one exception is race. Therefore, theory predicts that in competitive markets any discrimination against ECOA groups (except race) will be competed away.

– Chandler and Ewert (1976) who take a sample of 2,000 credit card applicants and account holders between 1971 and 1974, find being female was positively related to creditworthiness.
– Boyes, Hoffman, and Low (1986) use post-ECOA data and find being older, or married, reduces the probability of default. Race, however, does have an impact on default risk, with black people more likely to default than white people, controlling for other factors.
– Avery (1982) consider 9,900 new accounts from 1968 to 1970 and finds that older, or married, customers are lower risk. Again, race was found to have an impact on default

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[63] Chalder and Ewert (1976) find that a model that ignores an applicant's sex (or only allows for limited differences in male and female risk profiles) accepts fewer female applicants than when gender is fully accounted for.

[64] The Equal Credit Opportunity Act, Public Law 93-495, Title V; and the amendment in March 1976, Public Law 94-239.

[65] Except for age, which may be used as a predictive factor, provided that those aged 62 or older are not assigned a negative factor or value. See FRB (2007).

risk, with black people more likely to default than white people, controlling for other factors.

– Altman et al (1981) review a further 13 credit evaluation models for consumer loans developed before the ECOA. Only eight of the models included ECOA-prohibited variables and found significant relationships between age, marital status, or sex and creditworthiness. However, Elliehausen and Durkin (1989) discredit all these credit evaluation models as suffering from selection bias, which confounds credit acceptance criteria with credit risk.

Explanation 2: Prior to the ECOA, the protected groups were not discriminated against

Regardless of whether the prohibited risk classification factors within the ECOA provided additional information about an applicant's creditworthiness, the practical question arises of whether, prior to the ECOA, there is evidence that any of the protected groups were discriminated against. For example, if discrimination on the basis of, for example, race has a substantial detrimental impact on brand image, even if statistically justifiable, creditors may choose not to classify on this basis.

Elliehausen and Durkin (1989) provide a comprehensive review of the preceding studies that consider evidence of discrimination.

A number of studies do not find statistically significant evidence of discrimination on the basis of age, gender or marital status.

– Peterson and Peterson (1978) and Peterson (1981) test for credit market discrimination on the basis of gender using a much larger dataset, originally collected by the FRB for a study of bank consumer credit practices. Using account information on 37,000 consumer loans at 30 banks over the period of 1965–71, the Petersons tested for a difference in default risks between different groups of people. They establish theoretically that should a creditor discriminate against a certain group of people, by requiring higher standards of creditworthiness, this would result in lower default rates for this group relative to the average. On this basis, they find some evidence of discrimination on the basis of gender (against women for home-improvement loans and against men for car loans). However, under a different approach, Peterson (1981) tests for discrimination by directly comparing interest rates to gender, credit score and other explanatory factors. On this basis, Peterson finds statistically significant discrimination on the basis of gender only in the case of household goods loans.

– Shay and Sexton (1979) test for discrimination using data on loan performance from a national retailer and a large finance company, prior to the ECOA. Estimating two models, only one containing variables for sex, marital status, and age, they do not find a difference in the predictive power of the two models. As such, there is no evidence that gender, marital status or age altered the standard of creditworthiness that applicants were required to meet.

– Marshall (1979) compared credit rejection rates by two large finance companies collected before and after the ECOA, considering the impact of gender, age and credit score on the probability that credit was granted. Marshall found that while gender did not have an impact on the credit-granting decision, age did. In one firm, prior to the ECOA, older applicants were more likely to be rejected than younger applicants with the same credit score. This effect disappeared after the ECOA. For the second company, evidence of similar discrimination against older applicants also persisted after the enactment of the ECOA.

– Nevin and Churchill (1979) find marital status and age had a negligible effect in differentiating good accounts from bad accounts at two large finance companies. This is further evidence that discrimination on the basis of marital status and age did not exist prior to the ECOA.

The following papers find some evidence of a relationship between loan performance and age, gender or marital status.

–   Smith (1964) found a relationship between loan performance and age, sex, and marital status.

–   Apilado, Warner, and Dauten (1974) detected significant effects for age and marital status, but not sex.

Elliehausen and Durkin (1989) conclude that there is minimal evidence of systematic discrimination. This is supported by Dunson and Reed (1991), who do not find any statistically significant evidence that creditors were discriminated against on the basis of age prior to the ECOA.

Within a previous paper, Durkin and Elliehausen (1977) report that few consumers consider they had been treated unfairly on the basis of gender, marital status, age or race—in response to the 1977 national consumer survey by the Federal Banking Agency, the figure was less than 5% of respondents.

Brandt and Shay (1979) consider two surveys: a national survey of households in 1977 and a survey of Californian households in 1970. They find that while single males and minorities perceived significantly greater difficulty in obtaining credit, such groups did not have significantly lower levels of non-mortgage debt. Of the groups protected by the ECOA, only respondents aged 62 or older had significantly lower levels of non-mortgage debt. However, Brandt and Shay comment that this may reflect lower demands for credit than discrimination.

Direct assessments of the impact of the ECOA
Few direct impact assessments of the ECOA are available. It is likely that the absence of strong empirical evidence that the ECOA-protected groups were discriminated against prior to the ECOA has reduced the motivation for empirical impact assessments. The findings of the studies available indicate that *prohibition does not resolve discrimination.*

–   Marshall (1979) compares credit rejection rates by two large finance companies collected before and after the ECOA, and found that, while for one firm, discrimination against older applicants disappeared after the ECOA, for the other firm it persisted.

–   Using Home Mortgage Disclosure Act data in their study, Munnel et al. (1996) find that in the Boston area, black and Hispanic applicants were nearly three times as likely to be denied credit as white applicants. These findings have been severely criticised by a number of statisticians and economists as suffering from omitted-variable bias, among other problems. (See Yinger 1997; Brimelow and Spencer 1993; Liebowitz 1993; Sandi 1993). When the analysis in the Munnel study was re-run to include 38 additional explanatory variables, the relative rejection ratio for blacks and Hispanics and whites was reduced from 2.8:1 to 1.8:1.

Chandler and Ewert (1976) find that models which ignore an applicant's sex (or only allow for limited differences in male and female risk profiles) accept fewer female applicants than when gender is fully accounted for. The authors conclude that the ECOA may have disadvantaged some of the groups it intended to protect.

Shinkel (1980) also studied the effect of limiting information in credit-scoring models, reaching similar conclusions. When excluding race, marital status, age or occupation, Shinkel found that the number of good loans accepted fell, and the number of bad loans accepted rose, relative to when such attributes were considered using credit-scoring models. Thus, Shinkel considered the ECOA to worsen adverse selection.

As concluded by Andreeva et al. (2003) and Elliehausen and Durkin (1989), theory predicts little success for the ECOA in improving market outcomes.

To the extent that the ECOA prohibits classification of risk along characteristics that *do not* truly reflect a higher default risk (potentially gender), its impact is likely to disadvantage such groups. The arising adverse selection will increase interest rates and reduce the total supply of credit, to the detriment of all borrowers.

Where legislation prohibits classification of risk along characteristics that *do* reflect a higher default risk, and such groups are at a higher economic disadvantage, such groups will be adversely affected by any increase in interest rates. While relative to other groups credit may be available on more similar terms, they may be worse when compared against the counterfactual.

A1.3.2 Canadian motor insurance

Several Canadian provinces restrict the use of age as a classification variable in motor insurance. For example, insurance Acts within Novia Scotia and other Atlantic provinces prohibit the use of age (along with marital status and other factors) as risk classification variables. In addition, the government-run motor insurance schemes in British Columbia, Saskatchewan, Manitoba and Quebec do not classify drivers by age, gender, or marital status; instead, they price risk on a social basis.

Mullins (2003a) presents data showing that:

–   provinces with public motor insurance have higher car accidents, death, injury and property damage rates than those with market-based insurance;

–   death, injury and property damage rates are even higher for young drivers in these provinces, and highest for males between 16 and 25 years old.

Mullins concludes that unique provincial characteristics do not account for the greater deaths and damage, but considers the likeliest explanation to be that public systems produce too many subsidised higher-risk drivers. Therefore, Mullins considers this strong evidence that social risk pricing, as opposed to risk classification, worsens moral hazard. To this effect, Mullins predicts that Ontario could be faced with 50 more deaths and 3,900 more personal injuries to young people, and overall property damage collisions could rise by one-fifth if the government adopted a public insurance system with social risk pricing.

Mullins (2003b) focuses on the cost of motor insurance within the public provinces (British Columbia, Saskatchewan, Manitoba and Quebec) relative to where insurance is provided through private markets. Mullins finds that the four public motor insurance provinces collectively have the highest average premiums in Canada, and predicts that British Columbia to be the most expensive province in 2004 (27% higher than the national average) and PEI and Nova Scotia the cheapest (at 36% and 33% below that average). Alberta is predicted in the study to be the most expensive private insurance province, but just 1% above the national average.

This supports the theory that prohibiting risk classification will increase average premiums by worsening adverse selection and moral hazard. However, in itself it is not conclusive evidence. Premiums may be higher due to greater inefficiencies within publicly run insurance schemes.

Mullins (2004) extends this analysis and reports that:

–   provinces with public motor insurance have the highest premiums and the lowest claims payouts in Canada, producing low motor insurance value (claims payouts compared with premiums);

–   provinces with public motor insurance also have a high number of claims per driver, between two and four times the number in the private sector, pointing to lax system management;

- insurance value had been falling in provinces with public motor insurance systems for the previous eight years and rising in provinces where drivers are insured by the private sector;

- the Atlantic provinces provide the best insurance value on these measures, with low premiums and higher-than-average claims payouts. Alberta and Ontario have higher premiums but also pay the highest claims in Canada.

Overall, Mullins provides evidence to suggest that social risk pricing worsens moral hazard, although it is not clear what drives the higher premiums within British Columbia, Saskatchewan, Manitoba and Quebec. This could be because such states prohibit the use of age, gender, or marital status as risk classification variables.

Kelly and Neilson (2006) find that age is a reliable classification variable in the Canadian motor insurance market and one that can be practically implemented, but also consider that the heterogeneity in driving abilities for both younger and older ages indicates that this relationship is one of correlation (rather than causation). They also investigate the extent to which there may be a 'better' classification variable. However, in the end, none of the variables examined captures a driver's risk with the same degree of accuracy as can be achieved using age. Thus, on the basis of empirical evidence, the authors conclude that age cannot be eliminated from insurance processes without creating market disruptions and increases in moral hazard that are themselves undesirable.

Leadbetter, Voll and Wieder (2004) find that rate regulation makes insurance premium more volatile for consumers. Their paper extends previous US studies that consider the experiences of South Carolina and Illinois, and consider the impact of rate regulation in Ontario on insurance premiums. The authors find that, after controlling for other variables that could affect volatility, there was a structural shift increase in volatility following the introduction of rate regulation in Ontario. They therefore conclude that consumers benefit from a less regulated price system.

Dahlby (1981) considers the role of gender classification in particular, within the Canadian motor insurance market. Using data from 1975 to 1978, Dahlby finds that prohibiting gender discrimination in the 21–24 age group would increase the premium for single females substantially, and that a significant proportion would no longer purchase collision insurance.

A1.3.3 US motor insurance

The 1945 US McCarran-Ferguson Act exempts any insurance company subject to other state regulations from federal anti-trust laws. To take advantage of this exemption, many US states adopted formal regulation of insurance markets. Thus, similar to Canada, there is great variety in the form of motor insurance regulation across the US states, including any legislation that restricts the use of observable characteristics such as age. For example, New York allows providers to price motor insurance based on age and gender, but the insurance law forbids an insurance company from refusing to issue a policy or to terminate one because of the race, religion, colour, national origin, disability, sex, marital status or advanced age of an insured or applicant. While Michigan does not allow motor insurers to price according to age or gender.

Illinois is one state without any formal regulation of motor insurance rates. As explored by D'Arcy (2001), the Illinois experience suggests that rate regulation for motor insurance is unnecessary. This study finds that the experience in Illinois is not significantly different from rate regulation systems:

- insurance is widely available from a large number of competitors;
- rate changes are frequent, modest and appear to follow claim experience;
- loss ratios and the size of the uninsured and residual market, as well as insolvency assessments, are in line with those in states which have rating laws.

Moreover, by removing the regulatory burden on insurers, the cost of insurance in Illinois is reduced, thus D'Arcy (2001) concludes that restrictive regulation induces market failure. This reflects earlier findings by Cummins, Phillips and Tennyson (2001) and Harrington (2001) that, in the long run, rate regulation has not been found to result in lower prices. Moreover, as Tennyson (1997) finds, insurance premiums in jurisdictions with rate regulation are often higher than in those with less rate regulation.

Another interesting example is provided by the South Carolina motor insurance market, where there has been a considerable shift in regulation over time. From the mid-1970s to 1998, South Carolina intensively regulated motor insurance. Rate levels and rate structures were restricted, insurers' underwriting discretion was limited and large cross-subsidies were channelled through its residual market. Contrary to political expectations, but consistent with economic theory, Grace, Klein and Phillips (2002) find evidence that these regulatory measures worsened market conditions. Furthermore, the authors consider that the substantial easing of regulation from 1999 was having positive effects for both consumers and insurers. For example, they report the number of insurers writing motor insurance had doubled by 2001, and overall rate levels had continued to fall, reflecting both declining claim costs and increased competitive pressures.

A2 Data gathered on insurance and loan quotes

This appendix describes the assumptions underlying the data on price quotes which was gathered from price-comparison websites and presented in the analysis in Section 3 and 4.

A2.1 Travel insurance

Data on the number of quotes and policy premiums was gathered from two price-comparison websites (Confused.com and Moneysupermarket.com) as well as from Saga.co.uk.

In order for the analysis to be consistent across ages, as well as across websites, the following assumptions were used when requesting quotes for European cover.

Table A2.1 Assumptions used when gathering data on travel insurance quotes

Gender	Male
Start of coverage	14/03/2009
Baggage cover	Yes
Cancellation cover	Yes
Winter sports cover	No
Travelling alone	Yes
Address	London
Destination (worldwide)	USA
Destination (Europe)	France
Prior medical condition	No
Length of trip for single-trip quote	Two weeks

Source: Oxera.

The websites differed in the age limits that applied when requesting quotes. Moneysupermarket.com does not seem to have upper age limits. When requesting quotes from Moneysupermaket.com there is a special link for 'Travel insurance for over 65s'. If this link is followed the shopping experience is very similar to the main part of the website.

Consumers over the age of 65 can still proceed to the main part of the website (ie, not follow the link for 'Travel insurance for over 65s') and get quotes. They will get a message stating that the website noticed the applicant is over 64, and although they specialise in 64 and under, they are nonetheless happy to offer quotes.

Confused.com has an upper age limit of 75. For consumers over the age of 75, the website offers links and phone numbers to specialist companies.

Saga.co.uk requires the customer to be at least 50 in order to receive a quote. In addition to the above assumptions, Saga.co.uk asks a number of medical questions before a quote is received.

A2.2 Motor insurance

The websites from which quotes were received for motor insurance were Confused.com, Moneysupermarket.com and Saga.co.uk. When looking to receive quotes from these websites you are asked to provide information regarding your person, the type of cover you wish to receive, the car you wish to insure and security issues. In order to remain consistent, the following assumptions were always used when requesting a quote.

Table A2.2   Assumptions used when gathering data on motor insurance quotes

Person	
Marital status	Married
Address	Ilford, Essex
Employment status	For 65+, retired and 18–65, recruitment consultant
Licence held since	From 18
Have the use of any other vehicle	No
Type of licence	Full UK
How many cars at your home	One
Any children under16	No
Homeowner	Yes
Any claims in the last five years	No
Convicted of any motoring offences in the last five years	No
Any non-motoring convictions	No
Additional drivers	No
Car	
Make	Ford
Model	Focus—Zetec Climate Hatchback
Year	2006
Engine	1.6
Value	6000
Imported	No
Modified	No
Number of seats	5
Who owns car	Policy proposer
Whose name on registration	Policy proposer
When was car bought	2006
Fuel type	Petrol
Transmission	Manual
Security	
Alarm/immobiliser	Manufacturer-fitted alarm and immobiliser
Tracker	No
Where is car kept during the day	At home
Where is car kept overnight	Garage
Cover	
When does cover begin	14/03/2009
Kind of cover	Comprehensive
What is car mainly used for	Social only
How many years worth of no claims bonus do you have	5
Would you like to protect your no claims bonus	No
Total annual mileage	1,750
Voluntary excess	0

Source: Oxera.

The websites differed in the age limits that applied when requesting quotes. Confused.com states that 'Driver needs to be between 17 and 95'. Moneysupermarket.com did not specify any age limits. Saga.co.uk would offer insurance to people over 50.

A2.3   Personal loans

The websites looked at were Confused.com, Moneysupermarket.com, Comparethemarket.com and Moneynet.com. No data was gathered, but the websites (as well as the websites of a sample of large lenders) were screened to understand how age fits in the process.

When requesting quotes for personal loans the above websites did not ask for the applicant's age at the initial quoting stage. Instead, the websites asked for the following type of information:

–   loan amount;
–   loan period;
–   residential status;
–   the intended use of the loan (specific to Confused.com);
–   description of credit history (specific to Confused.com);
–   information on any CCJs.

In the terms and conditions of the initial quotes offered, there were no maximum age limits, but there were minimum age limits ranging from 17 to 25.

A3 Consumer survey

This appendix contains details of the Oxera survey, as well as additional charts and tables referred to in section 3.

A3.1 Survey methodology

Oxera commissioned GfK NOP to undertake a nationally representative survey of more than 2,000 consumers (plus a boost to increase the number of respondents aged 80 and over). The survey explored the demand for motor and travel insurance and personal loans by different age groups as well as access to these products by age group.

The survey was undertaken as part of GfK NOP's weekly Omnibus survey, with face-to-face fieldwork with the aid of a laptop (known as CAPI).

The survey was divided into two parts, one of which entailed a boost of the 80+ age group, all of which are described below.

–   The first part analysed demand for, and rejections to, motor and travel insurance and personal loans, as well as the distribution channels used by different age groups. The fieldwork for this was undertaken from March 12th to 17th, targeting respondents over the age of 18.

–   The above was then repeated targeting respondents over the age of 80 only, to boost the number of respondents in this age group. This fieldwork was undertaken from March 19th to 24th.

–   The second part of the survey analysed access to insurance and loans, and was targeted at respondents over the age of 18. The fieldwork was undertaken from April 2nd to 7th.

The survey results were obtained across a number of demographics, including age, sex, social grade and region. These are illustrated in Table A3.1 below using the first part of the survey.

The sample in the table excludes the 80+ boost which doubled the number of responses in this age group—ie, the sample of consumers aged 80 or over increased to just over 200.

Table A3.1 Demographics

Demographic	Value	Number of respondents
Age band	18–24	211
	25–49	926
	50–59	285
	60–69	277
	70–79	217
	80+	108
Sex	Male	937
	Female	1087
Social grade	AB	436
	C1	515
	C2	432
	DE	641
Region	North	114
	Yorks and Humber	180
	East Midlands	153
	East Anglia	77
	GLC	241
	South East (excl. GLC)	345
	South West	202
	Wales	94
	West Midlands	184
	North West	207
	Scotland	183
	Northern Ireland	44

Source: Oxera survey.

The use of age-based practices
in financial services

A3.2   Additional results

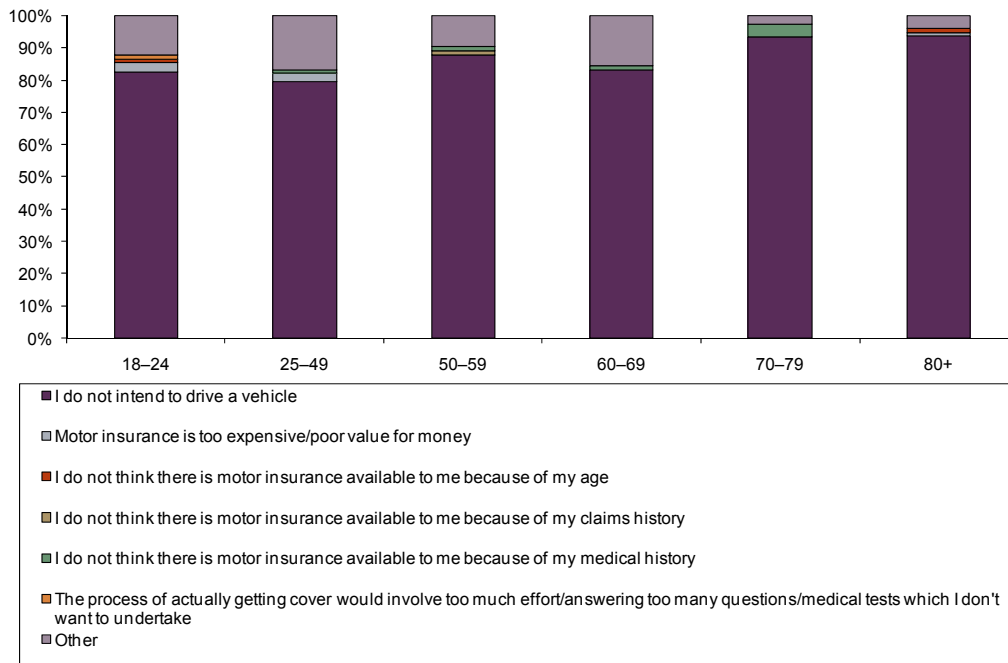**Figure A3.1 Channels used when purchasing travel insurance**
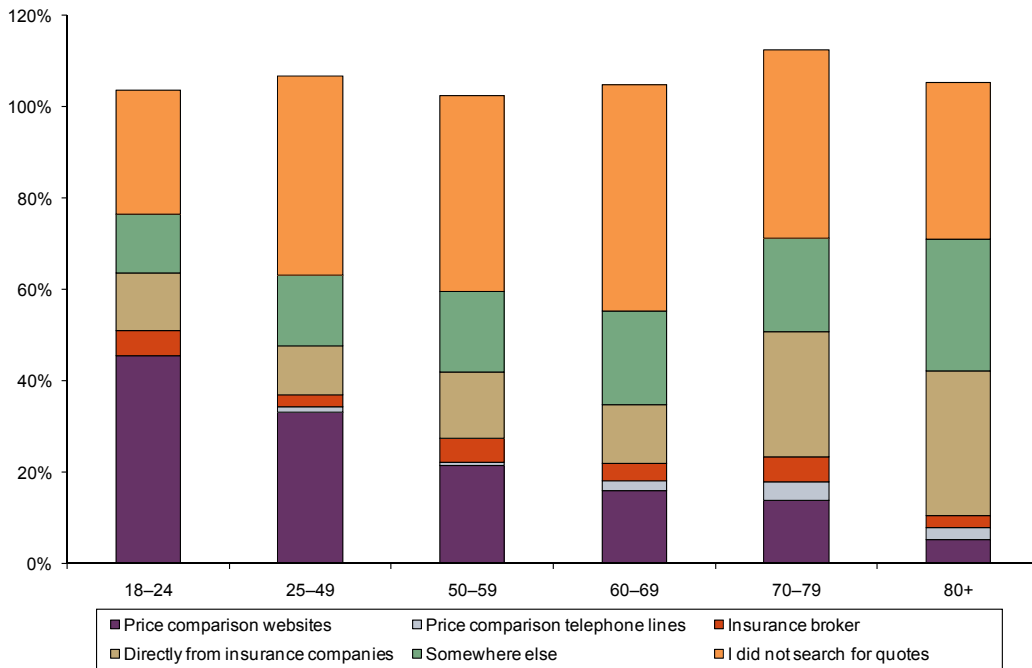
Base: Respondents who held/had held or had tried to purchase travel insurance in the previous year.
Note: Excludes respondents who answered Don't know or who refused to give an answer. Respondents were allowed to give more than one response if they used more than one channel in their search, which explains why the total adds to more than 100%.
Source: Oxera survey.

Figure A3.2 Main reason why respondents do not intend to buy motor insurance

Base: Respondents who held/had held or had tried to purchase travel insurance in the previous year and do not intend to purchase motor insurance in the next year.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

Figure A3.3 Main reason why respondents do not intend to buy travel insurance

Legend:
- I do not intend to go on holiday abroad
- Travel insurance is too expensive/poor value for money
- I do not think there is travel insurance available to me because of my age
- I do not think there is travel insurance available to me because of my claims history
- I do not think there is travel insurance available to me because of my medical history
- The process of actually getting cover would involve too much effort/answering too many questions/medical tests which I don't want to undertake
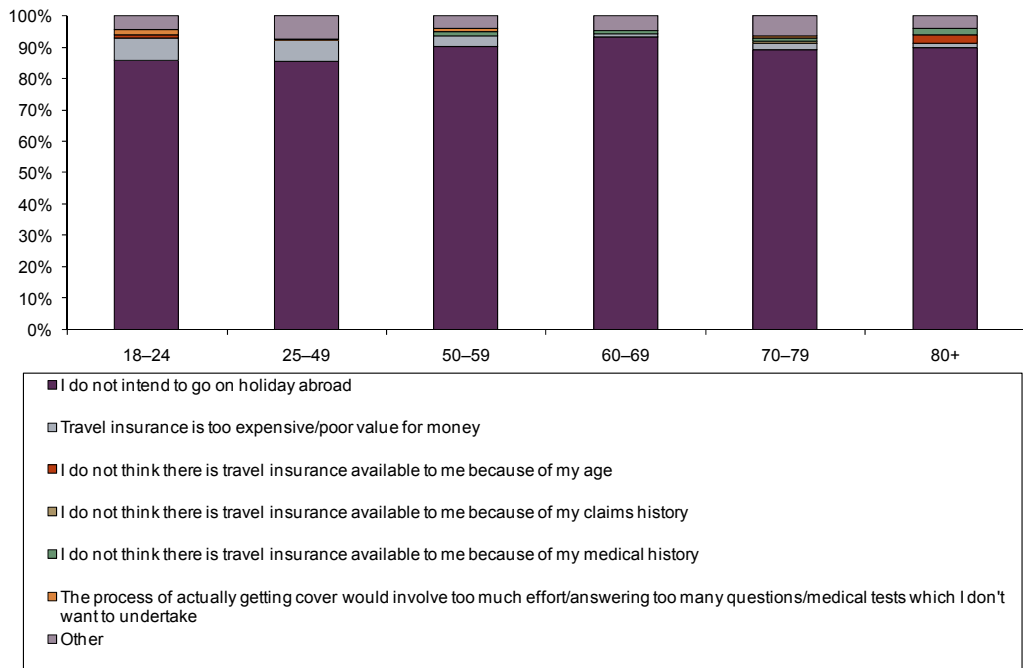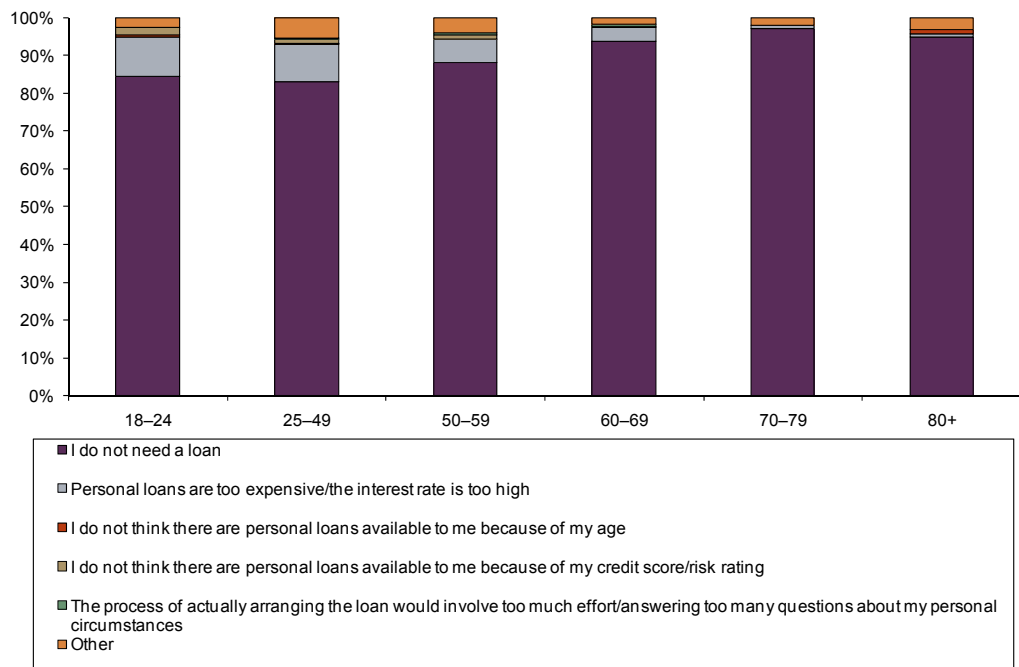- Other

Base: Respondents who held/had held or had tried to purchase motor insurance in the previous year and do not intend to purchase motor insurance in the next year.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

Figure A3.4 Main reason why respondents who did not hold a personal loan in the previous year do not intend to take out a personal loan in the next year

Legend:
- I do not need a loan
- Personal loans are too expensive/the interest rate is too high
- I do not think there are personal loans available to me because of my age
- I do not think there are personal loans available to me because of my credit score/risk rating
- The process of actually arranging the loan would involve too much effort/answering too many questions about my personal circumstances
- Other

Base: Respondents who held/had held or had tried to purchase personal loan in the previous year and do not intend to purchase a personal loan in the next year.
Note: Excludes respondents who answered Don't know or who refused to give an answer.
Source: Oxera survey.

Table A3.2   Age as one of the reasons why respondents who did not hold the product in the previous year do not intend to buy it in the next year, by age group

	18–24	25–49	50–59	60–69	70–79	80+
Motor insurance	2.0	0.5	0.0	0.0	0.0	5.3
Travel insurance	2.6	0.8	0.8	0.0	3.5	7.5
Personal loans	2.5	1.0	0.4	2.0	1.9	5.6

Base: Respondents who did not hold/had not held and had not tried to purchase the product in the previous year, and do not intend to purchase the product in the next year.
Note: Excludes respondents who answered Don't know or who refused to give an answer. Respondents were allowed to select multiple responses.
Source: Oxera survey.

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