Europe Economics

The impact of enforcement on tax and fines compliance

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Contents

Executive Summary

Civil Enforcement Association, CIVEA, commissioned Europe Economics to investigate the ways in which enforcement affects compliance with taxes and fines. Enforcement action proves necessary against people who do not pay their speeding fines, parking fines or taxes.

A key impact of enforcement is on the compliance with the original tax or fines. In addition to the benefit of recovering monies from those who did not pay, enforcement also provides incentives for those who might otherwise be non-compliant to pay without being pursued.

Our Models

Our models are estimated using a combination of public domain data and private data obtained from enforcement agents. Public domain data (drawn from sources such as ONS, IFS and Ministry of Justice) was used to estimate the volume of fines/tax issued and what proportions of different types of people and/or people in different regions pay them. Private data obtained from enforcement agents informed us of certain of the characteristics of people against whom enforcement action was taken.

Our model is built upon people's "recalcitrance" - i.e. their tendency to avoid paying taxes or fines without enforcement action being taken against them. Recalcitrance differs between people depending on their age, sex, region and occupation. As our measure of the impact of enforcement, we compare the status quo to a situation in which enforcement is just light touch enough that none of the most recalcitrant type of people pay. Once the most recalcitrant type of person is identified, we estimate how many other, less recalcitrant people would pay and how much they would pay.

In order to estimate how many other people would not pay in a world where enforcement is limited in this way, we assume that (if enforcement were uniform today) the ratio of the number of non-payers of the most recalcitrant type to non-payers in other categories would stay the same as it is today. However, enforcement action is not uniform across categories, even after allowing for differences in numbers within those categories. So, in addition, we assume that, in the world with limited enforcement, the current enforcement vigour differential disappears as well. The consequence is that those types of people against whom enforcement is currently more vigorous experience a greater drop-off in their tendency to pay. We recognise the important distinction between those unable to pay and those that choose not to pay, and emphasize that our approach does not result in those currently unable to pay being assumed to pay i.e., no one who is not paying at present will be paying under our model scenario.

To assess the impact of enforcement on people paying their taxes/fines on time, we have created 3 sets of economic models:

- Speeding Fines: We created a single model for speeding fines. The speeding fines model uses age, sex and regional characteristics of the offender.
- Council Tax: We created 2 models for council tax: simpler and richer. The "simpler" model uses the age and regional characteristics of households whereas the "richer" model uses age, regional and occupational characteristics of households. The simpler model uses the full enforcement dataset but does not make use of occupation data and the richer model uses occupation data and uses only the subset of enforcement data for which occupation is recorded.
- Penalty Charge Notice ('PCN'): We created 3 models by the type of PCN – parking, bus lane and Dartford crossing charge ('Dart Charge'). The parking and bus lane models use the age, sex and regional

characteristics of the offenders and Dart Charge only utilises age and sex as relevant characteristics for offenders.

Results

Speeding fines: The model suggests that, absent enforcement, over 860,000 (39%) more people would not pay their speeding fines than do so today. We estimate the total additional amount of speeding fines not paid, under this scenario, at £107 million per annum.

Council tax: Our estimates from the 'simpler' and 'richer' models suggest that local authorities would collect between £5.7 billion and £12.0 billion less in council tax every year under limited enforcement.

Overall our 'simpler' and 'richer' models suggest that, absent enforcement, over 7 million and 3.2 million more households, respectively, would not pay their council tax than do so today. The simple and rich models estimate the total additional amount of £12 billion and £5.7 billion less, respectively, in council tax would be collected if enforcement were only very light touch.

PCN: Adding up the estimates from parking, bus lane and Dart Charge fines, our models suggest £345 million of PCN fines would not have been collected if there were limited enforcement.

For parking offences, over 2,900,000 more people would not pay their PCNs than do so today. We estimate the total additional amount of parking PCNs not paid, under this scenario, at £265 million per annum.

For bus lane offences, over 730,000 more people would not pay their PCNs than do so today. We estimate the total additional amount of bus lane PCNs not paid, under this scenario, at £55 million per annum.

For Dart Charge, over 900,000 more people would not pay their PCNs than do so today. We estimate the total additional amount of Dart Charge not paid, under this scenario, at £63 million per annum.

Table 1: Summary Statistics

Type of fine/tax	Incremental effect of enforcement (#)	Fine/tax uncollected	Additional Breakdown
Speeding fine	860 thousand	£107 million	
'Simple' council tax	7 million	£12 billion	
'Richer' council tax	3.3 million	£5.7 billion	
Penalty Charge Notice	4.6 million	£383 million	Parking: £265 million Bus: £55 million Dart Charge: £63 million

Source: Europe Economics Analysis.

1 Introduction

This is a report, commissioned by the Civil Enforcement Association, CIVEA, about the ways enforcement affects compliance with taxes and fines. Some people do not pay their speeding fines, parking fines or taxes. Enforcement agents pursue payment via various strategies, subject to certain restrictions on what they are allowed to do in such pursuit. One rather naïve way to think about the merits of restrictions on the scope for enforcement action would proceed as follows. The benefits of the enforcement action are the monies recovered. The costs are the costs of the enforcement agents themselves, plus costs to those enforced upon such as their time or psychological distress caused by the process, plus any additional court time taken up in the process.

The key flaw in the argument above is that it misses a key impact of enforcement: the impact on compliance with the original tax or fine. Enforcement isn't simply about recovering money from the non-compliant and enforcing court judgements[1]. It is also about providing incentives for those who might otherwise be non-compliant to pay.

In this report we shall estimate by how much enforcement increases compliance. Our measure of that will be the amount that is paid, currently, by people who comply with their taxes or fines, but would not be paid if enforcement were much lighter, in a sense that we shall explain below.

1.1 The current situation with non-payment and enforcement

Rates of payment vary across the taxes and fines we have considered in this project. Of the 24 million council tax bills issued every year, payments have remained consistent with around 97 per cent of people paying their council tax in the England and Wales. By contrast, of the roughly 2 million fines involving speeding offences issued in England every year, around 82 per cent of speeding offenders pay their fines in England and Wales. The table below shows the proportion of people paying their fines/tax by category of offence or tax.

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[1] See, for example the excerpt from Transforming bailiff action – Ministry of Justice, "The need for a workable means to enforce the payment of debts and fines is one of those unpalatable but necessary facts of life. Without assurance that it is possible, with due process, to recoup money from debtors unwilling to pay, it would be too risky for creditors to lend. Without prompt and effective enforcement ensuring that offenders ultimately pay their fines, the authority of courts and public trust in their effectiveness would diminish.
Bailiffs are therefore one of the backstops of both our economy and justice system. They play an important role recovering money, and help create the conditions for a market economy and the rule of law to thrive." [online]

Table 1-1: Percentage of people paying the tax/fine within one year

Type of tax/fine	Proportion of tax/ fine paid
Council Tax	97%
Speeding fines	82%
TV Licence Evasion	32%
Vehicle insurance offences	53%
Over the drink driving limit	88%
Failing to provide info on driver's identity	53%
Use of hand-held mobile phone while driving	77%

Source: CIVEA, Ministry of Justice

CIVEA members recover such unpaid taxes and fines on behalf of local authorities and Her Majesty's Courts and Tribunals Service (HMCTS). CIVEA's scope of enforcement responsibilities include council tax, business rates, parking fines, magistrate court fines and child support payments. CIVEA members enforce around 2.8 million cases and recover over £500 million in unpaid taxes and fines every year.[1]

The enforcement process involves three-stages: compliance, enforcement and sale. The first step is the compliance stage where one is sent a 'Notice of Enforcement'.[2] Debtors are expected to contact the enforcement agent ("EA") for payment arrangements. If there is no response from the debtor at the compliance stage, the matter is moved to the enforcement stage where there will be at least one visit from the EA to arrange payment. Subsequently if the payment is not made in full, there is a risk of moving to the sale stage, where possessions are removed for sale by the EA. As an illustration, around 40 per cent of unpaid council taxes are subsequently collected at compliance stage. Furthermore, only 2.5 per cent of fees and debt from Council Tax arrears that are paid completely are collected at the Sale stage.[3]

Statistics from the Ministry of Justice reveal payment rates of fines based on the age, sex and regional characteristics of the offender. For example, the data reveals people living in London are less likely to pay their fines within a year as compared to people in other regions. Furthermore, younger people, especially aged 25-29, are less likely to pay their fines as compared to other age group and men are less likely to pay their fines than women.

Table 1-2: Percentage of payers by age groups

Offence Type	Age Group (years)								
	18-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+
TV Licence Evasion	42%	42%	41%	41%	41%	43%	44%	46%	50%
Vehicle insurance offences	63%	57%	57%	59%	61%	64%	66%	69%	76%
Speeding offences not detected by camera devices	88%	84%	86%	87%	89%	89%	91%	93%	95%
Speeding offences detected by camera devices	81%	80%	81%	83%	85%	87%	88%	89%	93%
Over the drink driving limit	89%	82%	81%	82%	83%	85%	88%	90%	95%

Source: Ministry of justice – Criminal Court statistics (also for Table 1-3 and Table 1-4)

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[1] CIVEA: About CIVEA [online]

[2] The 'Notice of Enforcement' contains all relevant details on the outstanding debt such as debt value, payment procedure and due date and contact details of EA

[3] CIVEA: What is Civil Enforcement [online]

Table 1-3: Percentage of payers by region

Offence Type	HMCTS Region						
	London	South West	North East	Midlands	North West	South East	Wales
TV Licence Evasion	22%	28%	33%	32%	35%	35%	49%
Vehicle Insurance Offences	45%	49%	58%	53%	51%	55%	64%
Speeding Offences not detected by camera devices	77%	89%	84%	88%	84%	89%	92%
Speeding Offences detected by camera devices	72%	83%	78%	84%	78%	83%	92%
Over the Drink Driving Limit	89%	87%	87%	88%	86%	89%	89%

Table 1-4: Percentage of payers by sex

Offence Type	Male	Female
TV Licence Evasion	39%	43%
Vehicle insurance offences	60%	65%
Speeding offences not detected by camera devices	88%	90%
Speeding offences detected by camera devices	84%	89%
Over the drink driving limit	85%	87%
Failing to provide info on driver's identity	50%	59%
Use of hand-held mobile phone while driving	80%	83%
Railway offences under British Railways Board Byelaws	29%	33%
Other offences connected with vehicle registration and excise licence	48%	51%
Railway offences under Railway Regulation Acts	32%	42%

In regards to council tax payments, families with children and single parents are more likely to default than any other type of households. Furthermore, people who rent their homes are more likely to default than homeowners, and people who work part time are also more likely to default.[1] Furthermore, data from MHCLG[2] and MoneyDashboard reveal trends in payment rates based on age, occupational and regional characteristics of households. For instance, households in the North East and North West are less likely to pay their council tax within a year. Furthermore, older people are more likely to pay their council tax as compared to younger people. Finally, people with higher income are more likely to pay their council taxes on time. The IFS produce estimates of payment rates by age and region (Figure 1-1).

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[1] StepChange Debt Charity: Council tax debts [online]
[2] Ministry of Housing, Communities & Local Government

Figure 1-1: Proportion missing at least one month's council tax payment April-June, conditional on having made a payment in both December and January, by demographic characteristics
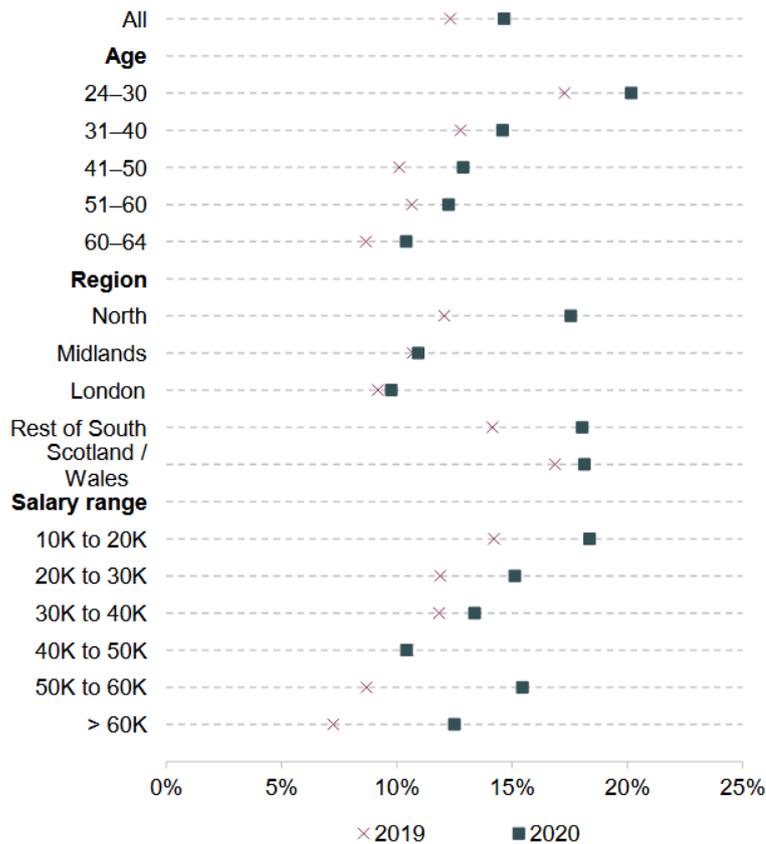
Source: IFS, Figure 5.4 of https://ifs.org.uk/uploads/BN317-Employment-income-and-council-tax.pdf

1.2 What our model estimates

Even if the general nature of the question raised in this report is fairly clear, its exact implications in terms of a model are less straightforward. Are we really asking the question: "How much would be paid in taxes or fines if there were no enforcement whatever, such that all fines payments or taxes would be voluntary?" The answer to that question may have a certain sort of abstract interest. Maybe there are a few sorts of people that would pay taxes entirely voluntarily out of a sense of civic duty. But it would presumably be quite a low percentage – rather close to zero. The percentage of people who get fined – and thus by definition were people whose sense of civic duty did not extend to not speeding or not parking where doing so was forbidden – would presumably be even less.

In that sense, perhaps we could say that almost the entire sum raised in taxes or fines is defended by enforcement. And that would not be wholly wrong, but it is perhaps slightly too wide-ranging a point for our purposes here.

We, instead, will consider a slightly different thought experiment. We shall refer to people's "recalcitrance" as their tendency not to pay taxes or fines without enforcement action being taken against them.[1] Recalcitrance differs between people. As we shall see, there are differences between sexes, between age groups, regions of the country, occupations and so on.

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[1]   Below we shall discuss the distinction between a refusal to pay when one is able to do so and a simple inability to pay.

Let us imagine that one could identify the most recalcitrant type of person there is. Then consider a level of enforcement just low or mild enough that none of the most recalcitrant type of people pay. How many other, less recalcitrant people would pay and how much would they pay? That is the thought experiment that underpins the models we shall set out here.

So, to spell this out, suppose that in England there were just three regions: The North, the South, and London. And suppose there were three age groups: The older, the middle aged and the young. And suppose the only characteristics relevant were age, region and sex. Then imagine the most recalcitrant type of person in the country were a young man from London. We would be imagining a level of enforcement just low enough that no young man from London would pay.

1.2.1 Two key strong assumptions

The challenge, then, is how to estimate how many other people would pay under these conditions, and if so how much they would pay. We estimate this based on two key, quite strong assumptions. First, we assume that in the world where enforcement was so limited that none of the most recalcitrant type of person would pay, the ratio of the share of non-payers of the most recalcitrant type to non-payers in other categories would stay the same as today. So, for example, continuing with our illustrative example above, if young men from London are the most recalcitrant group and at the moment five times as many young men from London do not pay as older women from the North, we assume that in our reduced-enforcement world in which every young man from London does not pay, one fifth of that number of older Northern women do not pay (subject to an adjustment we describe below).

The above is not quite the end of the story, however. For enforcement action is not even across categories, even allowing for differences in the numbers within those categories. For example, enforcement action is taken against a much lower percentage of young people fined for parking than young people's percentage of parking fine awards.

This is unsurprising, for a number of reasons. First, although one motivation for enforcement action is the defence of compliant payments we are exploring here, another is the recovery of funds. Enforcement agents are mandated to collect only from non-vulnerable people who can pay. Second, it would still be the case that enforcement action would be uneven even if the recovery of funds were not a motivation, because in order for enforcement to create incentives for compliance, enforcement must sometimes succeed. If enforcement never resulted in monies being returned, it would not provide a credible threat that could induce compliance. Third, the fee structure is geared to ensuring EAs focus on those who can pay, because fees come directly from the debtor. Groups who are evidently asset rich are more likely to pay. EAs remuneration therefore focuses enforcement activity on debtors with the greatest capacity to pay when faced with legal enforcement action.

The consequence of the above (or perhaps of some other reasons) is that the pattern of enforcement is not even. That means that some types of people may be more recalcitrant than other types despite being enforced against more vigorously. We shall assume that in the world where enforcement is so light touch that none of the most recalcitrant type of people pay at all, this enforcement vigour differential disappears, with the consequence that those types of people against whom enforcement is currently more vigorous than other types will have a greater drop-off in their tendency to pay. We assume that this differential drop-off is proportional to the difference in the current degree of enforcement.

So, again continuing with our example, if the average amount of enforcement is that against middle-aged Southern people, and a fifth of both older Northern people and middle-aged Southern people would not pay in our light-touch enforcement scenario, before adjusting for differential enforcement, but older Northern people are twice as likely to be enforced against as middle-aged Southern people, then we would assume that 40 per cent of older Northern people would not pay.

1.2.2 Limitations of the model

The model requires certain fairly strong assumptions to achieve its results. It also requires data. Each of these areas creates limitations to the model.

Of the assumptions, the strongest is that the ratio of non-payers of different types would stay the same even if enforcement were so light touch that the most recalcitrant type of person were not paying at all. One important way this might or might not mean the model distorts with its prediction is worth dwelling upon: the effect of those that cannot (as opposed to choose not to) pay.

First we emphasize that our approach does not result in those unable to pay being assumed to pay. No-one who is not paying at present will be paying under our model scenario. Where an issue could potentially arise is the following.

Consider two categories, X and Y. And let us call the most recalcitrant category R. Let us suppose that at present there are twice as many people in R as in either of X or Y – i.e. X and Y are currently equal in respect of non-payment. But let us suppose that the reasons for that at present are very different. Suppose that in category X everyone would like to pay, but are simply unable to pay, whereas in Y everyone could pay but chooses not to do so. Our model treats these two cases as if their consequences would be the same if enforcement were lighter. So, for example, suppose that currently one quarter of people of type R pay. Then we are assuming X and Y payer numbers would likewise rise by a factor of four. But since the reasons for non-payment are very different in the two categories, with X types simply unable to pay and Y types choosing not to pay, perhaps one might think the quadrupling of non-payment more plausible for those of type Y than for those of type X.

Although this is a potential limitation of the model, its implications may be limited partly because the pattern of enforcement reflects the fact that enforcement agents are skilled at distinguishing between those that are unable to pay and those that choose not to, so the pattern of enforcement already embodies some of that distinction. That means that when enforcement levels are reduced in the model, that reduction will be concentrated upon those most likely to be able to pay.

1.3 The rest of this report

The rest of this report proceeds as follows.

- In Section 2 we explore the data we have used and the current situation in terms of payment or non-payment of fines and taxes.
- In Section 3 we set out our model results – parking fines, council tax and penalty charge notices (PCN)[1].
- In Section 4 we include an appendix where we step through a version of our model in some detail and explain some more of the underlying assumptions of other models.

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[1]   Moving lane offences have not been estimated due to data unavailability.

2 Data

2.1   The data we use in our models

We combine public domain data with private data obtained from enforcement agents. In some cases the public domain data tells us directly the volume of fines and what proportion of different types of people and/or people in different regions pay them. In others we have more limited direct data, and have to construct estimates of non-payment to mesh our data. So, for example, we have data on non-payment by salary range but on enforcement by occupation. So to mesh these datasets we use another dataset that tells us median salary by occupation – implying that we assume those against whom enforcement action is taken (and for whom we have occupation data) have the median salary for their occupation.

In our datasets certain forms of data appear only for a small subset of cases. So, for example, we have occupation data only for a small subset of total cases where enforcement action was taken. Reflecting this, in such cases we produce multiple models: a sparser model which uses fewer characteristics in determining the most recalcitrant non-payer (e.g. only age and region) but for which we have a much larger number of datapoints; and a richer model which uses more characteristics in determining the most recalcitrant non-payer (e.g. age, region and occupation) but for only a smaller number of datapoints.

2.2   Precise data sources by model

The following tables set out the data sources used for each model and the data obtained from that source.

Table 2-1: Speeding fines model

Data Source		YEAR
CDER and Marston – Enforcement Agencies	Breakdown of enforcement action by age and gender.	2019
Department of Transport Statistics	Total number of speeding fines issued in England and Wales	2019
DVLA - FOI	Breakdown of speeding fines by gender	2014
DVLA – FOI	Breakdown of speeding fines by age	2016
Judicial Office	Mapping regions to HMCTS circuits	
Ministry of Justice – Criminal Court Statistics	Proportion of speeding fines paid by gender, age and region (HMCTS circuits) and average fine amount of paying groups	2014
ONS population estimates by age and region	Used for redistribution of age for each HMCTS region	2019
RAC foundation – sourced from the Home Office	Police for data on breakdown of speeding fines by region	2019

Table 2-2: Council Tax Model

Data Source		Year
CDER, Duke and Marston – Enforcement agencies	Breakdown of enforcement action by age.	2019
Chartered Institute of Public Finance and Accountancy	Average council tax rates (Band D)	2020
IFS - Employment, income and council tax during the COVID-19 crisis – sourced from MoneyDashboard	Proportion of council tax arrears by age (after 1 month)	2021
MHCLG – Collection rates of Council tax 2018 to 2019	Proportion of council tax paid by local authority (after 1 year)	2018/19
ONS households and families	Breakdown of people living alone by age	2021
ONS households by household size	Number of households and breakdown of households by size – single or family (1+)	2021
ONS households by type and region	Regional breakdown of proportion of households	2021
ONS internal migration	Mapping local authority to region	2021
ONS population estimates by age and region	Used for redistribution of age for each HMCTS region	2019
ONS population estimates by marital status and living arrangements	Breakdown of family (1+) households by age	2020

Table 2-3: Council Tax model with Occupation

Data Source		Year
Marston – Enforcement agency	Breakdown of enforcement action by age.	2019
Chartered Institute of Public Finance and Accountancy	Average council tax rates (Band D)	2020
IFS - Employment, income and council tax during the COVID-19 crisis – sourced from MoneyDashboard	Proportion of council tax arrears by age and salary range (after 1 month)	2021
MHCLG – Collection rates of Council tax 2018 to 2019	Proportion of council tax paid by local authority (after 1 year)	2018/19
ONS households and families	Breakdown of people living alone by age	2021
ONS households by household size	Number of households and breakdown of households by size – single or family (1+)	2021
ONS households by type and region	Regional breakdown of proportion of households	2021
ONS internal migration	Mapping local authority to region	2021
ONS population estimates by age and region	Used for redistribution of age for each HMCTS region	2019
ONS population estimates by marital status and living arrangements	Breakdown of family (1+) households by age	2020
Earnings and hours worked, age group by occupation - ASHE	Breakdown of occupation codes by age	2019
NOMIS - annual population survey – regional - employment by occupation	Breakdown of occupation codes by region	2019
ONS - Earnings and hours worked, occupation - ASHE	Mapping occupation code with median salary	2019
DWP - Pensioners' Incomes Series	Weekly pension income	2019-20

Table 2-4: Penalty Charge Notice (PCN) Model – Parking, Bus Lanes and Dart Charge

Data Source		Year
CDER, Duke, Excel and Marston – Enforcement agency	Breakdown of enforcement action by age and gender	2019
London Councils	Number of PCN violations in London and average fine for each PCN	2019
Traffic Penalty Tribunal	Number of PCN violations outside London and average fine for each PCN	2018
DfT - Civil parking enforcement statistics	Breakdown of PCNs by region and proportion of PCNs paid in each region	2009/10
ONS population estimates by age and region	Used for redistribution of age for each region	2019
Ministry of Justice – Criminal Court Statistics[1]	Proportion of penalties paid by gender and age – using speeding fines data	2013/14
IFS - Employment, income and council tax during the COVID-19 crisis – sourced from MoneyDashboard	Proportion of penalties paid by age	2021
PSNI – Police Force Northern Ireland	Breakdown of parking fines issued by gender and age (same breakdown used for bus lanes and dart charge)	2019
CIVEA Industry Data	Proportion of penalties paid for the Dart Charge	2019

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[1] The use of IFS and Ministry of Justice data for PCNs have been discussed in Section 4.3

2.3 The current situation

Next, we present the current situation for how many people, and what percentage of them, do not pay their fines or taxes in England. By contrast with the figures reported in Section 1.1 above, all the tables below involve some degree of modelling.

2.3.1 Speeding Fines

For speeding fines, we break down the results by age and region (Table 2-5)[1]. We also have a breakdown by sex but the table here presents data aggregated across sexes. We observe a high level of non-payment of fines among younger speeding offenders and those that live in South-East.

Table 2-5: Number of people who do not pay speeding fines under enforcement

	North East	North West	Midlands	London	South East	South West	England
18-24	8,737	6,268	6,686	3,306	9,530	5,003	39,530
25-29	10,562	7,963	8,248	5,401	11,831	5,869	49,874
30-34	9,573	7,445	7,451	5,602	11,609	5,591	47,270
35-39	10,275	8,000	7,854	6,069	13,311	6,078	51,586
40-44	9,409	7,260	7,121	5,363	12,855	5,692	47,701
45-49	10,198	7,810	7,318	4,804	12,965	6,068	49,163
50-54	10,385	7,926	7,281	4,236	12,572	6,227	48,628
55-59	6,430	4,853	4,239	2,372	7,359	3,801	29,055
60-64	5,434	3,979	2,985	1,922	5,367	2,926	22,613
65-69	3,176	2,322	1,797	1,014	3,163	1,813	13,284
70-74	3,142	2,322	1,793	884	3,293	1,890	13,325
75+	2,886	2,137	1,711	869	3,197	1,818	12,618
All Ages	90,208	68,285	64,483	41,844	107,052	52,774	424,646

Source: Europe Economics Analysis

Similarly, we provide a breakdown of the percentage of people who do not pay speeding fines by age and region (Table 2-6). For example, 24 per cent of the speeding offenders in North West aged 40-44 did not pay their fines. We see a higher percentage of non-payment among younger speeding offenders and those that live in London. From these results, we identified the most recalcitrant category of non-payer i.e., most non-compliant category under enforcement. The results indicate that London men between the age of 25 and 29 are the most recalcitrant category of non-payers.[2]

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[1] HMCTS regional classifications have been used for regional classification of speeding fines, reflecting the classification used by the Ministry of Justice, from which these data are obtained.

[2] Also shown in Table 4-5

Table 2-6: Percentage of people who do not pay speeding fines under enforcement

	North East	North West	Midlands	London	South East	South West	England
18-24	27%	27%	21%	31%	22%	22%	24%
25-29	28%	28%	22%	33%	24%	24%	26%
30-34	27%	27%	21%	32%	22%	23%	25%
35-39	25%	25%	19%	30%	21%	21%	23%
40-44	24%	23%	18%	29%	19%	19%	21%
45-49	21%	21%	15%	26%	16%	16%	18%
50-54	21%	21%	15%	26%	16%	16%	18%
55-59	20%	20%	13%	25%	15%	15%	17%
60-64	16%	16%	9%	21%	11%	11%	13%
65-69	16%	16%	9%	21%	11%	11%	13%
70-74	16%	16%	9%	21%	11%	11%	13%
75+	16%	16%	9%	21%	11%	11%	13%
All Ages	22%	22%	16%	28%	17%	17%	19%

Source: Europe Economics Analysis.

2.3.2   Council Tax – "Simpler" version

As it will be explained later in Section 3, we have created two models for council tax. One that uses our full enforcement dataset but does not make use of occupation data (the "simpler model") and one that uses occupation data and uses only the subset of our enforcement data for which occupation is recorded (the "richer model"). Further details on the selections and assumptions about occupation categories can be seen in Section 4.2. We provide a breakdown the number of households that do not pay their council tax by age and region in the simpler model (Table 2-7). The 'simpler' model suggests higher number of non-payment among younger households (highest for those aged 25-29), and households in London and North West.

Table 2-7: Number of households who do not pay council tax under enforcement

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	6,880	6,756	11,125	4,303	11,254	10,331	7,063	8,367	9,219	75,298
25-29	11,046	9,786	23,023	6,507	17,909	15,338	10,271	13,040	13,870	120,789
30-34	7,606	6,400	17,437	4,734	13,678	9,798	6,758	8,674	10,326	85,411
35-39	8,253	6,768	17,323	4,798	13,948	11,126	7,170	8,857	10,612	88,856
40-44	3,428	3,151	7,510	2,637	7,888	4,544	3,154	4,220	6,045	42,578
45-49	4,138	4,064	7,490	3,384	9,986	5,488	4,077	5,294	7,724	51,646
50-54	5,673	5,373	8,612	4,271	12,066	7,622	5,644	6,714	9,199	65,174
55-59	5,297	5,077	7,522	4,294	11,574	7,103	5,505	6,269	8,800	61,441
60-64	1,174	1,724	2,510	2,296	6,134	1,258	1,587	2,360	4,740	23,785
65-69	1,198	1,785	2,235	2,260	6,142	1,253	1,684	2,417	4,755	23,729
70-74	1,068	1,532	1,682	1,885	5,212	1,120	1,497	2,049	4,045	20,091
75-79	942	1,350	1,524	1,621	4,676	1,001	1,341	1,948	3,560	17,963
80-84	709	961	1,189	1,245	3,418	746	971	1,413	2,685	13,337
85+	709	907	1,190	1,108	3,124	770	989	1,323	2,451	12,572
All ages	58,122	55,635	110,373	45,344	127,008	77,500	57,712	72,947	98,029	702,669

Age is a reference to the age of the primary/adult resident(s).
Source: Europe Economics Analysis.

Similarly, we provide a breakdown of the percentage of households who do not pay council tax by age and region (Table 2-8). For example, 4 per cent of the households in East Midlands aged 30-34 did not pay their council tax. We observe a higher degree of non-compliance from younger households (aged below 29). From these results, we identified the most recalcitrant category of non-payer i.e., most non-compliant category given enforcement. The results indicate that households in Yorkshire between the age of 18 and 24 are the most recalcitrant category of non-payers.

Table 2-8: Percentage of households who do not pay council tax under enforcement

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	9%	9%	9%	10%	11%	9%	9%	9%	*11%*	10%
25-29	9%	9%	9%	10%	11%	9%	9%	9%	11%	10%
30-34	4%	4%	4%	5%	6%	4%	4%	5%	6%	5%
35-39	4%	4%	4%	5%	6%	4%	4%	5%	6%	5%
40-44	2%	2%	2%	3%	3%	2%	2%	2%	3%	2%
45-49	2%	2%	2%	3%	3%	2%	2%	2%	3%	2%
50-54	2%	3%	3%	4%	4%	2%	2%	3%	4%	3%
55-59	2%	3%	3%	4%	4%	2%	2%	3%	4%	3%
60-64	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
65-69	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
70-74	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
75-79	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
80-84	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
85+	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
All ages	2%	3%	3%	4%	4%	2%	2%	3%	4%	3%

Source: Europe Economics Analysis

2.3.3 Council tax – richer version

For the richer version, we provide a similar breakdown on the number of households that do not pay their council tax by age, region and occupation (Table 2-9). However, compared to the simpler model, we have occupation data only for a small subset of total cases where enforcement action was taken. We have a breakdown by occupation[1] but the table here presents data aggregated across all occupations. Again, we see a higher level of non-compliance for younger households (maximum for households aged 25-29), with non-compliance decreasing by age.

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[1] The precise breakdown is not reported here for reasons of confidentiality.

Table 2-9: Number of households who do not pay council tax under enforcement

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	9,371	7,888	11,414	5,302	13,845	10,864	8,150	9,631	11,058	87,523
25-29	8,835	7,554	16,800	5,336	14,833	11,115	7,907	9,937	11,135	93,451
30-34	6,257	4,432	12,200	3,417	10,137	6,732	4,776	6,064	7,565	61,581
35-39	6,500	4,486	11,603	3,316	9,896	7,318	4,851	5,928	7,442	61,339
40-44	5,244	3,655	9,338	2,733	8,369	5,945	3,799	4,809	6,343	50,237
45-49	5,264	3,920	7,744	2,917	8,811	5,972	4,085	5,016	6,740	50,468
50-54	5,439	4,240	6,885	3,174	9,184	6,188	4,483	5,251	6,918	51,762
55-59	5,408	4,267	6,404	3,399	9,383	6,142	4,658	5,222	7,048	51,930
60-64	3,154	2,675	3,855	2,388	6,370	3,454	2,837	3,306	4,885	32,925
65-69	3,913	3,618	6,425	2,908	7,325	5,104	3,888	4,501	5,793	43,476
70-74	3,489	3,105	4,834	2,426	6,216	4,564	3,457	3,816	4,929	36,837
75-79	3,075	2,736	4,383	2,086	5,576	4,078	3,096	3,628	4,337	32,995
80-84	2,315	1,947	3,419	1,603	4,076	3,041	2,242	2,632	3,271	24,546
85+	2,315	1,839	3,422	1,426	3,726	3,139	2,283	2,464	2,986	23,600
All ages	70,579	56,363	108,727	42,431	117,745	83,656	60,512	72,204	90,451	702,669

Source: Europe Economics Analysis

Similarly, we breakdown the percentage of households that do not pay council tax by age and region in the richer model (Table 2-10). For example, 2 per cent of the households in South West aged 40-44 did not pay their council tax. We observe a higher degree of non-compliance from younger households (aged below 29). Furthermore, households with lower salaries (or occupations with lower paying salaries) had a higher degree of non-compliance. From these results, we identified the most recalcitrant category of non-payers. The results (not shown in the table below) indicate that households of sales professionals in the East between the age of 18 and 24 are the most recalcitrant category of non-payers.

Table 2-10: Percentage of households who do not pay council tax under enforcement

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	6%	6%	6%	7%	7%	5%	5%	6%	7%	6%
25-29	5%	5%	6%	7%	7%	5%	5%	6%	7%	6%
30-34	3%	2%	3%	3%	4%	2%	2%	3%	4%	3%
35-39	3%	2%	3%	3%	4%	2%	2%	3%	4%	3%
40-44	2%	2%	2%	3%	3%	2%	2%	2%	3%	2%
45-49	2%	2%	2%	3%	3%	2%	2%	2%	3%	2%
50-54	2%	2%	3%	3%	3%	2%	2%	2%	3%	2%
55-59	2%	2%	3%	3%	3%	2%	2%	2%	3%	2%
60-64	1%	2%	2%	2%	3%	1%	1%	2%	3%	2%
65-69	3%	3%	4%	4%	4%	3%	3%	3%	4%	3%
70-74	3%	3%	4%	4%	4%	3%	3%	3%	4%	3%
75-79	3%	3%	4%	4%	4%	3%	3%	3%	4%	3%
80-84	3%	3%	4%	4%	4%	3%	3%	3%	4%	3%
85+	3%	3%	4%	4%	4%	3%	3%	3%	4%	3%
All ages	3%	3%	3%	4%	4%	2%	2%	3%	4%	3%

Source: Europe Economics Analysis

2.3.4 PCN – Parking fines

As it will be seen in Section 3, we provide three models for PCN – parking fines, bus lane fines and Dartford Crossing Charge (Dart Charge). Here we are presenting the current situation for parking fines. We break down the results by age and region (Table 2-11). We also have a breakdown by sex but the table here presents data aggregated across sexes. Similar to speeding fines, we observe that the majority of parking fines are issued to younger people aged below 39. It is worth noticing that approximately half of the non-payers of parking PCN fines belong to the London area.

Table 2-11: Number of people who do not pay under enforcement (parking fines)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	43,318	39,249	376,036	17,783	94,578	104,084	62,253	35,626	41,387	814,314
25-29	17,439	14,346	194,802	6,782	37,740	38,950	22,830	14,047	15,669	362,604
30-34	17,380	12,447	199,122	5,815	33,993	36,010	20,694	11,980	13,574	351,013
35-39	17,633	12,196	185,351	5,465	32,407	37,949	20,365	11,293	12,976	335,637
40-44	11,111	7,373	104,394	3,199	19,311	24,268	12,519	6,616	7,703	196,492
45-49	10,761	7,513	83,818	3,248	19,612	23,227	12,814	6,514	7,830	175,336
50-54	10,858	7,744	75,823	3,449	20,130	23,248	13,426	6,560	7,924	169,161
55-59	4,912	3,517	32,140	1,668	9,354	10,430	6,302	2,934	3,657	74,914
60-64	4,561	3,145	27,871	1,576	8,663	9,275	5,874	2,562	3,372	66,899
65-69	4,653	3,256	24,814	1,551	8,676	9,239	6,233	2,625	3,383	64,430
70-74	704	474	3,166	219	1,248	1,401	940	377	488	9,017
75+	1,218	780	5,763	363	2,106	2,468	1,624	676	822	15,822
All ages	144,548	112,040	1,313,100	51,118	287,818	320,549	185,874	101,810	118,784	2,635,639

Source: Europe Economics Analysis

Now we provide a breakdown of the percentage of people who do not pay parking fines by age and region (Table 2-12). For example, 25 per cent of the parking offenders in East Midlands aged 35-39 did not pay their fines. We observe a slightly higher degree of non-compliance from men and younger offenders. Furthermore, parking PCNS in London had a higher degree of payment non-compliance. The results indicate that London men between the age of 25 and 29 are the most recalcitrant category of non-payers for parking fines.

Table 2-12: Percentage of people who do not pay under enforcement (parking fines)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	35%	28%	37%	29%	34%	29%	29%	26%	31%	33%
25-29	35%	29%	37%	29%	35%	30%	29%	27%	31%	34%
30-34	33%	26%	35%	27%	33%	27%	27%	24%	29%	32%
35-39	32%	25%	34%	26%	32%	26%	26%	23%	28%	31%
40-44	31%	24%	33%	24%	30%	25%	24%	22%	26%	29%
45-49	29%	23%	32%	23%	29%	24%	23%	20%	25%	28%
50-54	29%	23%	32%	23%	29%	24%	23%	20%	25%	28%
55-59	29%	22%	31%	23%	29%	23%	23%	20%	25%	27%
60-64	27%	20%	29%	20%	27%	21%	20%	17%	22%	24%
65-69	27%	20%	29%	20%	27%	21%	20%	17%	22%	24%
70-74	27%	20%	29%	20%	27%	21%	20%	17%	22%	24%
75+	27%	20%	29%	20%	27%	21%	20%	17%	22%	24%
All ages	32%	26%	35%	26%	32%	26%	26%	24%	28%	31%

Source: Europe Economics Analysis

3 Model Results

In the following tables we set out the results of our models, after applying the method described above and in the Appendix.[1] Although we present and explain the results of the models below, we would like to emphasize the overall result of the models. The model presents an overall value of stricter enforcement, it is not a prediction of how many people will be enforced against for each category of non-payers.

3.1 Speeding fines

Firstly, we set out results for speeding fines. The following table sets out the proportion of people that would not pay speeding fines under little to no enforcement. We can see that for speeding fines the increase in non-payment is relatively concentrated by age. Our model suggests that most older people would pay their speeding fines even if enforcement was limited, but for those aged 25 to 34 there would be very limited payment (model indicates no payment in some regions) without enforcement. Furthermore, we observe a higher degree of non-payment from people living in London.

Table 3-1: Percentage of people who would not pay under no or little enforcement (speeding fines)

	North East	North West	Midlands	London	South East	South West	England
18-24	44%	44%	35%	52%	37%	37%	40%
25-29	100%	100%	100%	100%	100%	100%	100%
30-34	100%	100%	100%	100%	100%	100%	100%
35-39	100%	100%	94%	100%	96%	96%	97%
40-44	94%	94%	71%	100%	75%	76%	82%
45-49	57%	57%	41%	71%	44%	45%	50%
50-54	50%	50%	35%	63%	38%	39%	43%
55-59	56%	56%	38%	72%	42%	42%	48%
60-64	33%	33%	20%	45%	22%	23%	26%
65-69	27%	27%	16%	37%	18%	19%	22%
70-74	16%	16%	9%	21%	11%	11%	13%
75+	18%	18%	11%	25%	12%	13%	14%
All Ages	64%	64%	53%	78%	54%	53%	58%

Source: Europe Economics Analysis

We breakdown the incremental effect of enforcement on the entire population i.e., the number of people who pay under the threat of enforcement but would not have paid if there had been limited enforcement (Table 3-2). Furthermore, we provide a breakdown of the incremental effect by sex in Table 3-3 and Table 3-4[2]. The model indicates that approximately 620,000 men and 240,000 women would not have paid their fines than do so today if there was limited enforcement. We observe that the non-payers are concentrated towards the younger population for both sexes.

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[1] In the Appendix we step the reader through precisely how results are obtained for one particular case: speeding fines.

[2] A detailed methodology (with tables) is provided of the speeding fines for women in the appendix

Table 3-2: Incremental effect of enforcement on the entire population (speeding fines)

	North East	North West	Midlands	London	South East	South West	England
18-24	5,846	4,194	4,473	2,212	6,377	3,347	26,450
25-29	27,081	20,452	28,424	11,062	38,361	18,826	144,206
30-34	25,895	20,175	27,459	12,008	40,125	19,107	144,769
35-39	30,400	23,715	29,996	14,030	48,495	21,962	168,597
40-44	28,306	21,842	21,423	13,410	38,675	17,124	140,781
45-49	17,510	13,410	12,565	8,248	22,261	10,418	84,411
50-54	14,862	11,343	10,420	6,062	17,990	8,911	69,587
55-59	12,095	9,129	7,973	4,462	13,842	7,150	54,651
60-64	5,837	4,273	3,206	2,064	5,764	3,142	24,287
65-69	2,237	1,636	1,266	714	2,228	1,277	9,358
70-74	-	-	-	-	-	-	-
75+	427	316	253	128	473	269	1,865
All Ages	170,494	130,484	147,458	74,401	234,590	111,533	868,960

Source: Europe Economics Analysis

Table 3-3: Incremental effect of enforcement on men (speeding fines)

	North East	North West	Midlands	London	South East	South West	England
18-24	4,236	3,039	3,298	1,587	4,682	2,456	19,298
25-29	18,347	13,857	19,257	7,494	25,989	12,755	97,699
30-34	17,544	13,668	18,604	8,135	27,185	12,945	98,081
35-39	20,596	16,067	21,998	9,505	34,757	15,675	118,597
40-44	20,682	15,961	16,036	9,085	28,781	12,731	103,276
45-49	12,900	9,881	9,560	5,980	16,802	7,853	62,978
50-54	10,966	8,371	7,953	4,399	13,615	6,734	52,038
55-59	8,968	6,770	6,150	3,248	10,570	5,450	41,155
60-64	4,413	3,232	2,598	1,519	4,580	2,489	18,831
65-69	1,692	1,237	1,026	526	1,771	1,012	7,262
70-74	-	-	-	-	-	-	-
75+	323	239	205	94	376	213	1,449
All Ages	120,665	92,321	106,685	51,573	169,107	80,313	620,664

Source: Europe Economics Analysis

Table 3-4: Incremental effect of enforcement on women (speeding fines)

	North East	North West	Midlands	London	South East	South West	England
18-24	1,611	1,155	1,175	625	1,694	891	7,152
25-29	8,734	6,596	9,167	3,567	12,371	6,072	46,507
30-34	8,351	6,506	8,856	3,873	12,940	6,162	46,688
35-39	9,804	7,648	7,998	4,525	13,738	6,287	50,000
40-44	7,624	5,881	5,387	4,325	9,894	4,393	37,505
45-49	4,609	3,528	3,004	2,268	5,458	2,565	21,433
50-54	3,896	2,972	2,467	1,663	4,375	2,177	17,549
55-59	3,127	2,359	1,823	1,215	3,273	1,700	13,495
60-64	1,424	1,042	608	546	1,184	653	5,455
65-69	546	399	240	189	458	265	2,096
70-74	-	-	-	-	-	-	-
75+	104	77	48	34	97	56	416
All Ages	49,829	38,163	40,773	22,829	65,483	31,220	248,297

Source: Europe Economics Analysis

> Overall our model suggests that, absent enforcement, over 860 thousand more people would not pay their speeding fines than do so today. We estimate the total additional amount of speeding fines not paid, under this scenario, at £107 million per annum.

3.2 Council tax – Simpler model

Council tax is an area for which we have two models. One that uses our full enforcement dataset but does not make use of occupation data (the "simpler model") and one that uses occupation data and uses only the subset of our enforcement data for which occupation is recorded (the "richer model"). We present results for the simpler model first.

3.2.1 Council tax – Simpler model

The following table sets out the proportion of people that would not pay council tax under little to no enforcement. Once more we can see that for this tax the increase in non-payment is quite concentrated towards younger households. Our model suggests that most older people would pay even if enforcement were light, but for those aged 25 to 34, there would be limited payment without enforcement.

Table 3-5: Percentage who would not pay council tax with limited enforcement (simpler model)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	39%	41%	41%	45%	46%	38%	39%	41%	46%	42%
25-29	72%	76%	77%	84%	86%	71%	74%	77%	86%	78%
30-34	50%	56%	57%	70%	73%	48%	52%	58%	73%	59%
35-39	50%	56%	57%	71%	74%	49%	53%	59%	74%	59%
40-44	40%	51%	53%	78%	84%	37%	45%	56%	84%	56%
45-49	31%	39%	41%	60%	65%	28%	34%	43%	65%	44%
50-54	30%	37%	38%	52%	55%	29%	33%	40%	56%	40%
55-59	22%	27%	28%	39%	41%	21%	24%	29%	41%	30%
60-64	8%	15%	17%	33%	37%	6%	11%	19%	37%	19%
65-69	4%	7%	7%	14%	15%	3%	5%	8%	15%	8%
70-74	1%	3%	3%	6%	6%	1%	2%	3%	6%	3%
75-79	1%	2%	2%	3%	4%	1%	1%	2%	4%	2%
80-84	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
85+	1%	1%	1%	2%	2%	0%	1%	1%	2%	1%
All ages	25%	30%	38%	41%	45%	23%	25%	33%	45%	33%

Source: Europe Economics Analysis

Table 3-6 breaks down the incremental effect of enforcement for the entire population i.e., the number of households who pay under the threat of enforcement but would not have paid if there had been only limited enforcement. We observe that the effect of enforcement tends to be greater on younger households i.e., younger households are more inclined to pay their council tax due to the risk of enforcement.

Table 3-6: Incremental payment of council tax due to enforcement (simpler model)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	23,236	22,819	37,576	14,533	38,009	34,894	23,854	28,261	31,138	254,320
25-29	79,304	70,256	165,289	46,715	128,577	110,115	73,743	93,618	99,577	867,194
30-34	90,464	76,120	207,402	56,312	162,691	116,542	80,385	103,170	122,823	1,015,909
35-39	99,284	81,412	208,393	57,720	167,793	133,836	86,250	106,551	127,652	1,068,892
40-44	79,296	72,901	173,723	61,011	182,457	105,105	72,947	97,629	139,840	984,909
45-49	72,947	71,648	132,030	59,656	176,035	96,746	71,870	93,325	136,161	910,420
50-54	72,613	68,771	110,222	54,662	154,424	97,556	72,229	85,925	117,729	834,131
55-59	48,554	46,540	68,945	39,358	106,088	65,109	50,462	57,459	80,658	563,174
60-64	16,749	24,590	35,800	32,750	87,472	17,942	22,638	33,658	67,597	339,196
65-69	6,515	9,705	12,150	12,286	33,394	6,813	9,158	13,142	25,852	129,016
70-74	1,788	2,564	2,814	3,155	8,724	1,875	2,506	3,430	6,771	33,628
75-79	584	837	946	1,006	2,901	621	832	1,209	2,209	11,145
80-84	-	-	-	-	-	-	-	-	-	-
85+	-	-	-	-	-	-	-	-	-	-
All ages	591,334	548,164	1,155,290	439,165	1,248,567	787,154	566,876	717,377	958,005	7,011,932

Source: Europe Economics Analysis

Overall our model suggests that, absent enforcement, over 7 million more households would not pay their council tax than do so today. We estimate the total additional amount of £12.0 billion less in council tax would be collected if enforcement were only very light touch.

3.2.2 Council Tax – Richer model

Now we present the results of our "richer" model - the one that uses occupation data and uses only the subset of our enforcement data for which occupation is recorded. As explained earlier, we mesh the data of occupational categories with median salary of each occupation to explore the effect of occupation on council tax compliance. For instance, we expect occupations with higher salaries (e.g., managerial and professional occupations) to have higher payment compliance for council tax.

The following table sets out the proportion of people that would not pay council tax under little to no enforcement. Once more we can see that for council tax, the increase in non-payment is quite concentrated by age, with younger households more likely to not pay. Although not illustrated in the table, the model indicates that occupations with lower salaries will have higher non-payment rates if there were limited enforcement. Our model suggests that most older people would pay even if enforcement were light, but households aged 35 to 39 have the least compliance without enforcement.

Table 3-7: Percentage of households who would not pay council tax with limited enforcement (richer)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	10%	10%	10%	12%	12%	8%	9%	10%	12%	10%
25-29	25%	25%	23%	30%	30%	21%	23%	25%	30%	25%
30-34	29%	28%	25%	37%	38%	22%	25%	29%	38%	29%
35-39	31%	31%	29%	42%	42%	24%	28%	32%	42%	32%
40-44	26%	24%	25%	36%	37%	17%	20%	26%	38%	26%
45-49	19%	16%	17%	25%	26%	11%	14%	18%	26%	18%
50-54	20%	22%	21%	31%	32%	15%	18%	23%	32%	23%
55-59	17%	15%	15%	22%	22%	11%	13%	16%	23%	16%
60-64	10%	8%	10%	15%	16%	5%	6%	9%	16%	10%
65-69	4%	4%	5%	5%	6%	4%	4%	5%	6%	5%
70-74	4%	4%	5%	5%	6%	4%	4%	5%	6%	5%
75-79	4%	4%	5%	5%	6%	4%	4%	5%	6%	5%
80-84	4%	4%	5%	5%	6%	4%	4%	5%	6%	5%
85+	4%	4%	5%	5%	6%	4%	4%	5%	6%	5%
All ages	18%	17%	18%	23%	24%	13%	14%	18%	24%	18%

Source: Europe Economics Analysis

Next we provide a breakdown of the incremental effect of enforcement for the entire population (Table 3-8). We again observe that the effect of enforcement tends to be greater on younger households. We also see that there is no incremental effect of enforcement among older people (65+). This is perhaps due to the combination of high compliance levels in those age groups and proportionately low enforcement action taken against them, so the impact of enforcement is so sufficiently low that our model treats them as 0. At a regional level, the largest effect of enforcement is seen in North West, London and Yorkshire where 570,000, 460,000 and 440,000 households, respectively, would not have paid their council tax if enforcement was limited.

> Overall our richer model suggests that, absent enforcement, over 3,200,000 more households would not pay their council tax than do so today. In a given year, we estimate the total additional amount of £5.7 billion less in council tax would be collected if enforcement were only very light touch.[1]

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[1] Due to constraints on occupation information in the enforcement data, an additional analysis was undertaken in which enforcement action was controlled only for age (not age and occupation). The additional analysis also suggests £5.7 billion in council tax would not be collected if enforcement were only very light touch.

Table 3-8: Incremental payment of council tax due to enforcement (richer)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	3,807	2,687	3,322	1,952	4,800	3,931	2,927	3,011	3,945	30,382
25-29	28,906	24,252	41,605	17,568	45,254	34,483	25,922	30,339	35,097	283,426
30-34	61,077	44,161	93,514	33,860	94,598	62,093	47,209	58,260	71,123	565,895
35-39	68,932	49,792	104,074	37,158	104,182	76,100	53,672	63,246	79,086	636,241
40-44	61,932	40,173	83,946	32,401	94,864	57,383	40,117	51,826	72,369	535,011
45-49	44,064	28,200	43,681	23,012	65,950	37,192	28,080	35,016	50,816	356,011
50-54	44,803	38,378	49,134	29,676	81,267	49,412	39,387	46,360	62,148	440,564
55-59	37,197	25,389	29,281	21,059	54,888	31,461	26,289	29,893	42,414	297,872
60-64	16,704	10,150	13,272	12,034	31,201	9,196	9,133	12,850	24,232	138,773
65-69	-	-	-	-	-	-	-	-	-	-
70-74	-	-	-	-	-	-	-	-	-	-
75-79	-	-	-	-	-	-	-	-	-	-
80-84	-	-	-	-	-	-	-	-	-	-
85+	-	-	-	-	-	-	-	-	-	-
All ages	367,423	263,182	461,829	208,719	577,005	361,250	272,735	330,801	441,231	3,284,174

Source: Europe Economics Analysis

> Therefore, our estimates from the 'simple' and 'richer' models suggest that local authorities would collect between £5.7 billion and £12.0 billion less in council tax every year under limited enforcement.

3.3 Penalty Charge Notice (PCN)

To assess the impact of enforcement on PCNs, we have created 3 models by the type of PCN – parking, bus lane and Dartford Crossing Charge (Dart Charge). The Dart Charge is a remote payment method for the Dartford Crossings to reduce congestion.[1]

3.3.1 PCN – Parking fines

The following table sets out the proportion of people that would not pay parking fines under little to no enforcement. We observe that the non-payment of parking fines has no clear correlation with age and region. Our model suggests that the youngest age group (aged 18-24) would pay even if enforcement were light. Perhaps this is due to the combination of disproportionately low enforcement against this age group and the high percentage of fines issued to them. The model estimates that those aged 55 to 59 have the highest levels of non-compliance (no payment at all in some regions) without enforcement.

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[1]   Highways England: Dart Charge [online]

Table 3-9: Percentage of people who would not pay under little or no enforcement (parking fines)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	35%	28%	37%	29%	34%	29%	29%	26%	31%	33%
25-29	88%	72%	93%	73%	88%	74%	74%	67%	78%	85%
30-34	84%	67%	89%	68%	83%	69%	69%	62%	73%	81%
35-39	84%	66%	89%	68%	83%	69%	68%	61%	73%	81%
40-44	98%	79%	100%	81%	98%	83%	82%	72%	88%	93%
45-49	77%	59%	83%	60%	77%	61%	61%	53%	66%	72%
50-54	70%	54%	76%	55%	70%	56%	55%	49%	60%	66%
55-59	100%	84%	100%	86%	100%	88%	87%	76%	94%	94%
60-64	64%	47%	70%	48%	64%	50%	49%	42%	54%	59%
65-69	32%	24%	35%	24%	32%	25%	24%	21%	27%	29%
70-74	100%	84%	100%	86%	100%	88%	87%	74%	94%	93%
75+	83%	61%	90%	62%	83%	64%	63%	54%	69%	75%
All ages	68%	53%	74%	54%	67%	56%	54%	49%	58%	65%

Source: Europe Economics Analysis

Table 3-10 breaks down the incremental effect of enforcement for the entire population. We observe limited effect of enforcement on the youngest age group (18-24 years). However, from the age of 25, we observe a significant effect of enforcement on the rest of the population, especially for the younger age groups. At a regional level, the largest effect of enforcement is seen in London where 1.49 million parking offenders would not have paid their parking PCN than do so today if enforcement were limited.

Table 3-10: Incremental number of payers due to enforcement[1] (parking fines)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	-	-	-	-	-	-	-	-	-	-
25-29	26,223	21,572	292,924	10,198	56,750	58,569	34,329	21,122	23,561	545,247
30-34	26,849	19,228	307,609	8,983	52,513	55,629	31,968	18,507	20,969	542,255
35-39	28,292	19,569	297,384	8,769	51,996	60,887	32,675	18,120	20,819	538,510
40-44	24,423	17,323	214,988	7,515	42,563	57,018	29,414	15,543	18,097	426,884
45-49	17,322	12,094	134,917	5,228	31,568	37,386	20,626	10,485	12,603	282,228
50-54	15,045	10,730	105,058	4,779	27,892	32,212	18,602	9,090	10,979	234,386
55-59	12,036	9,978	70,961	4,732	23,035	29,585	17,877	8,324	10,266	186,794
60-64	6,417	4,425	39,219	2,218	12,190	13,052	8,266	3,606	4,745	94,139
65-69	947	663	5,050	316	1,766	1,880	1,269	534	689	13,113
70-74	1,924	1,555	7,738	720	3,432	4,598	3,084	1,239	1,560	25,851
75+	2,563	1,641	12,123	763	4,431	5,192	3,417	1,423	1,730	33,284
All ages	162,041	118,777	1,487,973	54,220	308,135	356,010	201,526	107,991	126,018	2,922,691

Source: Europe Economics Analysis

Overall our model suggests that, absent enforcement, over 2.9 million more people would not pay their parking fines than do so today. We estimate the total additional amount of parking fines not paid, under this scenario, at £265 million per annum.

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[1]   We provide a breakdown for Table 3-10 by sex in Section 4.3.1

3.3.2 PCN – Bus Lane Offences

The following table sets out the proportion of people that would not pay bus lane fines under little to no enforcement. Similar to parking fines, we observe that the non-payment of bus lane fines has no correlation with age and region. Our model suggests that the youngest age group (aged 18-24) would pay even if enforcement were light. As explained earlier, this is perhaps due to low degree of enforcement action taken and high lev of fines issued. Least compliance is expected from offenders aged 40 to 44 (no payment at all in some regions) if there were no enforcement.

Table 3-11: Percentage of people who would not pay under limited enforcement (bus lane offences)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	35%	28%	37%	29%	34%	29%	29%	26%	31%	31%
25-29	96%	78%	98%	80%	95%	81%	80%	73%	85%	87%
30-34	94%	75%	97%	77%	94%	78%	77%	69%	82%	86%
35-39	92%	73%	97%	75%	92%	76%	75%	67%	80%	84%
40-44	100%	86%	100%	88%	100%	89%	88%	78%	94%	93%
45-49	78%	60%	84%	61%	78%	62%	62%	54%	67%	69%
50-54	69%	53%	74%	54%	69%	55%	55%	48%	59%	61%
55-59	99%	81%	100%	84%	99%	85%	84%	74%	91%	90%
60-64	61%	45%	67%	46%	61%	47%	47%	40%	51%	53%
65-69	30%	22%	32%	22%	30%	23%	23%	19%	25%	25%
70-74	97%	75%	100%	77%	97%	79%	78%	67%	86%	85%
75+	75%	55%	82%	57%	75%	58%	57%	49%	63%	64%
All ages	71%	55%	77%	56%	69%	58%	57%	51%	61%	64%

Source: Europe Economics Analysis

We break down the incremental effect of enforcement for the entire population (Table 3-12). Again, we observe limited effect of enforcement on the youngest age group and a significant effect of enforcement on the rest of the population (aged 25+), especially for the younger age groups. At a regional level, the largest effect of enforcement is seen in London and South East where 168,000 and 140,000 bus lane offenders, respectively, would not have paid their PCN if enforcement was limited.

Overall our model suggests that, absent enforcement, around 730 thousand more people would not pay their fines for bus lane offences than do so today. We estimate the total additional amount of bus lane fines not paid, under this scenario, at £55 million per annum.

Table 3-12: Incremental number of payers due to enforcement (bus lane offences)

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	-	-	-	-	-	-	-	-	-	-
25-29	10,755	8,848	33,630	4,183	23,276	24,022	14,080	8,663	9,664	137,122
30-34	11,608	8,314	37,502	3,884	22,705	24,052	13,822	8,002	9,066	138,955
35-39	11,879	8,216	35,715	3,682	21,832	25,565	13,719	7,608	8,742	136,959
40-44	9,076	6,914	22,659	2,999	15,847	22,755	11,739	6,203	7,154	105,348
45-49	6,390	4,462	14,604	1,929	11,646	13,792	7,609	3,868	4,649	68,949
50-54	5,268	3,757	10,793	1,673	9,766	11,278	6,513	3,183	3,844	56,074
55-59	4,278	3,420	7,479	1,622	8,169	10,140	6,127	2,853	3,555	47,643
60-64	2,124	1,465	3,809	734	4,035	4,320	2,736	1,194	1,571	21,989
65-69	189	132	296	63	353	376	254	107	138	1,907
70-74	664	482	816	223	1,182	1,426	957	384	497	6,632
75+	794	508	1,102	236	1,372	1,608	1,058	441	536	7,655
All ages	63,026	46,517	168,407	21,228	120,184	139,337	78,615	42,505	49,416	729,233

Source: Europe Economics Analysis

3.3.3   PCN – Dart Charge

The following table sets out the proportion of people that would not pay the Dart Charge under little to no enforcement. There is no regional breakdown as the users of the Dartford crossing can be anyone from the country. We observe that the non-payment of Dart Charge has no correlation with age. Our model suggests that most younger people (aged 18-24) would pay even if enforcement were light. Least compliance is expected from offenders aged 40 to 44 if there were no enforcement.

Table 3-13: Percentage of people who would not pay under limited enforcement (Dart Charge)

	Male	Female	All
18-24	23%	19%	21%
25-29	90%	73%	83%
30-34	89%	70%	82%
35-39	88%	67%	80%
40-44	100%	78%	91%
45-49	74%	53%	66%
50-54	65%	47%	58%
55-59	100%	71%	89%
60-64	58%	37%	50%
65-69	28%	18%	24%
70-74	96%	61%	82%
75+	71%	45%	61%
All ages	64%	49%	58%

Source: Europe Economics Analysis

We break down the incremental effect of enforcement for the entire population (Table 3-14). Again, we observe limited effect of enforcement on the youngest age group and a significant effect of enforcement on rest of the population (aged 25+), with higher concentration of non-compliance among the younger age groups. Furthermore, the model indicates that the incremental effect of enforcement is higher on men than women, with 608,000 men paying the Dart charge due to the risk of enforcement.

Overall our model suggests that, absent enforcement, over 900 thousand more people would not pay their Dart Charge penalty than do so today. We estimate the total additional amount of Dart Charge not paid, under this scenario, at £63 million per annum, around £43 million and £20 million for men and women, respectively.

Table 3-14: Incremental number of payers due to enforcement (Dart Charge)

	Male	Female	All
18-24	-	-	-
25-29	108,274	55,935	164,209
30-34	112,210	55,761	167,970
35-39	111,290	54,438	165,728
40-44	85,715	42,846	128,560
45-49	59,395	27,088	86,483
50-54	50,167	22,902	73,069
55-59	40,580	18,330	58,910
60-64	21,355	8,703	30,058
65-69	6,692	2,728	9,420
70-74	5,777	2,354	8,131
75+	6,887	2,807	9,693
All ages	608,341	293,891	902,232

Source: Europe Economics Analysis

Adding up the three charges, our estimates suggest £383 million of PCN fines would not have been collected if there were no enforcement.

3.4 Summary Statistic

Table 3-15: Summary statistics on different types of fines/tax

Type of fine/tax	Incremental effect of enforcement (#)	Fine/tax uncollected	Additional Breakdown
Speeding fine	860 thousand	£107 million	
'Simple' council tax	7 million	£12 billion	
'Richer' council tax	3.3 million	£5.7 billion	
Penalty Charge Notice	4.6 million	£383 million	Parking: £265 million Bus: £55 million Dart Charge: £63 million

Source: Europe Economics Analysis.

4 Appendix: A more technical statement of the model

In this Appendix we take the reader, step by step, through the working of the model for one specific case: speeding fines. We also state the additional assumptions and methodologies applied for the council tax and PCN models.

4.1 Speeding Fines

Using public domain data, the results were computed for a breakdown of speeding fines issued by sex, age and region. Two tables were created to help display the breakdown – men and women. Using ONS data, the values have been adjusted to account for regional differences in age distribution. The table below depicts the number of fines issued to men and women by age and region.

Table 4-1: Number of fines issued to men by age and region

	North East	North West	Midlands	London	South East	South West	England
18-24	22,670	16,286	22,058	7,256	29,868	15,539	113,676
25-29	25,973	19,606	25,304	11,359	34,632	17,040	133,915
30-34	24,473	19,057	24,088	12,151	35,696	17,041	132,507
35-39	28,065	21,883	27,823	13,868	44,582	20,158	156,380
40-44	27,603	21,334	27,914	12,954	47,306	20,717	157,827
45-49	33,359	25,596	33,689	12,601	55,313	25,549	186,107
50-54	34,602	26,458	34,471	11,266	55,019	26,886	188,703
55-59	22,704	17,171	21,963	6,586	34,960	17,791	121,175
60-64	23,563	17,296	21,896	6,179	34,705	18,524	122,163
65-69	13,770	10,093	13,178	3,259	20,453	11,477	72,232
70-74	13,626	10,096	13,150	2,843	21,296	11,968	72,979
75+	12,516	9,289	12,551	2,792	20,674	11,509	69,330
All ages	282,925	214,167	278,085	103,115	434,505	214,200	1,526,996

Source: Europe Economics Analysis.

Table 4-2: Number of fines issued to women by age and region

	North East	North West	Midlands	London	South East	South West	England
18-24	10,185	7,317	9,910	3,260	13,419	6,981	51,072
25-29	11,669	8,809	11,368	5,103	15,559	7,656	60,165
30-34	10,995	8,562	10,822	5,459	16,038	7,656	59,532
35-39	12,609	9,831	12,500	6,231	20,030	9,056	70,258
40-44	12,401	9,585	12,541	5,820	21,253	9,308	70,908
45-49	14,987	11,500	15,136	5,661	24,851	11,479	83,613
50-54	15,546	11,887	15,487	5,062	24,719	12,079	84,780
55-59	10,200	7,715	9,868	2,959	15,707	7,993	54,441
60-64	10,586	7,771	9,837	2,776	15,592	8,323	54,885
65-69	6,187	4,535	5,921	1,464	9,189	5,157	32,452
70-74	6,122	4,536	5,908	1,277	9,568	5,377	32,788
75+	5,623	4,173	5,639	1,254	9,288	5,171	31,148
All ages	127,111	96,220	124,937	46,327	195,212	96,235	686,042

Source: Europe Economics Analysis.

Having known the number of people issued a speeding fine for each category, the number of people paying the fines were calculated. Data from Ministry of Justice, provided a breakdown of people paying their fines by each category. The table below shows the number of women who paid their fines by age and region.

Table 4-3: Count of women who paid their fines by age and region

	North East	North West	Midlands	London	South East	South West	England
18-24	7,778	5,591	8,154	2,325	10,887	5,649	40,383
25-29	8,734	6,596	9,167	3,567	12,371	6,072	46,507
30-34	8,351	6,506	8,856	3,873	12,940	6,162	46,688
35-39	9,804	7,648	10,471	4,525	16,545	7,462	56,454
40-44	9,867	7,630	10,750	4,325	17,965	7,847	58,384
45-49	12,303	9,444	13,386	4,341	21,672	9,985	71,130
50-54	12,823	9,810	13,763	3,900	21,661	10,558	72,516
55-59	8,538	6,461	8,898	2,313	13,967	7,089	47,266
60-64	9,261	6,801	9,271	2,268	14,490	7,715	49,806
65-69	5,412	3,969	5,580	1,196	8,540	4,780	29,477
70-74	5,355	3,970	5,568	1,043	8,892	4,984	29,813
75+	4,919	3,652	5,314	1,025	8,632	4,793	28,335
All ages	103,145	78,078	109,179	34,701	168,560	83,096	576,759

Source: Europe Economics Analysis. NB Similar calculations done for men

By taking the difference of the two aforementioned calculations, the number of people not paying the speeding fines was calculated for each category. The table below represents the number of females who did not pay their speeding fines by age and region of the spending offender.

Table 4-4: Count of women who did not pay their fines by age and region

	North East	North West	Midlands	London	South East	South West	England
18-24	2,407	1,726	1,756	935	2,532	1,332	10,689
25-29	2,936	2,213	2,202	1,536	3,188	1,584	13,658
30-34	2,644	2,056	1,966	1,587	3,097	1,494	12,844
35-39	2,805	2,183	2,029	1,706	3,485	1,595	13,803
40-44	2,534	1,955	1,791	1,495	3,289	1,460	12,524
45-49	2,684	2,055	1,750	1,321	3,179	1,494	12,483
50-54	2,722	2,077	1,724	1,162	3,057	1,521	12,264
55-59	1,662	1,254	969	646	1,740	904	7,175
60-64	1,326	970	566	508	1,102	608	5,079
65-69	775	566	341	268	649	377	2,975
70-74	767	566	340	234	676	393	2,975
75+	704	521	324	230	656	378	2,813
All ages	23,966	18,142	15,758	11,626	26,652	13,139	109,283

Source: Europe Economics Analysis. NB Similar calculations done for men

Subsequently, the percentage of people not paying their fines is calculated for each category. Table 4-5 and Table 4-6 show the proportion of people who do not pay their fines by age and region for men and women respectively. For instance, if 100 women, aged 18-24, in the North East were given a speeding fine, 24 per cent of them do not be pay their fines.

Table 4-5: Proportion of men who did not pay their fines by age and region

	North East	North West	Midlands	London	South East	South West
18-24	28%	28%	22%	33%	23%	24%
25-29	29%	29%	24%	**34%**	25%	25%
30-34	28%	28%	23%	33%	24%	24%
35-39	27%	27%	21%	31%	22%	22%
40-44	25%	25%	19%	30%	20%	20%
45-49	23%	22%	17%	28%	18%	18%
50-54	22%	22%	16%	27%	17%	18%
55-59	21%	21%	15%	26%	16%	16%
60-64	17%	17%	11%	23%	12%	13%
65-69	17%	17%	11%	23%	12%	13%
70-74	17%	17%	11%	23%	12%	13%
75+	17%	17%	11%	23%	12%	13%

Source: Europe Economics Analysis.

Table 4-6: Proportion of women who did not pay their fines by age and region

	North East	North West	Midlands	London	South East	South West
18-24	24%	24%	18%	29%	19%	19%
25-29	25%	25%	19%	30%	20%	21%
30-34	24%	24%	18%	29%	19%	20%
35-39	22%	22%	16%	27%	17%	18%
40-44	20%	20%	14%	26%	15%	16%
45-49	18%	18%	12%	23%	13%	13%
50-54	18%	17%	11%	23%	12%	13%
55-59	16%	16%	10%	22%	11%	11%
60-64	13%	12%	6%	18%	7%	7%
65-69	13%	12%	6%	18%	7%	7%
70-74	13%	12%	6%	18%	7%	7%
75+	13%	12%	6%	18%	7%	7%

Source: Europe Economics Analysis.

After calculating percentages for each category, the most recalcitrant category is identified i.e., most non-compliant category given enforcement. The results indicate that London men between the age of 25 and 29 are the most recalcitrant category of non-payers.

Having recognised the most recalcitrant category (London, male and 25-29 years old), we rebase the number of non-payers for all categories (age, sex and region) by taking ratios with the recalcitrant category. The ratios are formulated for each category by dividing the number of non-payers in the most recalcitrant category by the number of non-payers in each respective category. Table 4-7 and Table 4-8 display the ratios by which the number of non-payers who are in the most recalcitrant category exceeds the numbers in other categories.[1]

Table 4-7: Normalisation of each category against the recalcitrant category (men)

	North East	North West	Midlands	London	South East	South West
18-24	0.61	0.85	0.78	1.63	0.55	1.05
25-29	0.51	0.67	0.64	**1**	0.45	0.90

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[1] Note that these are not ratios of recalcitrance. These are ratios of numbers of people. So, for example, although there are about two and a half times as many non-payers aged 40-44 in the South East as the number aged 25-29 in London (hence the 0.40 figure in the table above), the number of fines issued to those aged 40-44 in the South East is more than 2.5 times as many as to those aged 25-29 in London. So the 25-29 year olds in London are more recalcitrant even though there are fewer non-payers amongst them.

	North East	North West	Midlands	London	South East	South West
30-34	0.56	0.72	0.70	0.96	0.45	0.94
35-39	0.52	0.66	0.66	0.89	0.39	0.86
40-44	0.56	0.73	0.73	1.00	0.40	0.91
45-49	0.51	0.67	0.69	1.11	0.39	0.85
50-54	0.50	0.66	0.70	1.26	0.41	0.82
55-59	0.81	1.07	1.18	2.24	0.69	1.33
60-64	0.94	1.28	1.60	2.73	0.91	1.67
65-69	1.61	2.20	2.65	5.18	1.54	2.69
70-74	1.63	2.20	2.66	5.94	1.48	2.58
75+	1.77	2.39	2.79	6.05	1.52	2.68

Source: Europe Economics Analysis

Table 4-8: Normalisation of each category against the recalcitrant category (women)

	North East	North West	Midlands	London	South East	South West
18-24	1.61	2.24	2.20	4.13	1.53	2.90
25-29	1.32	1.75	1.76	2.52	1.21	2.44
30-34	1.46	1.88	1.97	2.44	1.25	2.59
35-39	1.38	1.77	1.90	2.27	1.11	2.42
40-44	1.53	1.98	2.16	2.59	1.18	2.65
45-49	1.44	1.88	2.21	2.93	1.22	2.59
50-54	1.42	1.86	2.24	3.33	1.26	2.54
55-59	2.33	3.08	3.99	5.99	2.22	4.28
60-64	2.92	3.99	6.83	7.61	3.51	6.36
65-69	4.99	6.83	11.35	14.42	5.95	10.26
70-74	5.04	6.83	11.37	16.54	5.72	9.84
75+	5.49	7.42	11.91	16.84	5.89	10.23

Source: Europe Economics Analysis

With the ratios identified for each category, we calculated the number of people who would not have paid their fines if there was little or no enforcement.

As mentioned earlier, we assume that 100 per cent of the speeding offenders would not pay their fines if they belong to the most recalcitrant category. In this case, the most recalcitrant category has 11,359 fines. Thus, we divide 11,359 by the respective ratio for each category to obtain the number of people who would not pay their fines.[1] The table below shows the number of women who would not pay their fines by age and region if there was limited enforcement (unadjusted for enforcement prospect).

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[1] This is perhaps most straightforwardly seen via an example. There are 11,359 people aged 25-29 in London who are fined. Of that number, 3,865 do not pay at present. In the South East, of 47,306 people fined, 9,567 did not pay. So the ratio of those not paying at present in the South East to those not paying in London is 2.5:1 or, expressed as in Table 4.7, 0.4 times as many 25-29 year olds in London does not pay as 40-44 year olds in the South East. When enforcement is assumed to be so light touch that no-one aged 25-29 in London pays, we assume the ratio of the number of non-payers, across categories, is constant (before making additional adjustments at later steps of the model). Since there were 11,359 fines issues to 25-29 year olds, we assume 11,359 fines were not paid. So since the ratio is held constant, that means 11,359 / 0.4 = 28,116 fines are not paid by 40-44 year olds in the South East.

Table 4-9: Number of women who would not pay their fines under limited enforcement (unadjusted)

	North East	North West	Midlands	London	South East	South West	England
18-24	7,074	5,074	5,162	2,747	7,442	3,914	31,414
25-29	8,627	6,503	6,470	4,514	9,370	4,656	40,141
30-34	7,771	6,042	5,779	4,663	9,102	4,391	37,748
35-39	8,244	6,417	5,963	5,014	10,242	4,687	40,568
40-44	7,448	5,745	5,263	4,394	9,666	4,292	36,807
45-49	7,889	6,040	5,142	3,882	9,343	4,391	36,687
50-54	8,001	6,104	5,066	3,415	8,986	4,470	36,042
55-59	4,886	3,686	2,848	1,898	5,114	2,655	21,086
60-64	3,896	2,850	1,663	1,493	3,239	1,787	14,928
65-69	2,277	1,663	1,001	788	1,909	1,107	8,744
70-74	2,253	1,664	999	687	1,987	1,154	8,744
75+	2,069	1,531	954	675	1,929	1,110	8,267
All ages	70,436	53,318	46,311	34,170	78,329	38,614	321,177

Source: Europe Economics Analysis. NB Similar calculations done for men

Using data from enforcement agencies, we estimated the share of people enforced against by age, gender and region over the total enforcement action taken by enforcement agencies. Table 4-10 depicts the share of women by age and region that were enforced against compared to total enforcement. For instance, of the total enforcement action taken by EAs in 2019, 5.6 per cent of them were against people aged 25-29 in South East.

Table 4-10: Share of people enforced against by age and region (compared to total enforcement)

	North East	North West	Midlands	London	South East	South West	England
18-24	0.0%	0.6%	0.3%	1.8%	1.5%	0.2%	4.5%
25-29	0.1%	3.1%	1.3%	7.1%	5.6%	0.9%	18.1%
30-34	0.1%	3.1%	1.3%	7.1%	5.2%	1.0%	17.8%
35-39	0.1%	3.1%	1.1%	7.0%	5.2%	0.8%	17.3%
40-44	0.1%	2.4%	0.9%	4.9%	4.1%	0.6%	13.0%
45-49	0.1%	1.4%	0.7%	3.7%	2.8%	0.4%	9.1%
50-54	0.1%	1.5%	0.5%	3.3%	2.2%	0.4%	8.0%
55-59	0.0%	0.8%	0.4%	2.7%	1.5%	0.3%	5.7%
60-64	0.0%	0.5%	0.2%	1.4%	0.9%	0.2%	3.2%
65-69	0.0%	0.2%	0.1%	0.7%	0.4%	0.1%	1.5%
70-74	0.0%	0.1%	0.0%	0.3%	0.2%	0.0%	0.8%
75+	0.0%	0.3%	0.0%	0.4%	0.2%	0.1%	1.0%
All ages	0.7%	17.1%	6.8%	40.5%	29.9%	5.0%	100.0%

Source: Europe Economics Analysis, Marston, CDER. NB Similar calculations done for men

Subsequently, we calculate the share of people who do not pay their fines by age, gender and region over the total level of non-payment of speeding fines. Table 4-11 depicts the share of women who did not pay their fines by age and region compared to all non-payers. For example, of all the people who did not pay their fines, 11.1 per cent of them were aged 30-34.

Table 4-11: Share of people who did not pay fines compared to count of all non-payers

	North East	North West	Midlands	London	South East	South West	England
18-24	2.1%	1.5%	1.6%	0.8%	2.2%	1.2%	9.3%
25-29	2.5%	1.9%	1.9%	1.3%	2.8%	1.4%	11.7%
30-34	2.3%	1.8%	1.8%	1.3%	2.7%	1.3%	11.1%
35-39	2.4%	1.9%	1.8%	1.4%	3.1%	1.4%	12.1%
40-44	2.2%	1.7%	1.7%	1.3%	3.0%	1.3%	11.2%
45-49	2.4%	1.8%	1.7%	1.1%	3.1%	1.4%	11.6%
50-54	2.4%	1.9%	1.7%	1.0%	3.0%	1.5%	11.5%
55-59	1.5%	1.1%	1.0%	0.6%	1.7%	0.9%	6.8%
60-64	1.3%	0.9%	0.7%	0.5%	1.3%	0.7%	5.3%
65-69	0.7%	0.5%	0.4%	0.2%	0.7%	0.4%	3.1%
70-74	0.7%	0.5%	0.4%	0.2%	0.8%	0.4%	3.1%
75+	0.7%	0.5%	0.4%	0.2%	0.8%	0.4%	3.0%
All ages	21.2%	16.1%	15.2%	9.9%	25.2%	12.4%	100.0%

Source: Europe Economics Analysis. NB Similar calculations done for men

Then we calculate the enforcement ratio which is the enforcement likelihood against a particular type of person given they do not pay their fines. The ratios have been calculated by dividing (for each category) the share of people against whom enforcement action has been taken by the share of people who did not pay their fines. In other words, we divide the values in the last column of Table 4-10 by the equivalent value in the last column of Table 4-11 which is then adjusted relative to the average across all categories. The table below shows the enforcement ratios by age[1]. If a person from one category is more likely to be enforced against, there's a higher chance they would not pay if there was no enforcement i.e., if the risk of enforcement is removed, they are less likely to pay their fines.

Table 4-12: Enforcement ratios by age

	Enforcement Ratio
18-24	56.8%
25-29	181.3%
30-34	187.9%
35-39	168.2%
40-44	136.4%
45-49	92.4%
50-54	82.7%
55-59	98.0%
60-64	70.6%
65-69	58.0%
70-74	28.6%
75+	39.1%

Source: Europe Economics Analysis.

Having calculated the enforcement ratios by age, we can now calculate the number of people who would not pay if there was limited enforcement. Table 4-13 shows the number of women who would not pay their fines by age and region if there was limited enforcement for the collection of speeding fines, after adjusting for enforcement actions. These results are adjusted for the likelihood of EAs undertaking enforcement actions against a particular type of person.

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[1] Enforcement ratios have not been adjusted by region due to lack of data availability of enforcement practices across England. We assume the data is representative of enforcement pattern by age across England.

Table 4-13: Number of women who would not pay their fines under limited enforcement (adjusted)

	North East	North West	Midlands	London	South East	South West	England
18-24	4,018	2,882	2,932	1,560	4,227	2,223	17,841
25-29	11,669	8,809	11,368	5,103	15,559	7,656	60,165
30-34	10,995	8,562	10,822	5,459	16,038	7,656	59,532
35-39	12,609	9,831	10,027	6,231	17,223	7,882	63,803
40-44	10,158	7,836	7,178	5,820	13,183	5,854	50,029
45-49	7,294	5,584	4,754	3,589	8,638	4,059	33,916
50-54	6,618	5,049	4,190	2,825	7,433	3,698	29,813
55-59	4,789	3,613	2,792	1,860	5,013	2,603	20,670
60-64	2,749	2,011	1,174	1,054	2,286	1,261	10,534
65-69	1,320	965	581	457	1,107	642	5,071
70-74	767	566	340	234	676	393	2,975
75+	808	598	372	263	754	434	3,229
All ages	73,795	56,305	56,530	34,455	92,135	44,359	357,579

Source: Europe Economics Analysis. NB Similar calculations done for men

In order to determine the value added by enforcement, we subtract the number of non-payers under enforcement from the number of people who would have not paid if there was little or no enforcement. The values indicate the value-added by enforcement i.e., the number of people pay their fines on time due to the risk of being enforced against. The table below shows the number of people who paid their fines, by age and region, due to the risk of enforcement. For example, of the people paying their fines currently, approximately 250,000 female speeding offenders would have not paid the fines if there was little or no enforcement.

Table 4-14: Number of incremental payments by women due to enforcement by age and region

	North East	North West	Midlands	London	South East	South West	England
18-24	1,611	1,155	1,175	625	1,694	891	7,152
25-29	8,734	6,596	9,167	3,567	12,371	6,072	46,507
30-34	8,351	6,506	8,856	3,873	12,940	6,162	46,688
35-39	9,804	7,648	7,998	4,525	13,738	6,287	50,000
40-44	7,624	5,881	5,387	4,325	9,894	4,393	37,505
45-49	4,609	3,528	3,004	2,268	5,458	2,565	21,433
50-54	3,896	2,972	2,467	1,663	4,375	2,177	17,549
55-59	3,127	2,359	1,823	1,215	3,273	1,700	13,495
60-64	1,424	1,042	608	546	1,184	653	5,455
65-69	546	399	240	189	458	265	2,096
70-74	-	-	-	-	-	-	-
75+	104	77	48	34	97	56	416
All ages	49,829	38,163	40,773	22,829	65,483	31,220	248,297

Source: Europe Economics Analysis. NB Similar calculations done for men

Overall our model suggests that, absent enforcement, over 860,000 (39%) more people would not pay their speeding fines than do so today. We estimate the total additional amount of speeding fines not paid, under this scenario, at £107 million per annum.

Table 4-15: Summary Statistics

Total number of fines in England	**2,213,037**
Incremental effect of enforcement (people who paid their fines due to the risk of enforcement)	868,960 (39%)
Total amount	£107,751,086

Source: Europe Economics Analysis

4.2 Council tax model

For council tax models, age is a reference to the age of the primary/adult resident(s).

For the "richer model", the Standard Occupational Classifications (SOC) 2010[1] was used to create nine occupational categories for each household. For households with residents aged 65+, we classify them as pensioners. Occupation is a reference to the occupation of the primary/adult resident. An assumption is made that at least one adult is employed in each household. The ten occupational categories that we used for the richer model are:

1. Managers, directors and senior officials
2. Professional occupations
3. Associate professional and technical occupations
4. Administrative and secretarial occupations
5. Skilled trades occupations
6. Caring, leisure and other service occupations
7. Sales and customer service occupations
8. Process, plant and machine operatives
9. Elementary occupations
10. Pensioners (65+)

To calculate the final increment value by enforcement, we multiply the total number of households in each region by the average council tax rate of a Band D household (the median household) in each region[2]. Using ONS data, each age category of household was split into single person and multiple resident households.[3] Single person households receive a 25 per cent discount on their council taxes.[4]

4.3 PCN models

For a breakdown of the PCN issuance by age and gender, we used data from the Northern Ireland police force. This was done due to the lack of publicly available data on the breakdown of fines for England. Given the lack of data on payment compliance for PCN, we assume that the non-payment compliance characteristics for PCNs lie at the average between those who don't pay speeding fines and those that don't pay council tax. Hence, we use the data from IFS and Ministry of Justice on payment rates for each characteristic in the PCN models.

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[1] ONS: SOC 2010 [online]
[2] CIPFA (March 2021): Average council tax in England exceeds £2,000 in two regions [online]
[3] We have assumed that the adult residents of multiple-resident households belong to the same age group.
[4] Gov.UK: Council tax – Who has to pay [online]

To assess the impact of enforcement on parking fines, we have created 3 models by the type of PCN – parking, bus lane and Dartford Crossing Charge.

Parking penalty fines differ by region. We have divided them into London and the rest of England. Furthermore, there are 2 levels of parking penalties – high and low. The average fines for a high- and low-level parking notice in London are £130 and £80 respectively.[1] Data from London parking PCNs indicate that approximately 80 per cent of the parking fines are classified as high-level. For the rest of England, we assume an even split between high and low (lack of data) and the average parking fines to be £60.[2]

Similarly, bus lanes PCNs differ by region. The average penalty for bus lane PCNs in London is £130, whereas the average for the rest of England is £60.

4.3.1   Breakdown of parking fines model results by sex

Our estimates suggest that approximately 1.9 million men and 1.0 million women would not pay their parking fines than do so today. This translates to £168 million and £96 million in unpaid parking fines for men and women respectively.

Table 4-16: Incremental effects of parking enforcement on men

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	-	-	-	-	-	-	-	-	-	-
25-29	16,693	13,921	185,848	6,572	36,131	37,706	22,117	13,704	15,115	347,808
30-34	17,164	12,496	195,887	5,828	33,578	36,047	20,734	12,108	13,530	347,373
35-39	18,115	12,752	189,631	5,704	33,299	39,551	21,246	11,893	13,463	345,654
40-44	15,091	11,357	128,400	4,917	26,350	37,243	19,235	10,277	11,759	264,630
45-49	11,158	7,966	86,473	3,436	20,340	24,524	13,547	6,972	8,219	182,634
50-54	9,691	7,066	67,331	3,140	17,970	21,127	12,216	6,044	7,159	151,744
55-59	7,189	6,587	42,381	3,116	13,758	19,447	11,766	5,551	6,669	116,463
60-64	4,164	2,956	25,291	1,477	7,913	8,670	5,500	2,440	3,128	61,539
65-69	615	443	3,257	210	1,146	1,249	844	362	454	8,579
70-74	1,149	1,039	4,622	480	2,050	3,054	2,052	838	1,014	16,298
75+	1,663	1,096	7,818	508	2,876	3,449	2,274	963	1,141	21,788
All ages	102,691	77,678	936,939	35,390	195,411	232,068	131,530	71,152	81,651	1,864,510

Source: Europe Economics Analysis

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[1]   London Councils – Parking and Traffic Charges in London [online]
[2]   Traffic Penalty Tribunal – PCN/Appeal Process [online]

Table 4-17: Incremental effects of parking enforcement on women

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	-	-	-	-	-	-	-	-	-	-
25-29	9,530	7,651	107,076	3,625	20,618	20,863	12,212	7,418	8,446	197,439
30-34	9,684	6,732	111,723	3,154	18,935	19,582	11,234	6,399	7,439	194,882
35-39	10,177	6,817	107,754	3,064	18,696	21,336	11,429	6,227	7,357	192,856
40-44	9,332	5,966	86,588	2,598	16,213	19,774	10,179	5,266	6,338	162,255
45-49	6,164	4,128	48,444	1,792	11,228	12,863	7,079	3,512	4,384	99,594
50-54	5,354	3,663	37,727	1,639	9,922	11,085	6,386	3,046	3,820	82,642
55-59	4,848	3,391	28,580	1,615	9,278	10,139	6,111	2,773	3,596	70,330
60-64	2,253	1,469	13,928	741	4,278	4,382	2,766	1,165	1,617	32,600
65-69	333	220	1,793	105	620	631	424	173	235	4,534
70-74	775	516	3,117	241	1,382	1,544	1,032	400	546	9,553
75+	900	545	4,305	255	1,555	1,743	1,143	460	590	11,496
All ages	59,349	41,099	551,034	18,830	112,724	123,942	69,996	36,839	44,367	1,058,181

Source: Europe Economics Analysis

4.3.2 Breakdown of bus lane fines model results by sex

Our estimates suggest that approximately 340,000 men and 310,000 women would not pay their fines for bus lane offences than do so today. This translates to £26 million and £24 million in unpaid parking fines for men and women respectively.

Table 4-18: Incremental effects of bus lane enforcement on men

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	-	-	-	-	-	-	-	-	-	-
25-29	6,847	5,710	20,743	2,696	14,820	15,465	9,071	5,621	6,200	87,172
30-34	7,421	5,403	23,328	2,520	14,518	15,586	8,965	5,235	5,850	88,826
35-39	7,606	5,354	22,439	2,395	13,982	16,607	8,921	4,994	5,653	87,950
40-44	5,421	4,532	13,533	1,962	9,465	14,864	7,676	4,102	4,625	66,180
45-49	4,116	2,939	9,361	1,268	7,504	9,047	4,998	2,572	3,032	44,835
50-54	3,393	2,474	6,917	1,099	6,292	7,397	4,277	2,116	2,507	36,472
55-59	2,582	2,258	4,467	1,068	4,942	6,665	4,033	1,903	2,323	30,240
60-64	1,378	978	2,457	489	2,619	2,870	1,821	808	1,035	14,455
65-69	123	88	191	42	229	250	169	72	91	1,255
70-74	413	322	487	149	736	947	637	260	328	4,279
75+	515	340	710	157	891	1,068	704	298	353	5,037
All ages	39,815	30,398	104,634	13,845	75,996	90,766	51,271	27,980	31,995	466,700

Source: Europe Economics Analysis

Table 4-19: Incremental effects of bus lane enforcement on women

	East	East Midlands	London	North East	North West	South East	South West	West Midlands	Yorkshire	England
18-24	-	-	-	-	-	-	-	-	-	-
25-29	3,909	3,138	12,887	1,487	8,457	8,557	5,009	3,043	3,464	49,950
30-34	4,187	2,911	14,174	1,364	8,187	8,467	4,857	2,767	3,216	50,130
35-39	4,273	2,862	13,276	1,287	7,850	8,958	4,799	2,615	3,089	49,008
40-44	3,655	2,381	9,126	1,037	6,383	7,892	4,062	2,102	2,530	39,168
45-49	2,274	1,523	5,244	661	4,142	4,745	2,612	1,296	1,617	24,113
50-54	1,875	1,283	3,876	574	3,474	3,881	2,236	1,067	1,337	19,602
55-59	1,696	1,162	3,012	554	3,228	3,475	2,094	950	1,233	17,404
60-64	746	486	1,353	245	1,416	1,451	915	386	535	7,533
65-69	66	44	105	21	124	126	85	34	47	653
70-74	252	160	328	75	446	479	320	124	169	2,353
75+	279	169	391	79	482	540	354	142	183	2,618
All ages	23,211	16,119	63,773	7,383	44,187	48,571	27,344	14,525	17,420	262,533

Source: Europe Economics Analysis