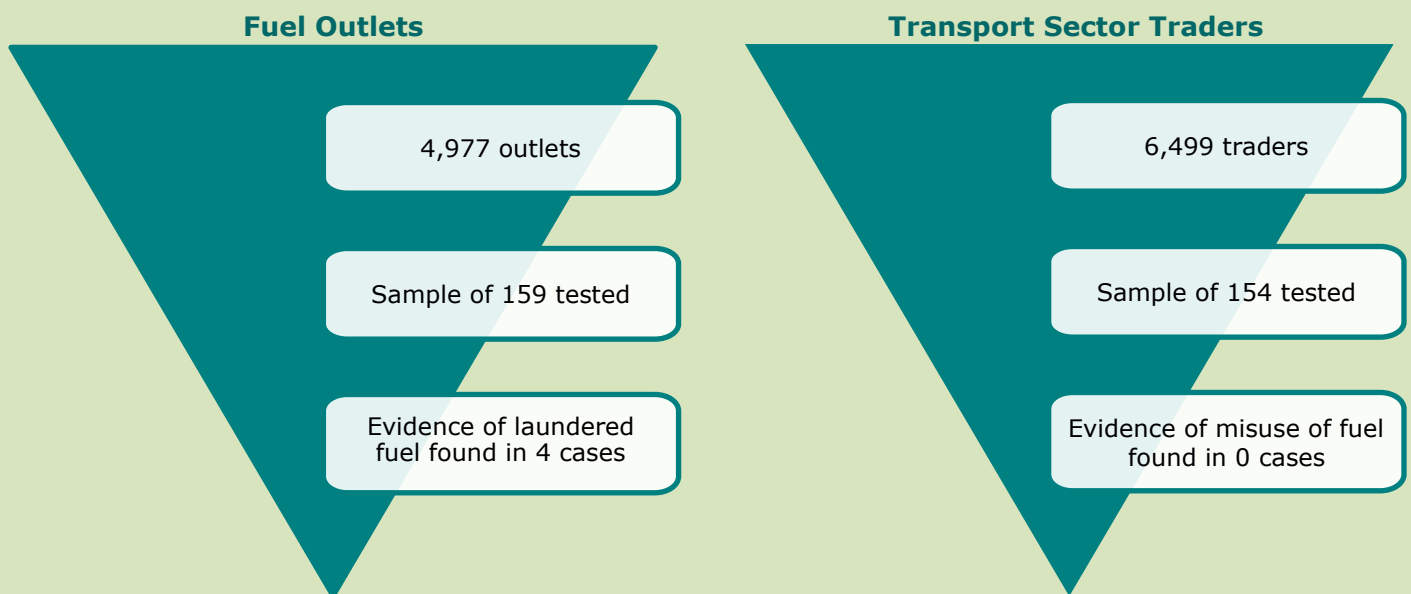


National Oil Random Sampling Programme 2020/2021

Revenue has conducted an annual national sampling programme since 2016 to quantify the extent to which illicit fuel (laundered road diesel) is evidenced among licensed fuel outlets. The programme was extended to include transport sector traders in 2018.

The sampling programme entails taking samples of road diesel from randomly selected groups of licensed fuel outlets (mostly forecourt retailers and fuel distributors) and transport sector traders. The samples are tested for the presence of Accutrace, a colourless marker with chemical properties similar to diesel but resistant to conventional dye-washing laundering methods. Since 2015, Accutrace is required to be added, in addition to the existing mineral oil marker dyes, to any supply of rebated fuel in the Republic of Ireland or the United Kingdom.

The 2020/2021 sampling programme took place between February 2020 and August 2021.



The results represent an authoritative confirmation of the effectiveness of the various measures implemented by Revenue in recent years to enhance compliance in the fuel trade and among users of diesel. The random sampling programme results do not signify the complete elimination of the illicit trade in fuel. However, they do demonstrate that systematic selling of illicit fuel through retail outlets and its use in the transport sector appears negligible.

1 Background and Objectives

The introduction in 2015 of a new fiscal marker, "Accutrace S10™" (referred to in this report as Accutrace), for marked mineral oil products was part of a series of initiatives by Revenue to enhance compliance in the fuel trade and combat the trade in illicit fuel.

Accutrace is a colourless marker with chemical properties similar to diesel but resistant to conventional dye-washing laundering methods. Since 31 March 2015, Accutrace is required to be added, in addition to the existing mineral oil marker dyes, to any supply of rebated fuel removed from an oil warehouse in the Republic of Ireland or the United Kingdom.¹

Following a suitable 'bedding-in' period, since 2016 Revenue has conducted an annual national random sampling programme to quantify the extent to which illicit fuel (e.g., laundered road diesel) is evidenced among licensed fuel outlets. The programme was extended to include transport sector traders in 2018.

The random sampling programme entails taking samples of road diesel from randomly selected licensed fuel outlets (mostly forecourt retailers and fuel distributors) and transport sector traders and testing each sample for the presence of markers.²

The field testing is conducted by Revenue's specialist enforcement teams. The programme, in terms of independent case selection and outcome reporting, is conducted under the auspices of Revenue's Strategy, Evaluation & Reporting Branch. Cases are randomly selected and distributed to field test teams (with guidelines for conducting the sampling and reporting templates), with sampling conducted in a coordinated nationwide programme. Due to the disruption caused by the COVID-19 pandemic restrictions, the programme was paused during 2020. Sampling for 2020/2021 programme took place over the first two months of 2020 and the summer of 2021.

This random sampling exercise, conducted on a national level each year, provides a powerful and robust measure of the scale of the selling and use of laundered fuel in the State. Now in its fifth year, it gives a benchmark against which to compare outcomes over time.³

¹ The fiscal marker is a collaboration between Irish Revenue and Her Majesty's Revenue & Customs in the UK.

² Revenue enforcement teams use portable analysers (that use micro-gas chromatograph technology) to test for the presence of Accutrace in road diesel. Detection of Accutrace in road diesel, particularly where there is no trace of the other marking agents (i.e., marker dyes), is a clear indication of laundered fuel. However, it should be noted that while a detection of the marker in road fuel empowers Revenue to detain or seize suspect fuel, subsequent prosecutions are only initiated following formal testing and certification of the presence of the marker by the State Laboratory.

³ Reports on previous years' results from the sampling programmes are published at:

<https://www.revenue.ie/en/corporate/information-about-revenue/research/research-reports/excise-and-vat.aspx>.

2 Sampling

For the 2020/2021 programme, the sampling focused on two categories: licenced fuel traders and transport sector traders.

2.1 Licenced Fuel Traders

Any trader producing, selling, dealing in, or keeping for sale or delivery road diesel is legally obliged to hold an Auto Fuel Trader Licence ("AFTL"). The total population of AFTL holders (i.e., those holding a valid licence) was 4,977 at the time of sampling. Of these, a random sample of 159 was selected for sampling (3.8 per cent of the total population). A breakdown of the population and sample by region is shown in Table 1.

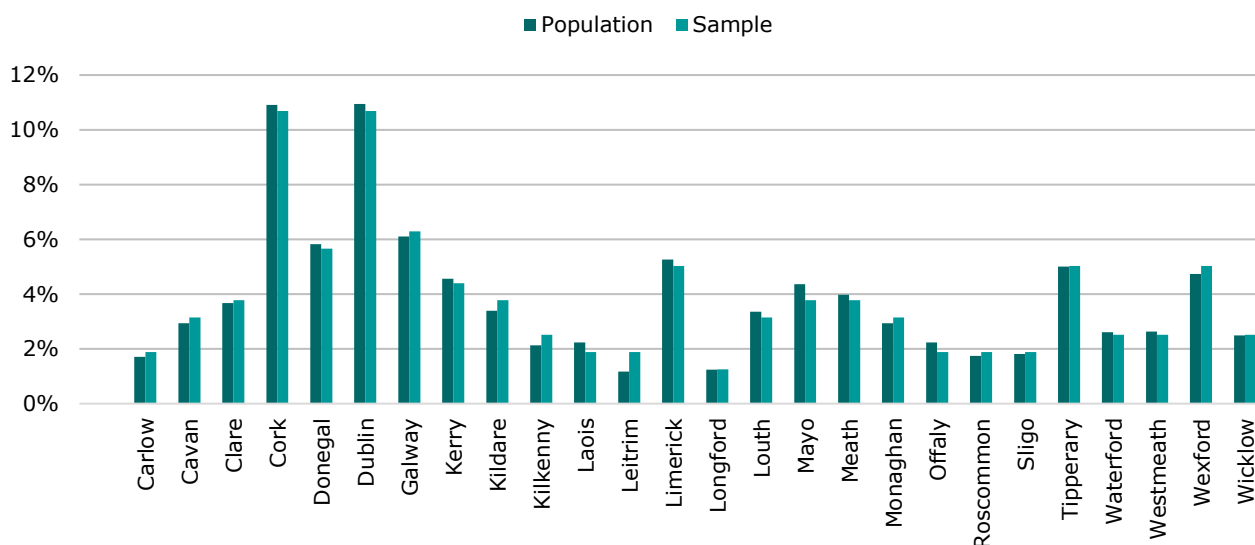
Table 1: Auto Fuel Trader Licence Sample and Population 2020/2021

Region*	AFTL Population		AFTL Random Sample	
	Number	%	Number	%
Border, Midland & West	2,176	44%	70	44%
Dublin	545	11%	17	11%
East & South East	1,041	21%	34	21%
South West	1,215	24%	38	24%
Total	4,977	100%	159	100%

Source: Revenue analysis. *Note: Although Revenue realigned in 2018 to move away from geographic based regions, the structure is maintained here for comparative purposes.

Revenue enforcement teams tested for the presence of the marker, Accutrace, by taking samples of diesel in the storage tanks of the randomly selected traders. All sampling took place between 14 February 2020 and 13 March 2020.

The purpose of randomly sampling a large number of traders is to ensure representativeness of all national fuel traders in the sample. There are a number of ways to test representativeness, including by comparing distributions of selected characteristics in the sample and the population. For this exercise, geographical location (Figure 1) is used. On the basis of these distributional comparisons and other analysis, the results show a reasonably close match, which provides confidence that the sample is likely to be representative of all AFTL holders in Ireland.

Figure 1: Auto Fuel Trader Licence Sample and Population by Location 2020/2021

Source: Revenue analysis.

2.2 Transport Sector Traders

Businesses operating in the transport sector are not required to hold a licence for Excise purposes, therefore unlike AFTL holders there is no overall register of cases from which to draw a random sample. Instead, a query is run against Revenue records to identify traders in the transport sector. A number of criteria are used:

- Assigned to one of the following NACE codes: 4931, 4939, 4941 or 4942; or
- Included in their business description the terms: "haulier" or "transport"; or
- Availed of the Diesel Rebate Scheme; and
- Are not included on register of licenced hauliers.

This produced a "population" of 6,499 cases. Of these, a random sample of 154 was selected for sampling (2.4 per cent of the total population). A breakdown of the population and sample by region is shown in Table 2.

Table 2: Transport Sector Traders Sample and Population 2020/2021

Region*	Transport Sector Population		Transport Sector Random Sample	
	Number	%	Number	%
Border, Midland & West	2,654	41	65	42
Dublin	1,210	18	26	17
East & South East	1,343	21	34	22
South West	2,654	20	29	19
Total	6,499	100%	154	100%

Source: Revenue analysis. Note: *Although Revenue realigned in 2018 to move away from geographic based regions, the structure is maintained here for comparative purposes.

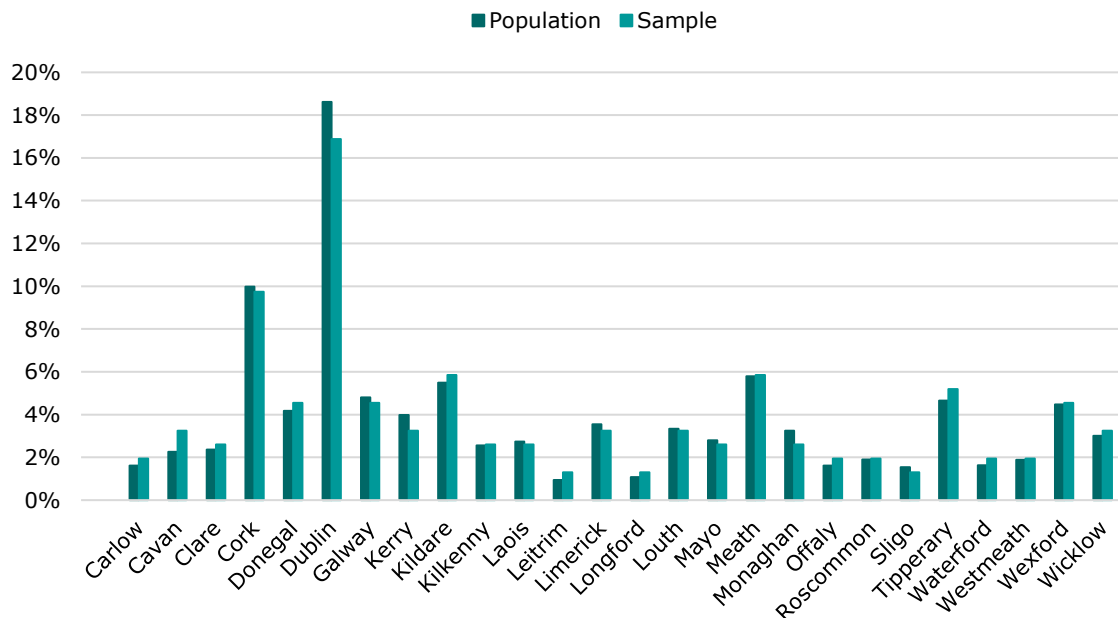
Revenue enforcement teams test for the presence of standard markers. The intent is to sample fuel from the tank of at least one diesel-propelled vehicle owned by each of the randomly selected traders. Along with testing for the presence of Accutrace, the officers test for any identifiable misuse of reduced-rate fuel. To that end the following tests were conducted in all cases sampled:

- A visual check for any dye present;
- A test for the presence of the Euromarker;
- A hydrometer test for the presence of kerosene; and
- A test for the presence of Accutrace.

All sampling took place between 4 May 2021 and 25 August 2021.

Analysis of the sample and population by location (Figure 2) and by other attributes confirms that the sample is likely to be representative of all transport sector traders in Ireland (when the sector is defined as outlined above).

Figure 2: Transport Sector Traders Sample and Population by Location 2020/2021



Source: Revenue analysis.

3 Results

3.1 Licenced Fuel Traders

Of the random sample of 159 licenced fuel traders, 23 cases were unavailable for testing for a number of reasons, including the trader not being involved in selling road diesel or having gone out of business. This results in an effective sample of 136.⁴

Evidence of Accutrace was found in 4 (3 per cent) of the 136 licenced fuel traders sampled.

Table 3: Auto Fuel Trader Licence Results 2020/2021

Region	Random Sample	Unavailable for Test	Tested	Evidence of Accutrace
Border, Midland & West	70	11	59	1
Dublin	17	5	12	0
East & South East	34	2	32	1
South West	38	5	33	2
Total	159	23	136	4

Source: Revenue analysis.

Transport Sector Traders

Of the random sample of 154 transport sector traders, 42 cases were unavailable for testing for a number of reasons, including the trader having gone out of business or all of the trader's diesel-propelled vehicles being off-site. Officers were requested to re-visit, to a maximum of three visits, those cases where access to a suitable vehicle was not possible on the initial visit. This results in an effective sample of 112.⁵

Evidence of Accutrace or of misuse of reduced-rate fuel was found in 0 (0 per cent) of the 112 transport sector traders sampled.

Table 4: Transport Sector Traders Results 2020/2021

Region	Random Sample	Unavailable for Test	Tested	Evidence of Accutrace*
Border, Midland & West	65	19	46	0
Dublin	26	8	18	0
East & South East	34	9	25	0
South West	29	6	23	0
Total	154	42	112	0

Source: Revenue analysis. Note: *Includes visual check for any dye present, test for the presence of the Euromarker or hydrometer test for the presence of kerosene.

⁴ Margin of error on a sample of 136 with 4 findings is in the range 0.01% to 0.07% (at a 95% confidence interval).

⁵ Margin of error on a sample of 112 with 0 findings is in the range 0.00% to 0.03% (at a 95% confidence interval).

4 Discussion

This is the fifth year of Revenue's national random sampling programme in fuel. The first two years focused on licenced fuel traders. The programme was extended to include businesses in the transport sector in 2018. This was done to widen the testing to include a group that are important users of diesel and who could stand to benefit significantly in financial terms from the illegal use of reduced-rate fuel.

Evidence of laundered fuel has been found in 4 licenced fuel traders in 2020/2021. In 2020/2021, the fourth year of sampling transport sector traders, evidence of misuse of reduced-rate fuel was found in 0 traders. Revenue has pursued appropriate follow up action in all cases.

The results from all five years of the sampling programme are summarised in Table 5.

Table 5: Random Sampling Programmes 2016-2021

Region	2016		2017		2018*		2019*		2020-2021*	
	Traders Tested	Evidence of Accutrace	Traders Tested	Evidence of Accutrace	Traders Tested	Evidence of Accutrace**	Traders Tested	Evidence of Accutrace**	Traders Tested	Evidence of Accutrace**
Border, Midland & West	75	0	85	0	66	0	91	0	105	1
Dublin	17	0	18	0	30	1	25	0	30	0
East & South East	58	0	68	0	64	2	51	3	57	1
South West	47	0	41	0	38	0	65	0	56	2
Total	197	0	212	0	198	3	232	3	248	4

Source: Revenue analysis. Notes: *2020/2021, 2019 and 2018 results include both licence fuel traders and transport sector traders; ** Includes visual check for any dye present, test for the presence of the Euromarker or hydrometer test for the presence of kerosene.

These random sampling exercises, conducted on a national level, provide a powerful and robust measurement of the scale of the selling and use of laundered fuel in the State. The samples, one in thirty fuel selling outlets and around one in twenty users in the transport sector in 2020, are significantly larger than required to provide robust statistical results that can be extrapolated to the full population.

The results represent an authoritative confirmation of the effectiveness of the various measures implemented by Revenue in recent years to enhance compliance in the fuel trade and among users of diesel. The sampling results do not signify the complete elimination of the illicit trade in fuel. However, they demonstrate that systematic selling of illicit fuel through retail outlets and its use in the transport sector appears negligible and close to being fully eliminated.