

Cruise activity and pollution: The case of Barcelona

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ABSTRACT

One of the main causes of mortality worldwide is air pollution. To tackle this problem, local, regional and national governments have implemented policies to reduce emissions from industrial and on-road sources. However, when these policies are being designed, shipping emissions are often overlooked. There has been a drastic increase in the demand for cruises and its economic relevance is also growing in port-cities. Barcelona is Europe's leading cruise port, and it is located near the centre of the city. In this context, this paper analyses the impact of cruise ships in the air quality of the entire city of Barcelona using a dataset with information about pollutants and the number of cruises arriving to the port. We show that there is a direct impact between cruises staying at the port and city pollution. Additionally, the size and age of the cruise also affect air quality. The larger (or newer) the cruise is, the higher the emission generated. Moreover, our simulations show that the whole city is affected by these emissions.

1. Introduction

Air pollution is one of the main causes of mortality worldwide. Every year seven million premature deaths are linked to air pollution; three million of which are due to ambient air pollution. Moreover, air pollution is also a risk factor of pollution-related diseases, such as, respiratory infections, chronic obstructive pulmonary disease, lung cancer, stroke and heart disease (WHO, 2014). Industry, agriculture, on-road traffic and heating are the main sources of air pollution in urban areas, with on-road traffic being the main contributor to urban air pollution (Raaschou-Nielsen et al., 2010; Holman, 1999). Recognition of the importance of air pollution has led authorities to make significant efforts to improve the air quality, by reducing emissions from industrial and on-road traffic sources. To reduce air pollution, the first initiative implemented in Europe was the Air Quality Framework Directive 96/62/EC, which established standards for a variety of pollutants.¹ In 2005 the European Commission proposed to consolidate the Framework Directive and other related directives into a single Ambient Air Quality Directive, adopted as 2008/50/EC.² The Ambient Air Quality Directive along with the Directive 2004/107/EC, provides the reference framework for the control of air pollution in the EU. In Spain, *Real Decreto* 102/2011 establishes air quality objectives regarding the concentrations of a range of pollutants.³ Locally, in the case of

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¹ Including ozone, particulate matter (PM_{10}) and nitrogen dioxide (NO_2).

² Including a set of objectives for fine particulate matter ($PM_{2.5}$).

³ Sulfur dioxide, nitrogen dioxide and nitrogen oxides, particles, lead, benzene, carbon monoxide, ozone, arsenic, cadmium, nickel and benzo(a)pyrene.

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Barcelona, the city council has implemented various policies to reduce the use of private cars and ease the use of public transport and alternative methods of transport, like bicycles. These policies are aimed at reducing emissions and these emission reductions could result in an increase in the relative weight of other pollution sources, such as shipping.

Shipping represents a significant economic resource for maritime cities. Studies show that shipping activities generated 117 billion euros in the European Union in 2013. This activity not only generates wealth but also direct and indirect jobs. It is estimated that 615,000 people are directly employed in the shipping sector and more than a million people in indirect jobs. In addition, the cruise industry is a significant economic factor for tourism areas. In 2016, the direct cruise sector contribution in Europe rose to 20.69 billion euros, while its indirect and induced economic contribution increased to 29.46 billion euros. In terms of employment, studies show that 185,842 jobs are directly related to the cruise sector in Europe while 195,584 jobs are related in an indirect or induced way by this sector (CLIA, 2017).

Worldwide, during the period 2011–2016, the demand for cruises has increased by 18.32%.⁴ This increase is matched by an increase in the capacity deployed by the cruise sector⁵; in the same period the cruise sector increased its capacity from 121.8 million of bed days up to 1635 million. It is important to note that the two areas with the biggest deployment are the Caribbean, and the Mediterranean, with 55.07 and 30.53 million beds respectively (CLIA, 2017). In terms of passengers, it is estimated that 6.78 million passengers were carried by cruises ships in Europe during 2016, being Barcelona the main cruise port in Europe, with 2.68 million passengers in 2016.

Along with the increase of the shipping and cruise sector activities worldwide, researchers have started to analyse the impact of these activities on pollution in ports. Studies show that shipping activities are a significant polluting factor in the port area. Moreover, all types of vessels have impacted on pollution, including cruise ships.

In this regard, shipping activities and, specifically, the cruise sector, generate wealth for their home cities but also generate a negative externality in terms of increased pollution that can provoke health problems among the population of these cities. This is due to the proximity of ports to urban areas. Operations carried out at ports can influence human health, and induce serious health problems such as premature mortality, asthma, bronchitis and heart failure (IAPH, 2007). In this regard, Tzannatos (2010) estimated that ship emissions in the passenger port of Piraeus reached 2600 tons annually and their estimated externalities were around 51 million euros. Also, in Piraeus, Chatzinikolaou et al. (2015) estimated that the total external cost in health problems caused by coastal passenger and cruise ships is about 26.3 million euros annually. Moreover, McArthur and Osland (2013) estimated that the costs of ship emissions in the port of Bergen are between 10 and 21.5 million euros per year.

Taking this into account, in our paper we analyse the impact of cruise ships in the pollution generated in the city of Barcelona. As said before, Barcelona is the main port in Europe in terms of cruise ships passengers. In the last years the number of cruise ships passengers has increased from 225,937 in 1995 up to 2,712,247 in 2017, an increase of 1100% in 23 years.⁶ Also the number of cruise ships operating in the port has increased drastically, from 447 in 1998 to 778 in 2017⁷ (see Fig. 1).

Recent studies have analysed the impact of shipping activity on pollution in port areas. Corbett et al. (2007) found that particulate matter (PM) emissions from shipping causes approximately 60,000 premature deaths each year. In terms of CO₂, a significant share of emissions are derived from the time that ships stay in port (Habibi and Rehmatulla, 2009). In the case of cruise ships, Eckhardt et al. (2013) show that mean concentrations of SO₂ are 45% higher in periods where cruise ships are present at harbours in Svalbard⁸. In Bergen, McArthur and Osland (2013) showed that cruise ships were the second highest type of pollution emitters of NO_x, SO₂, PM₁₀, PM_{2.5} and CO₂. Following this literature, Tichavská and Tovar (2015) calculated the emissions generated by cruise ships and ferries in Las Palmas. Authors show that passenger ships were the main source of polluting emissions, except for CO.

Moreover, in the case of the Mediterranean, CO₂ emissions from cruise and passenger ships are estimated to be about 10% of all ship emissions (Faber et al., 2009). Focusing on Barcelona, Pey et al. (2013) showed that 19% of the PM₁₀ concentration near the harbour was exclusively related to emissions taking place at harbour. Additionally, in a study carried out by the Autonomous Government of Catalonia (Generalitat de Catalunya, 2007) the authority showed that, although the main source of atmospheric pollution in Barcelona is due to road transport (52% for PM₁₀ and 40% for NO_x), emissions from the harbour area are also important (8% for PM₁₀ and 9% for NO_x).

It is important to remark the geographical distribution of the port of Barcelona. The port has two main areas for boarding cruise ships, one called Moll de Barcelona and the other called Moll Adossat. In the former there are two International Maritime Terminals: the International Nord and the International Sud. These two terminals (International Nord and International Sud) are located near the city, at 854 m from the city centre. In the latter there are five terminals: Internacional A, Internacional B, Internacional C, Internacional D and Internacional E.⁹ These are the main terminals receiving cruise ships each day¹⁰ and they are located at 2–2.5 km distance from the city centre of Barcelona. As can be seen, the terminals are located quite near the city, so it is very likely that the pollution originating from cruise activity can influence the urban area of Barcelona and its inhabitants.

⁴ In Europe (excluding Russia and Central and Eastern countries) the demand has increased by 8.45% in the same period.

⁵ In millions of bed days.

⁶ In our period analysed, 2012–2016, the number of passengers increased from 2,408,634 up to 2,683,499; an increase of 11.41%.

⁷ In our period analysed, 2012–2016, the increase of cruise ships have been from 770 to 778. It is important to note that the number of cruise ships is limited by the capacity of the port.

⁸ The authors show that O₃ concentrations were lower during periods with ships at the port.

⁹ Terminal Internacional E was opened in May 2018.

¹⁰ In the week from May 9th to May 15th 2018, 81% of ships arrived at a terminal located in the Moll Adossat.

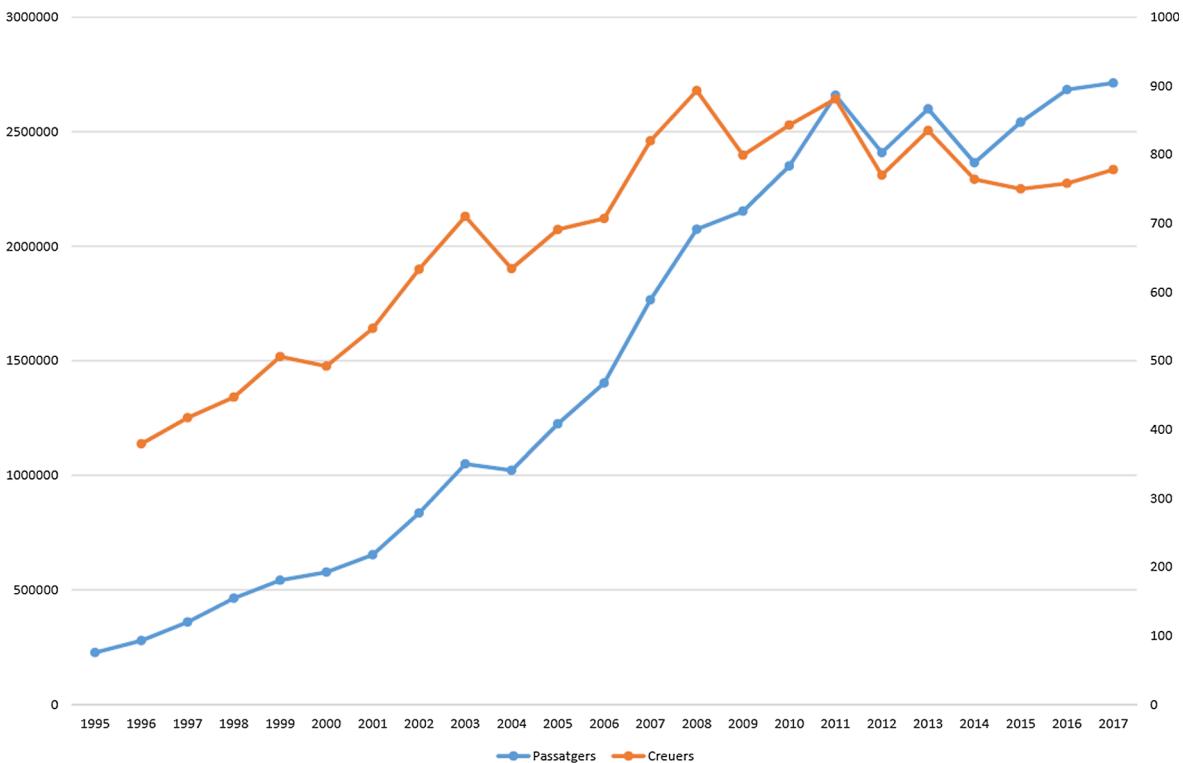


Fig. 1. Number of passengers and cruise ships (1995–2017).

Source: Own elaboration.

For this reason our main objective is to analyse the impact of cruise ship activity not only on the pollution generated in the port area but also on the whole urban area of Barcelona. We use a database of pollutants from different air quality stations in the city of Barcelona and the number of cruise ships arriving, staying and leaving hourly during the period 2012–2016, to analyse the impact of these ships on the air quality of Barcelona. Based on this data, we show that the pollution generated by cruise activity affects the whole city of Barcelona; not only the port. This pollution has an impact up to 10 km away from the port. In addition, our results enable us to simulate the impact of each pollutant generated by cruise activity throughout the city of Barcelona, and demonstrate the greatest impact near the port.

As far as we know, this is the first time that the impact of the activity of cruise ships on the air quality of the city has been analysed using an econometric model, rather than using a deterministic model. In this regard it is important to note the works of Saxe and Larsen (2004), and Poplawski et al. (2011). Saxe and Larsen (2004) modelled the dispersal of NO_x, SO₂ and PM₁₀ caused by ships in three Danish harbours and found that emissions of NO_x and PM₁₀ from these ships could represent a health problem to people in Copenhagen and Elsinore.¹¹ Poplawski et al. (2011) also modelled the impact of cruise ships in Victoria but then they compared their predicted results with measured concentrations in the nearest air quality network. They showed that NO₂ and SO₂ levels were higher on days with cruise ships in port.

For the case of Barcelona, previous studies have used deterministic models to analyse the impact of different port activities, including cruise ships, in the air quality of the port. Pey et al. (2013, 2016) show that, at the harbour, PM components and SO₂ emissions are usually related to fuel oil combustion emissions, mainly due to shipping exhausts. Villalba and Gemechu (2011) analysed the total GHG emissions for vessel type at the port Barcelona in 2008. Taking into account the total GHG emissions, authors show that passenger ships (mostly cruises) were the third highest emitter. Similar to our results, they found that, for passenger cruises, the main emission operation was the hotelling phase (13,529 tons) in contrast with maneuvering (8649 tons). Following these results, CAIMANS (2015) also found that emissions during the hoteling phase were higher than those in maneuvering. Moreover, CAIMANS (2015) found that the most important pollutants, in terms of Air Quality impact, are NO₂, SO₂, PM₁₀ and Ni.

In addition, we find that the cruise activity on the port not only affects the air quality in the port area but also throughout Barcelona for the pollutants analysed, similar as the results of Pey et al. (2016) that show that the whole city of Barcelona is affected by shipping emissions, not only from the harbour, but also from the Mediterranean background. Our simulations show that the activity of a single cruise ship affects the air quality up to 10 km far away from the port. These results are in agreement with the ones

¹¹ Note that authors believe that health problems related to NO_x should be lower in Danish ports rather than South European harbours, due to the higher concentration of O₃ in South Europe.



Fig. 2. Location of the cruise port, air quality and meteorological stations.

Source: Own elaboration.

found by [Pey et al. \(2016\)](#) for the case of PM₁₀ and PM_{2.5}. Authors show that the contribution of local harbour emissions due to fuel oil combustion to PM₁₀ and PM_{2.5} at the port were estimated around 8 and 14% respectively. At the urban area of Barcelona the contributions from the port, due to fuel oil combustion, were estimated between 4% for PM₁₀ and 6% for PM_{2.5}.¹² Our results can guide the regulatory framework of port cities in regard to the improvement of air quality. Note that a regulatory framework, if correctly implemented, can play a significant role in the reduction of pollutants in the ambient air. [Tichavská et al. \(2017\)](#) analysed the emissions generated in three ports with different regulatory frameworks. Although these three ports had different regulatory frameworks, the authors showed that differences in emissions cannot only be explained by regulatory differences.

The rest of the paper is organised as follows. [Section 2](#) presents the data set. [Section 3](#) presents the methodology applied in the empirical analysis. [Section 4](#) shows the results of this analysis. [Section 5](#) provides simulations about the effects of cruises on the pollution generated in Barcelona. Finally, [Section 6](#) concludes.

2. Database

Our empirical analysis draws on information collected from the Air Quality Monitoring website of the Government of Catalonia.¹³ From January 2012 to December 2016 we collected hourly mean data from six types of pollutants¹⁴: CO, NO, NO₂, SO₂, O₃ and PM₁₀ for 13 air quality stations in the metropolitan area of Barcelona located at a maximum distance of 11.221 km from the port.¹⁵ Information about cruises was gathered from the Port of Barcelona webpage, where data about cruise ships arriving and leaving the port of Barcelona since 1 January 2012 is available. We collected data from 2012 to 2016 about the total number of cruises arriving and leaving the port hourly and also the number of cruises staying at the port each hour. Additionally we also gathered data about the characteristics¹⁶ of the cruises from www.marinetraffic.com. Finally, data about weather conditions was gathered from the meteorological service of the Government of Catalonia, the Meteocat. In this case, we collected hourly average data about temperature, rain, relative humidity, atmospheric pressure and the wind's force and direction. In [Fig. 2](#) we can see the location of each air quality station (in red), distinguishing between the air quality stations located in Barcelona city (names in blue) and the ones located in the metropolitan area outside Barcelona city (names in orange), the meteorological stations (in green) and the cruise port (in yellow). As

¹² Similar results were found by [Pérez and Pey \(2011\)](#). The contribution of port emissions due to fuel oil combustions at the harbour were 10–16% for PM₁₀ and PM_{2.5} at the port and 4%–5% at the urban area.

¹³ The information is drawn from the Xarxa de Vigilància i Previsió de la Qualitat de l'Aire.

¹⁴ There is no data available about the hourly mean for PM_{2.5}, so we gather daily mean data for PM_{2.5}.

¹⁵ In order to calculate distances we used as a reference the Terminal Internacional D, the remotest terminal to the city.

¹⁶ Gross tonnage, deadweight, length overall, breadth extreme and year built.

Table 1

Descriptive statistics.

Source: Own elaboration.

Pollutant	Hourly Mean Value (2012–2016)	Std. Dev.	Hourly Minimum Value	Hourly Maximum Value
NO	17.32 ($\mu\text{g}/\text{m}^3$)	31.58	1 ($\mu\text{g}/\text{m}^3$)	810 ($\mu\text{g}/\text{m}^3$)
NO ₂	39.55 ($\mu\text{g}/\text{m}^3$)	24.96	0 ($\mu\text{g}/\text{m}^3$)	262 ($\mu\text{g}/\text{m}^3$)
CO	0.43 (mg/m^3)	0.30	0.2 (mg/m^3)	7 (mg/m^3)
SO ₂	2.55 ($\mu\text{g}/\text{m}^3$)	2.19	1 ($\mu\text{g}/\text{m}^3$)	163 ($\mu\text{g}/\text{m}^3$)
O ₃	45.73 ($\mu\text{g}/\text{m}^3$)	30.71	1 ($\mu\text{g}/\text{m}^3$)	207 ($\mu\text{g}/\text{m}^3$)
PM ₁₀	26.06 ($\mu\text{g}/\text{m}^3$)	16.69	1 ($\mu\text{g}/\text{m}^3$)	910 ($\mu\text{g}/\text{m}^3$)

Table 2

Air quality stations with minimum and maximum hourly mean concentrations.

Source: Own elaboration.

Pollutant	Minimum hourly mean	Maximum hourly mean
NO	7.20 ($\mu\text{g}/\text{m}^3$) Vall d'Hebron	37.36 ($\mu\text{g}/\text{m}^3$) Eixample
NO ₂	29.73 ($\mu\text{g}/\text{m}^3$) Vall d'Hebron	55.71 ($\mu\text{g}/\text{m}^3$) Eixample
CO	0.29 (mg/m^3) Vall d'Hebron	0.65 (mg/m^3) Eixample
SO ₂	2.07 ($\mu\text{g}/\text{m}^3$) Palau Reial	2.98 ($\mu\text{g}/\text{m}^3$) Badalona
O ₃	36.26 ($\mu\text{g}/\text{m}^3$) Eixample	56.78 ($\mu\text{g}/\text{m}^3$) Vall d'Hebron
PM ₁₀	20.07 ($\mu\text{g}/\text{m}^3$) Palau Reial	29.48 ($\mu\text{g}/\text{m}^3$) Poblenou

can be seen, all the city is covered by air quality stations.

Table 1 shows the mean of hourly concentrations of the pollutants for all the 5 years analysed and for all the air quality stations analysed. None of the mean of hourly concentrations of pollutants exceeded the maximum recommended by the European Directive as an hourly maximum. Even so, in the case of NO₂ the mean value for the 5-year period is up to 98.9% of the yearly maximum value recommended (40 $\mu\text{g}/\text{m}^3$). Also, for NO₂, it is important to note that the maximum hourly level achieved in Barcelona (810 $\mu\text{g}/\text{m}^3$) is 31% higher than the maximum hourly recommended by the EU. For the other pollutants we see that in the case of particulate matter the mean hourly level for the five years period is about 60–65% of the annual maximum value recommended (40 $\mu\text{g}/\text{m}^3$). Also, it is important to note that taking into account the annual maximum limit value allowed by the European Directive for NO₂ (40 $\mu\text{g}/\text{m}^3$), the air quality stations from Eixample and Sant Gervasi exceeded these maximum annual level for the 5 years period (also, Sant Adrià exceeded it in four of the five years). In addition, during the 5 years period, the hourly maximum limit value of NO₂ was exceeded in Barcelona 23 times, five times in Eixample, three times in Palau Reial, and 15 times in Sant Gervasi.

It is important to note that there are significant differences between air quality levels among different areas of Barcelona. In this regard, **Table 2** shows the air quality station's location with the minimum and maximum hourly mean concentrations for each pollutant for all the 5 years analysed. As we can see, pollution in Barcelona is not homogeneous throughout the entire city: the highest concentration of pollution is near the city centre (air quality station of Eixample), where the port of Barcelona is located, and the lowest is found at the periphery of the city (air quality station of Vall d'Hebron). In [Fig. 2](#) you can see the location of these two air quality stations.

Focusing on cruises, it is important to note the annual distribution of cruise ships arriving at the port of Barcelona. **Table 3** shows the monthly number of cruises arriving at the port. October is the month when most cruises are received, with 548 cruise ships entering the port over the five years analysed. October was also the main month receiving cruise ships for the years 2012, 2014, 2015 and 2016. On the other hand, February is the month when the port of Barcelona receives the lowest number of cruises with a total number of 83 during the period, and it is also the lowest month for years 2012–2015. As the entry of cruises is not homogeneous over the year we include monthly dummies in our regressions to control for any event happening in those months.

Table 4 shows the daily and hourly mean number of cruises entering, leaving, staying hourly or staying during the night at the port of Barcelona during the 5 years period. As we can see, two cruises arrive and leave the port each day. Moreover, each hour there is, at least, one cruise staying at the port. We can see that, in means, there is a constant daily and hourly activity of cruises at the port of Barcelona.

3. Empirical strategy

To approximate the effects of cruise activity on the different pollutants, we use the following reduced model:

Table 3
Number of cruise ships per month.
Source: Own elaboration.

	Total	Std. Dev.
January	108	11.115
February	83	8.891
March	140	11.330
April	414	20.300
May	490	20.682
June	360	18.004
July	369	19.260
August	408	19.403
September	470	21.363
October	548	22.220
November	334	17.674
December	154	12.328

Table 4
Average daily and hourly cruises entering, leaving, staying hourly or staying at night (all sample).
Source: Own elaboration.

	Mean	St. Dev.	Min.	Max.
Entry (daily)	2.12	1.73	0	9
Entry (hourly)	0.09	0.32	0	4
Leaving (daily)	2.12	1.72	0	9
Leaving (hourly)	0.09	0.34	0	6
Staying at night (daily)	0.27	0.55	0	3
Staying (hourly)	1.01	1.38	0	9

 Y_{it}

$$\begin{aligned}
 &= \beta_0 + \beta_i \text{CruiseActivity}_t + \beta_j \text{CruiseActivity} * \text{Km}_{it} + \beta_k \text{CruiseActivity} * \text{Km}^2_{it} + \beta_l \text{CruiseActivityAntiquity}_t \\
 &\quad + \beta_m \text{CruiseActivityAntiquity} * \text{Km}_{it} + \beta_n \text{CruiseActivityAntiquity} * \text{Km}^2_{it} + \beta_o \text{CruiseActivityAntiquity}^2_t \\
 &\quad + \beta_p \text{CruiseActivityAntiquity}^2 * \text{Km}_{it} + \beta_q \text{CruiseActivityAntiquity}^2 * \text{Km}^2_{it} + \beta_r \text{CruiseActivitPassengers}_t \\
 &\quad + \beta_s \text{CruiseActivityPassengers} * \text{Km}_{it} + \beta_t \text{CruiseActivityPassengers} * \text{Km}^2_{it} + \beta_u \text{CruiseActivityPassengers}^2_t \\
 &\quad + \beta_v \text{CruiseActivityPassengers}^2 * \text{Km}_{it} + \beta_w \text{CruiseActivityPassengers}^2 * \text{Km}^2_{it} + \beta_x X_{it} + \beta_y \mu_i + \varepsilon_{it}
 \end{aligned}$$

where the dependent variable Y_{it} is the hourly average of each of the pollutants (NO_x, CO, PM₁₀, SO₂ and O₃), in the air quality station i , in the hour t , which are explained by:

- The cruise activity carried out in the port of Barcelona, which we approximate through three different variables: (1) a variable with the number of cruise ships arriving at the port each hour, (*Entry*), (2) the number of cruise ships that leave the port each hour (*Exit*), (3), and the number of cruise ships that are at the port each hour (*Stay*). These variables show the effect over the average distance between the cruise terminal and the air quality stations. Since air quality stations are distributed throughout the city, this variable shows approximately the average effect on the city. It should be noted that cruise ships docked at the port continue to operate and carry out activities, so we expect the coefficient that accompanies this variable to be positive and significant. We expect a positive and significant coefficient to be present, approaching the average impact of cruise activity in the city of Barcelona. Each of these three variables are included equally interacting with the distance between the point of measurement of air quality and the cruise port of Barcelona, as well as this same variable squared. With these two variables we approximate the effect of the cruises depending on the distance to the port, and whether that relationship is linear or not. We hope that as we move away from the port of Barcelona the effect of cruise activity will be lower, despite the fact that due to the emission height of the cruise corresponding to the height of the funnels increased by the plume, the concentration at ground level is not maximum in correspondence with the source, but at a certain distance from it. Unfortunately, we do not have an air quality station at the port itself. It is important to note that the port of Barcelona has two different cruise terminals. As indicated above, 82.2% of total cruises arrive at the newest terminal. Moreover, the characteristics of cruises arriving at each terminal are different. Cruises arriving at the newest terminal are on average 10 years younger than cruises arriving at the old terminal. Also, cruises arriving at the newest terminal are bigger than those arriving at the oldest terminal. The mean deadweight of cruises arriving at the newest terminal is 9301.50 tonnes, while the mean deadweight of cruises arriving at the oldest terminal is 3478.04 tonnes. So, not only there are significant differences in the number of movements in those terminals but also in the characteristics of the cruises arriving at them. In order to cope with these differences we run the econometric model twice: in one case we analyse the impact

on pollution levels of cruises entering the newest terminal, while in the other case we analyse the impact on pollution levels of cruises entering the oldest terminal.

- A second element to take into account is the age of the cruise ships, so we include the average antiquity of cruise ships entering, leaving or staying at the port each hour. On the one hand older cruise ships are more likely to use older technology so they may pollute more, on the other hand newer cruises are bigger¹⁷ so they may have to do more manoeuvres to park, and therefore pollute more than older ones. So, the expected sign of this variable is ambiguous, and it has to be determined by the data. As the relationship between antiquity and pollution might not be lineal we include the average antiquity of cruise ships entering, leaving or staying at the port squared. As in the previous variables, these interacting variables are also introduced with the distance to the air quality measurement points and that distance to the square.
- A third element to consider is the number of cruise's passengers, so we introduced the average number of cruise's passengers that operate in the port of Barcelona. Also its squared value is included. We expect that cruise ships with the largest number of passengers will have a higher impact on pollution due to the size of the cruise but also due to the activity of passengers in the city. In this case the expected sign of this variable is positive, more passengers generate more pollution. As the relationship between size and pollution might not be lineal we include the average number of passenger cruise ships entering, leaving or staying at the port squared. The interaction of these variables with the distance to the air quality stations, and their distance to the square, are also introduced.¹⁸
- Another element to consider is the weight of the cruise, so the variable of the average number of tonnes of the cruise ships that operate in the port of Barcelona is introduced,¹⁹ along with its squared value. We expect heavier cruises to generate a higher level of contamination, so the coefficient should be positive. As the relationship between weight and pollution might not be lineal we include the average tonnage of cruise ships entering, leaving or staying at the port squared. The interaction of these variables with the distance to the air quality stations, and their distance to the square, are also introduced. As the correlation between the number of cruise passengers and the weight of cruises is high we analysed these regressions in a separate way and solve any problem of multicolinearity that can occurs. Results for weight characteristics can be found in Annex.
- In addition to the variables that reflect the activity of the cruise ships in the port of Barcelona, we control for a whole set of variables that might affect the level of pollution:
 - (1) The hour of the day. We include twenty-three dummy variables that takes value 1 if the measurement of pollution is in this hour, and zero in other case. We take midnight like reference. This variable capture any event that occurs during this hour every day, like flux of traffic. We expect that these variables show the two peaks of traffic in the city of Barcelona, one around 8h in the morning and the other around 20h in the afternoon.
 - (2) The day of the week. We include six variable dummies for each one of the days of the week, except Sunday, which acts as a point of reference. These coefficients reflect the differences on pollution between each day and Sunday, so we expect a positive sign, because traffic and economic activity is higher during the week.
 - (3) The month of the year, include dummy variables for each of the months, except December, which acts as a reference variable. The coefficient of these variables show the difference between the average level of pollution in this month against the average level of pollution in the month of December.
 - (4) The different years, including dummy variables for each year of the sample, except 2016, which acts as a reference variable. If the sign of these variables are positive (negative) mean that pollution go down (up) during the period analysed.
 - (5) As the atmospheric conditions can affect pollution,²⁰ we include the hourly average of temperature, atmospheric pressure, relative humidity (a positive signs are expected because high temperature, atmospheric pressure or humidity generates high level of pollution) and accumulated rainfall (a negative coefficient is expected because rainfall reduce pollution).
 - (6) Wind speed. The higher the level of wind speed, the lower the level of pollution, so we expect a negative sign.
 - (7) The wind direction, for which we include 15 dummy variables that take value 1 when the wind has blown in that direction during that hour. The wind direction can be: North (N) North-Northeast (N-NE), North-East (NE), East-Northeast (E-NE), East-Southeast (E-SE), South-East (SE), South (S), South-Southwest (S-SW), South-West (SW), West-Southwest (W-SW), West (W), West-Northwest (W-NW), North-West (NW), North-Northwest (W-NW), and North (N). All the addresses are entered except the North (N) that is taken as a reference. We expect that when the wind blows to the east the pollution levels decrease (the wind drives the pollution towards the sea), therefore negative signs for these variables; while when the west wind blows the pollution levels increase (it incorporates pollution from the interior to the city), showing positive signs.
 - (8) It also includes a time variable that grows throughout the period, and that same variable squared, to capture any type of trend in the evolution of pollution. If the coefficient is positive (negative) means that pollution increase (decrease) during the period of analysis.
 - With all of these control variables we seek to capture any kind of effect affecting pollution different from cruise activity.
- Variable μ_i is a fixed effect by air quality station and captures any intrinsic characteristic of their location.

¹⁷ Size and weight of cruises are correlated, so we cannot include both of them in the regressions. If we use size in terms of weight, the results do not change significantly.

¹⁸ We undertook separate regressions for weight and number of passengers due to the high correlation between them (0.95).

¹⁹ We have information about the size of the cruise ships. The use of this alternative variable does not change significantly the results.

²⁰ Following the studies of Bel and Rosell (2013), Bel and Holst (2018), Pey et al. (2010), Schlenker and Walker (2016), Viard and Fu (2015), among others, we include atmospheric variables to control for the impact of these variables on pollutants analysed.

Before carrying out the econometric estimations, it was found that the database, with a data panel structure, presented problems of heterokedasticity and autocorrelation of order one. This fact led us to use an estimator that produces robust Newey-West standard errors to the problems of heterokedasticity and autocorrelation.²¹ This estimator only computes pooled OLS estimates, but we incorporate the fixed effects using the variable μ_i . In the following section the econometric results are shown (see [Table 5](#)).

4. Results

In the next table the reduced results of the econometric regressions can be found. In the table we show the impact of the variables included in our models on the level of pollution for each pollutant analysed. In [Annex](#) we can find the complete results for the econometric regressions.²²

As we can see in [Table 5](#), the activity of cruises at the two terminals generates a positive impact on the level of pollution on NO_x, CO, PM₁₀ and SO₂ and a negative effect on O₃. In general, cruises arriving at the newest terminal have a greater impact on pollutants than cruises arriving at the oldest terminal. In addition, the bigger the cruise arriving at the port of Barcelona is, the greater its impact on the level of pollution. Taking into account the newest terminal, cruises staying at the port increase the level of NO_x, PM₁₀ and SO₂ by 12.54 µg/m³ (22.1% of increase over the average), 4.51 µg/m³ (17.3% of increase over the average) and 0.42 µg/m³ (97.5% of increase over the average) respectively. Cruises entering the port only increases CO pollution by 0.21 mg/m³ (48.7% of increase over the average). Finally, when cruises leave the port the levels of NO_x and SO₂ are reduced by 6.79 µg/m³ and 0.78 µg/m³ respectively. These results are for the average distance of the air quality stations, during the hour after the cruise activity. Therefore, these percentages can be interpreted as the impact of cruise activity on the city average one hour later. That means, for example, that when a cruise ship is docked at the port, NOx levels, on the average of the city the next hour, are 22.1% higher than when there is no cruise activity.

This result shows that when a cruise ship leaves the port, and stops being berthed in the port, pollution emissions are reduced. For cruises arriving at the oldest terminal it should be noted that the impact of cruise activity on city pollution is not really significant as there is only a positive impact on the levels of CO and SO₂ but only at a 10% significance. So, as we can see, following the results of [Villalba and Gemechu \(2011\)](#) and [CAIMANS \(2015\)](#), we found that the main impact of cruise activity on pollution is due to cruises docked at the new terminal (hotelling phase). When cruises are in hotelling phase, they usually maintain their engines on to produce energy for all the activities carried at the cruise.

It can also be seen how the impact of cruises generally decreases with the distance to the port, because the coefficients of variables that interact cruise activity with distance are negatives. Logically, as the point of measurement of air quality is farther from the port, the impact of the pollution generated by the cruises would be expected to be lower, although the height of funnels can cause that emissions are smaller in the cruise terminal than to some distance of it. However, as we have already said, unfortunately we have no information about pollution in the cruise terminal. It should be noted, however, that this reduction in the impact of cruises on pollution decreases, as we can see in the positive sign of the variables interacted with the distance squared (when significant). So the relationship between pollution of cruise activity and distance to the port is decreasing but in general not lineal. In the following section, a simulation of the effects of cruises on pollution levels is performed, depending on the distance to the cruise ship docked at the port of Barcelona. These results are in line with [Pérez and Pey \(2011\)](#) and [Pey et al. \(2016\)](#) where authors showed that the impact of shipping activity on PM₁₀ and PM_{2.5} affects near the port but also, to a lesser extent, in the urban area.

Taking into account the characteristics of the cruises, as said before, size matters. For the case of cruises allocated to the new terminal it can be seen that for NO_x, CO and SO₂ the heavier the cruise is, the greater the impact on these pollutants regardless of cruises entering, staying or leaving port, although the main impact of the cruise's size is when they are staying at the port. The age of cruise ships only matter for the case of cruises staying at the port and depends on the pollutant analysed. Surprisingly, the older the cruise is, the lower the impact on NO_x and CO when staying at the port. On the other hand, older cruises increases the level of SO₂ in the city more than newer cruises when staying at the port; but also when they leave it. Even if the number of cruises does not increase, if the participation of newer (or older in the case of SO₂) or heavier cruise ships increases, the levels of the pollutants will increase (except for O₃). This result is equally relevant since the size of the cruises has been increasing over the years.

Regarding the control variables, all have the expected signs²³:

The evolution of the pollution throughout the year, controlling for all variables of the model (including cruise traffic), that is, not taking into account the effect on the level of pollution of all non-monthly variables, it can be observed that in the summer months (July, August and September) the average level of pollution is lower than in the winter months (December, January and February).²⁴ One reason explaining this fact could be that road traffic emissions are lower in holiday periods.²⁵ This pattern is repeated in all pollutants, with greater or lesser intensity.

Regarding the hour of day we can observe how in the city of Barcelona there are two pollution peaks, one between 7h and 10h in

²¹ The Stata command that permit robust standard errors is newey2.

²² We do not include PM_{2.5} pollutant because we do not have hourly data. Results with average daily data are in line with the results of PM₁₀.

²³ The coefficients of these control variables can be seen in annex.

²⁴ Except for O₃. NOx and Volatile Organic Compounds (VOC) combine chemically with oxygen to form ozone during sunny, high-temperature conditions of late spring, summer and early fall.

²⁵ These results are similar to [Pey et al. \(2016\)](#) that found that NOx levels were lower at summer due to lower vehicle emissions during the holiday period.

Table 5
Effects of cruise activity in the pollution levels.

	NO _x	CO		PM ₁₀		SO ₂		O ₃	
		New Terminal	Old Terminal	New Terminal	Old Terminal	New Terminal	Old Terminal	New Terminal	Old Terminal
Entry	7.089 (8.700)	-9.906 (8.860)	0.210** (0.099)	0.005 (0.107)	4.186 (6.339)	3.562 (7.135)	-0.442 (0.616)	-0.675 (0.665)	-0.958 (3.212)
EntryPassengers	0.018* (0.007)	0.019 (0.018)	2.52e-4*** (7.34e-5)	-2.53e-4 (2.16e-4)	0.012** (0.005)	-0.001 (0.004)	7.78e-4 (5.08e-4)	0.002* (0.001)	-0.005 (3.14e-4)
EntryPassengers ²	-3.49e-6*** (1.24e-6)	-4.03e-6 (8.65e-6)	-5.46e-8*** (1.29e-8)	1.59e-7 (1.05e-7)	-2.31e-6*** (8.57e-7)	2.56e-6 (6.74e-6)	-1.22e-7 (6.15e-7)	-8.60e-7 (8.62e-8)	-1.35e-7 (6.40e-7)
EntryAnt	-1.158 (1.305)	0.314 (0.585)	-0.026* (0.013)	0.005 (0.007)	-1.154 (0.953)	0.339 (0.442)	-0.008 (0.090)	-0.675 (0.047)	-0.567 (0.522)
EntryAnt ²	-0.019 (0.041)	-0.005 (0.009)	8.1e-5 (4.17e-4)	-2.97e-5 (1.04e-4)	0.013 (0.030)	-0.011* (0.007)	-0.002 (0.003)	5.93e-4 (6.6e-4)	0.005 (0.016)
Stay	12.541*** (0.997)	2.431 (1.605)	0.016 (0.011)	0.036* (0.019)	4.510*** (1.127)	-0.188 (1.707)	0.418** (0.103)	3.646*** (0.204)	-0.026 (0.621)
StayPassengers	0.021*** (0.003)	0.016*** (0.005)	2.91e-4*** (2.88e-5)	6.33e-5 (6.49e-5)	0.015** (0.003)	0.011*** (0.005)	2.72e-4 (2.17e-4)	1.07e-3* (5.70e-4)	-0.009*** (0.001)
StayPassengers ²	-4.21e-6*** (5.64e-7)	-2.27e-6 (2.70e-6)	-6.02e-8*** (6.00e-9)	-1.23e-8 (3.40e-8)	-3.30e-6*** (5.55e-7)	-2.08e-6 (2.90e-9)	5.60e-9 (4.49e-8)	1.36e-6*** (2.98e-7)	2.08e-6 (3.33e-7)
StayAnt	-1.777*** (0.482)	0.218 (0.144)	-0.006 (0.005)	-0.005*** (0.002)	-1.307*** (0.002)	0.167 (0.470)	0.272*** (0.144)	-0.030* (0.010)	-0.115 (0.016)
StayAnt ²	0.034** (0.015)	-0.003 (0.002)	-1.71e-4 (1.64e-4)	1.54e-4*** (3.03e-5)	0.023 (0.015)	-0.004 (0.002)	-0.008*** (0.002)	4.94e-4* (2.58e-4)	0.003* (0.001)
Exit	-6.794*** (1.732)	-7.935 (5.730)	-7.935 (0.027)	-11.217* (0.091)	-12.0 (2.856)	-11.217* (6.787)	-0.778*** (0.251)	9.006*** (1.161)	4.751 (3.856)
ExitPassengers	0.012** (0.005)	0.014 (0.012)	2.26e-4*** (5.87e-5)	1.81e-4 (1.86e-4)	0.012* (0.007)	3.00e-4 (0.014)	3.00e-4 (6.38e-4)	-0.012** (0.002)	-0.008 (0.003)
ExitPassengers ²	-1.56e-6 (9.74e-7)	-4.83e-6 (5.61e-7)	-4.31e-8*** (1.20e-8)	-5.12e-8 (8.80e-8)	-2.50e-6* (1.33e-6)	-1.17e-5* (6.49e-6)	8.97e-8 (1.49e-7)	-1.03e-6 (7.97e-7)	2.18e-6 (6.07e-7)
ExitAnt	0.901 (1.040)	0.282 (0.330)	0.012 (0.011)	-0.003 (0.005)	-0.026 (1.196)	0.122 (0.138)	0.272*** (0.100)	-0.040 (0.063)	-0.068 (0.028)
ExitAnt ²	-0.020 (0.035)	-0.002 (0.005)	-7.21e-4 (3.32e-4)	9.91e-5 (7.38e-5)	-0.015 (0.035)	-5.32e-4 (0.006)	-0.008*** (0.003)	2.87e-4 (7.37e-4)	2.80e-4 (0.017)
Constant	-827.914*** (20.482)	-836.049*** (20.267)	-836.049*** (0.206)	-447.752*** (12.993)	-450.212 (0.207)	-21.417*** (1.428)	-21.278*** (1.434)	424.892*** (12.092)	428.569*** (12.166)
Controlling by hour of day	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controlling by day of week	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controlling by month of the year	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controlling by year	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controlling by weather conditions	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controlling by air quality station	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controlling by time	YES	YES	YES	YES	YES	YES	YES	YES	YES
No Obs.	493,895 (0.0000)	914,80** (0.0000)	191,147 (0.0000)	156,466 (0.0000)	253,16*** (0.0000)	184,47*** (0.0000)	250,554 (0.0000)	311,030 (0.0000)	145,97** (0.0000)
F-Test	936,98*** (0.0000)	349,68** (0.0000)	343,45*** (0.0000)	253,16*** (0.0000)	184,47*** (0.0000)	2033,37** (0.0000)	3002,60** (0.0000)		

Robust Standard errors to heteroskedasticity and autocorrelation in brackets. (*** 1%, (** 5%, (*) 10%).

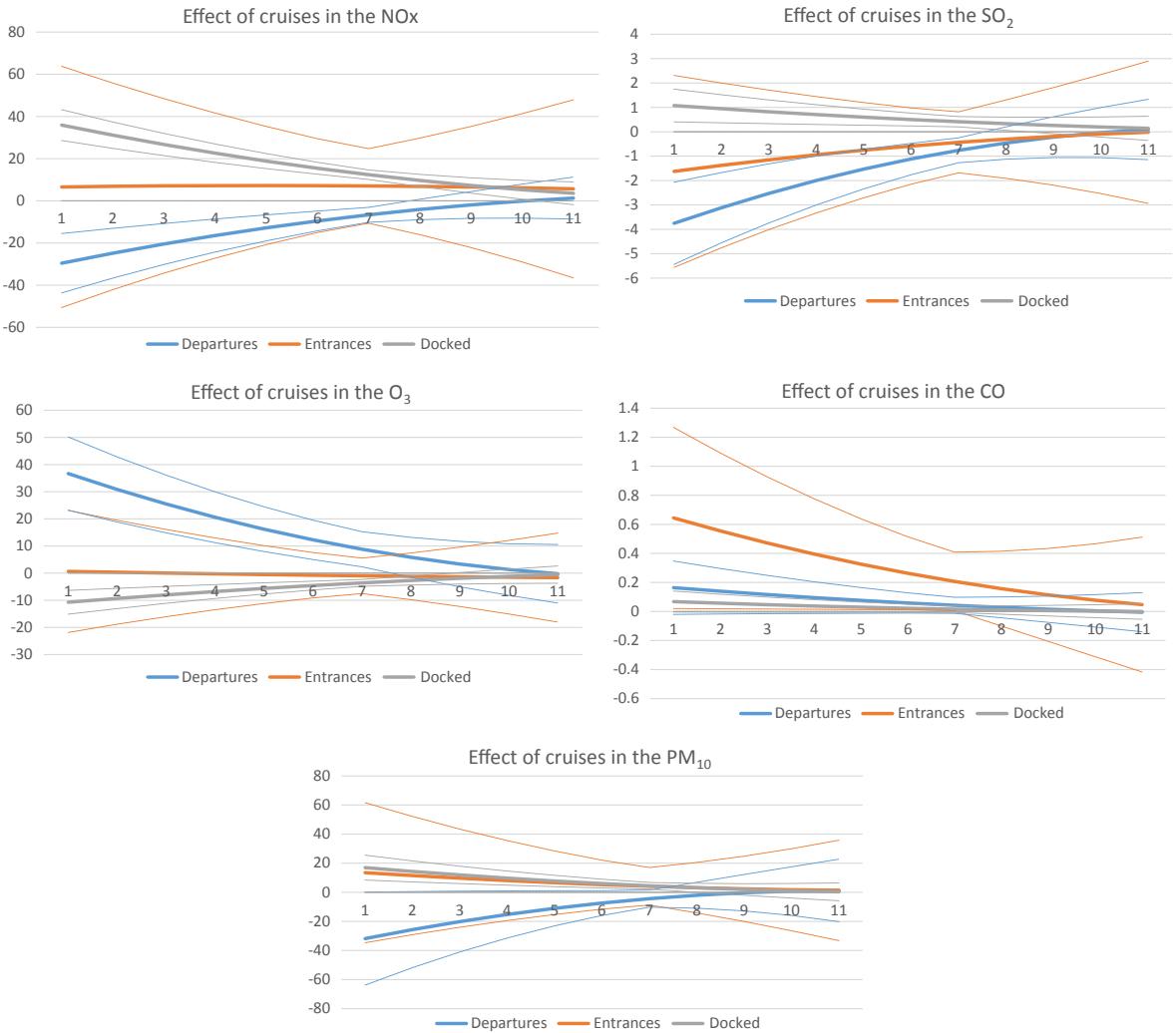


Fig. 3. Simulation effects of cruises in pollution.

Source: Own elaboration.

the morning and another between 7h and 10h at night. These results coincide with the two daily periods with the highest traffic volume, since they coincide with the entry and exit of work stations, when a greater number of people perform commuting.

As expected, the dummy variables related with the days of the week are positive and significant. This implies that Sunday is the day with least pollution in the week, showing higher levels during the working days, which are those with greater economic activity and traffic.

The weather conditions show in general how a higher temperature, relative humidity or atmospheric pressure generate higher levels of pollution, while a greater force of the wind causes lower levels of pollution. Finally, the impact of precipitation differs on the pollutant analysed.

To check how the level of pollution in the city has evolved at a general level, once controlled by the rest of the factors (cruise activity; economic activity or traffic evolution (controlling by the variables of hour of the day, day of the week, month of the year and year); or the climatic conditions), we must analyse the coefficient of the variable "time". As we can see in the Annex, in general, the coefficient is negative and significant, so we can say that there has been a significant decrease in pollution levels in the last five years for NOx, CO₂ and O₃, and an increase for PM₁₀.

5. Simulations

In the following figures we can see a simulation of the effect of cruises on the level of pollution depending on the distance to the cruise port of Barcelona. To calculate this effect we use the average effect of the cruises and the average distance of the air quality measurement points, and taking into account the effect of the distance on the pollution levels (vertical axis), we calculate the effect for distances between 1 and 11 km (a distance that covers the entire city of Barcelona), represented in the horizontal axis. The dash line represents the interval of confidence at 95% for each activity (cruises entering, staying or leaving the port) (see Fig. 3)

As can be seen from the above graphs, the effects of cruise ships' activity on different pollutants decreases when the distance to port increases, but they affect the whole city as they are significant up to 7–10 km; the size of the city of Barcelona. Taking into account these simulations it can be seen that the activity of cruises at the port of Barcelona has a high impact on the neighbourhood near the port. The proximity of the port of Barcelona to the city means that the entire city is affected by the activity of cruises to a greater or lesser extent; even impacting on the bordering municipalities (with a very limited effect).

A single cruise docked at the port increases the level of all pollutants analysed, except for CO. Note that the impact of the cruise activity near the port is high as can be seen in the previous graphs. Taking into account the hourly average pollution for the period analyzed (Table 1) the effect of a single cruise docked at the port increases the level of pollution for the different pollutants, for the different distance to the port. One cruise docked at the port increases the pollution, at 1 km of distance from the port, by 63.2% the level of NO_x, by 65.1% the level of PM₁₀ and by 42.3% in the case of SO₂, over the hourly average when there are not cruise activity in the port. Also, one cruise entering the port can significantly affect the air quality at a distance of 1 km. One cruise entering the port increases the level of CO by 149.7% over the hourly average. It is not significant for the other pollutants. As we can see, hotelling phase is the cruise mode that pollutes more, in line with the results of CAIMANS (2015) and Villalba and Gemedch (2011).

The case of O₃ is the exception. In the same line of results obtained by Eckhardt et al. (2013) cruise activity generates negative effects (a reduction in the levels) on O₃. This is due to chemical reactions (NO + O₃ = NO₂ + O₂ and NO₂ + O₃ = NO + 2O₂) that convert emissions of NO and NO₂ to the atmosphere into lower levels of O₃.

6. Conclusions

In recent years, the demand for cruise ships has significantly increased and today the Port of Barcelona is the main port in Europe in terms of the number of passengers of cruise ships by year. Although this activity generates wealth for the city it is also an important source of air pollution that can contribute to decreasing the air quality, not only in the port area but also over the whole metropolitan area. In this regard, the cruise activity generates not only wealth but also negative externalities for the citizens of Barcelona.

The goal of this article has been to measure the effects of cruise activity at port (cruises arriving, leaving and staying at port hourly) on pollution throughout the city of Barcelona. By using a dataset collected by the authors we have found that the activity of the cruise ships at port has negative effects on air quality levels all over the city of Barcelona. Our results show that for NO_x, CO, PM₁₀ and SO₂ pollutants the activity of cruises at the port decreases air quality throughout the city. Moreover, our simulations show that the effect of one cruise entering, staying or leaving the port affects the air quality even at distances between 7 and 10 km. This implies that the whole city of Barcelona, and some localities around the city are affected by it, although in a decreasing way. The main impact is at the port. The nearer we are from the port, the higher the level of pollution due to cruise activity, as we move away from the port, the impact of cruises on the pollution levels decreases. For example, at 1 km away from the port, the activity of a single cruise ship can increase the level of some pollutants by more than 60% over the hourly average for the period analysed (and over 100% in the case of CO when cruises enter the port). As we move away from the port, the impact decreases, disappearing between 7 and 10 km.

The results of this study should provide useful information for drawing up policies in port-cities that have a cruise sector, in order to control emissions generated by its activity. One direct policy implication should be the inclusion of cruise activity in any local initiative aimed at improving the air quality of port cities. Moreover, as our results show that cruises staying at the port negatively affect air quality, any policy aimed at easing the use of green energies in ports should reduce the emission of pollutants. Finally, although it is not the aim of our paper to calculate the health costs caused by cruise activity, this estimation could be used for calculating an optimal tax for passenger cruise ships to cope with these health costs.

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Annex

See Tables 6–25.

Table 6Effects of cruise activity at the new terminal in the NO_x levels. Controlling by passengers.

NO _x	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	7.089	8.700	0.810	0.415	-9.962	24.141
EntryPassengers	0.018	0.007	2.550	0.011	0.004	0.032
EntryPassengers ²	-0.000	0.000	-2.820	0.005	-0.000	-0.000
EntryAnt	-1.158	1.305	-0.890	0.375	-3.716	1.400
EntryAnt ²	-0.019	0.041	-0.460	0.646	-0.099	0.062
Stay	12.541	1.097	11.430	0.000	10.390	14.691
StayPassengers	0.022	0.003	7.790	0.000	0.016	0.027
StayPassengers ²	-0.000	0.000	-7.460	0.000	-0.000	-0.000
StayAnt	-1.777	0.482	-3.690	0.000	-2.722	-0.833
StayAnt ²	0.034	0.015	2.230	0.026	0.004	0.064
Exit	-6.794	1.732	-3.920	0.000	-10.190	-3.399
ExitPassengers	0.012	0.005	2.370	0.018	0.002	0.021
ExitPassengers ²	-0.000	0.000	-1.600	0.110	-0.000	0.000
ExitAnt	0.901	1.040	0.870	0.387	-1.138	2.939
ExitAnt ²	-0.020	0.036	-0.560	0.575	-0.090	0.050
EntryDistance	-0.169	2.430	-0.070	0.945	-4.932	4.595
EntryDistance ²	-0.043	0.155	-0.280	0.782	-0.346	0.260
StayDistance	-2.908	0.311	-9.360	0.000	-3.517	-2.300
StayDistance ²	0.173	0.020	8.590	0.000	0.133	0.212
ExitDistance	2.741	0.599	4.580	0.000	1.567	3.914
ExitDistance ²	-0.184	0.050	-3.710	0.000	-0.281	-0.087
EntryAntDistance	0.404	0.365	1.110	0.268	-0.311	1.119
EntryAntDistance ²	-0.022	0.023	-0.930	0.352	-0.067	0.024
EntryAnt2Distance	-0.003	0.011	-0.270	0.791	-0.026	0.019
EntryAnt2Distance ²	0.000	0.001	0.200	0.842	-0.001	0.002
StayAntDistance	0.404	0.138	2.930	0.003	0.133	0.674
StayAntDistance ²	-0.027	0.009	-3.010	0.003	-0.045	-0.009
StayAnt ³ Distance	-0.008	0.004	-1.850	0.064	-0.017	0.000
StayAnt ² Distance ²	0.001	0.000	2.130	0.033	0.000	0.001
ExitAntDistance	-0.282	0.301	-0.940	0.350	-0.872	0.308
ExitAntDistance ²	0.014	0.020	0.700	0.482	-0.025	0.053
ExitAnt ² Distance	0.006	0.010	0.570	0.569	-0.014	0.025
ExitAnt ² Distance ²	-0.000	0.001	-0.400	0.688	-0.002	0.001
EntryPassengersDistance	-0.005	0.002	-2.580	0.010	-0.009	-0.001
EntryPassengersDistance ²	0.000	0.000	2.210	0.027	0.000	0.001
EntryPassengers ² Distance	0.000	0.000	3.000	0.003	0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-2.500	0.012	-0.000	-0.000
StayPassengersDistance	-0.005	0.001	-6.260	0.000	-0.006	-0.003
StayPassengersDistance ²	0.000	0.000	5.190	0.000	0.000	0.000
StayPassengers ² Distance	0.000	0.000	5.580	0.000	0.000	0.000
StayPassengers ² Distance ²	-0.000	0.000	-4.520	0.000	-0.000	-0.000
ExitPassengersDistance	-0.003	0.001	-2.330	0.020	-0.006	-0.001
ExitPassengersDistance ²	0.000	0.000	2.110	0.035	0.000	0.000
ExitPassengers ² Distance	0.000	0.000	1.530	0.127	-0.000	0.000
ExitPassengers ² Distance ²	-0.000	0.000	-1.420	0.155	-0.000	0.000
Baldovina	-2.264	0.305	-7.430	0.000	-2.862	-1.667
Ciutadella	-12.697	0.408	-31.100	0.000	-13.497	-11.897
Eixample	26.239	0.490	53.570	0.000	25.279	27.199
Gornal	-8.029	0.417	-19.260	0.000	-8.847	-7.212
Vall d'Hebron	35.184	0.664	52.970	0.000	33.883	36.486
Palau Reial	-13.276	0.401	-33.100	0.000	-14.062	-12.490
Poblenou	-3.655	0.398	-9.180	0.000	-4.435	-2.875
Prat1	-5.034	0.550	-9.160	0.000	-6.111	-3.957
Prat2	-2.016	0.569	-3.540	0.000	-3.130	-0.901
Sant Adrià	10.543	0.417	25.300	0.000	9.726	11.359
Sant Gervasi	19.120	0.461	41.470	0.000	18.216	20.024
Sants	-14.629	0.383	-38.180	0.000	-15.380	-13.878
2012	-4.672	12.568	-0.370	0.710	-29.304	19.961
2013	2.407	9.420	0.260	0.798	-16.056	20.870
2014	7.987	6.306	1.270	0.205	-4.372	20.346
2015	10.428	3.156	3.300	0.001	4.243	16.613
January	-9.742	2.921	-3.340	0.001	-15.467	-4.018
February	-13.180	2.696	-4.890	0.000	-18.464	-7.895
March	-18.826	2.432	-7.740	0.000	-23.592	-14.060
April	-32.090	2.180	-14.720	0.000	-36.362	-27.818
May	-38.942	1.931	-20.170	0.000	-42.727	-35.158

(continued on next page)

Table 6 (continued)

NO _x	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
June	-43.385	1.700	-25.530	0.000	-46.716	-40.054
July	-48.582	1.476	-32.920	0.000	-51.475	-45.690
August	-56.047	1.244	-45.060	0.000	-58.485	-53.610
September	-44.808	1.004	-44.630	0.000	-46.776	-42.840
October	-24.945	0.816	-30.560	0.000	-26.544	-23.345
November	-10.324	0.623	-16.570	0.000	-11.546	-9.103
h1	-5.551	0.292	-19.020	0.000	-6.124	-4.979
h2	-10.673	0.373	-28.650	0.000	-11.403	-9.943
h3	-13.837	0.364	-38.040	0.000	-14.550	-13.124
h4	-15.257	0.358	-42.570	0.000	-15.959	-14.554
h5	-12.458	0.360	-34.630	0.000	-13.163	-11.753
h6	0.197	0.378	0.520	0.603	-0.544	0.937
h7	26.205	0.444	59.010	0.000	25.335	27.076
h8	42.167	0.537	78.550	0.000	41.115	43.219
h9	33.445	0.544	61.500	0.000	32.379	34.510
h10	17.638	0.470	37.540	0.000	16.717	18.558
h11	7.544	0.434	17.370	0.000	6.692	8.395
h12	1.936	0.428	4.520	0.000	1.096	2.776
h13	-1.765	0.428	-4.120	0.000	-2.604	-0.925
h14	-5.540	0.429	-12.910	0.000	-6.381	-4.699
h15	-6.672	0.426	-15.670	0.000	-7.506	-5.837
h16	-4.633	0.425	-10.900	0.000	-5.467	-3.800
h17	0.922	0.426	2.170	0.030	0.088	1.756
h18	8.811	0.446	19.740	0.000	7.936	9.686
h19	15.378	0.471	32.660	0.000	14.455	16.300
h20	18.884	0.465	40.600	0.000	17.972	19.795
h21	17.162	0.455	37.720	0.000	16.270	18.054
h22	11.794	0.440	26.810	0.000	10.932	12.657
h23	5.787	0.325	17.810	0.000	5.150	6.424
Monday	17.352	0.269	64.570	0.000	16.826	17.879
Tuesday	21.421	0.280	76.610	0.000	20.873	21.969
Wednesday	24.657	0.292	84.480	0.000	24.085	25.229
Thursday	24.395	0.288	84.570	0.000	23.830	24.961
Friday	23.994	0.275	87.210	0.000	23.455	24.533
Saturday	10.314	0.252	40.890	0.000	9.819	10.808
Time	-0.002	0.000	-5.550	0.000	-0.003	-0.001
Time Squared	0.000	0.000	25.780	0.000	0.000	0.000
temperature	0.704	0.031	22.940	0.000	0.644	0.765
Relative humidity	0.099	0.006	16.330	0.000	0.087	0.111
Pressure	0.899	0.013	70.260	0.000	0.874	0.924
Precipitation	-0.093	0.127	-0.730	0.463	-0.341	0.155
Wind speed	-9.155	0.053	-171.180	0.000	-9.260	-9.050
NNE	-0.163	0.578	-0.280	0.778	-1.296	0.970
NE	-0.243	0.554	-0.440	0.662	-1.329	0.844
ENE	-7.330	0.543	-13.490	0.000	-8.395	-6.265
E	-6.030	0.562	-10.720	0.000	-7.132	-4.927
ESE	-8.956	0.577	-15.530	0.000	-10.086	-7.825
SE	-1.850	0.590	-3.130	0.002	-3.007	-0.693
SSE	4.206	0.577	7.290	0.000	3.075	5.337
S	3.514	0.578	6.080	0.000	2.380	4.648
SSW	3.223	0.563	5.720	0.000	2.119	4.328
SW	2.697	0.537	5.020	0.000	1.644	3.750
WSW	4.924	0.537	9.170	0.000	3.871	5.977
W	4.950	0.528	9.370	0.000	3.915	5.985
WNW	6.925	0.502	13.800	0.000	5.942	7.909
NW	3.731	0.513	7.280	0.000	2.726	4.735
NNW	-0.540	0.583	-0.930	0.354	-1.684	0.603
_cons	-827.914	20.482	-40.420	0.000	-868.057	-787.771

Number of obs = 493,895.

F(119, 493771) = 936.98.

Prob > F = 0.0000.

Table 7Effects of cruise activity at the old terminal in the NO_x levels. Controlling by passengers.

NO _x	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	-9.997	8.860	-1.130	0.259	-27.363	7.370
EntryPassengers	0.019	0.018	1.090	0.274	-0.015	0.054
EntryPassengers ²	-0.000	0.000	-0.470	0.642	-0.000	0.000
EntryAnt	0.314	0.585	0.540	0.591	-0.832	1.460
EntryAnt ²	-0.005	0.009	-0.540	0.589	-0.022	0.012
Stay	2.431	1.605	1.510	0.130	-0.715	5.577
StayPassengers	0.016	0.005	3.010	0.003	0.006	0.026
StayPassengers ²	-0.000	0.000	-0.820	0.411	-0.000	0.000
StayAnt	0.218	0.144	1.510	0.131	-0.065	0.501
StayAnt ²	-0.003	0.002	-1.390	0.163	-0.008	0.001
Exit	-7.935	5.730	-1.380	0.166	-19.166	3.296
ExitPassengers	0.014	0.012	1.130	0.258	-0.010	0.037
ExitPassengers ²	-0.000	0.000	-0.870	0.387	-0.000	0.000
ExitAnt	0.282	0.330	0.850	0.393	-0.365	0.929
ExitAnt ²	-0.003	0.005	-0.530	0.594	-0.012	0.007
EntryDistance	3.827	3.253	1.180	0.240	-2.550	10.203
EntryDistance ²	-0.270	0.270	-1.000	0.316	-0.799	0.258
StayDistance	-1.336	0.567	-2.360	0.018	-2.447	-0.225
StayDistance ²	0.086	0.045	1.900	0.057	-0.003	0.175
ExitDistance	2.452	2.152	1.140	0.255	-1.766	6.669
ExitDistance ²	-0.290	0.180	-1.610	0.106	-0.642	0.062
EntryAntDistance	-0.243	0.210	-1.160	0.247	-0.655	0.169
EntryAntDistance ²	0.019	0.017	1.140	0.253	-0.014	0.053
EntryAnt ² Distance	0.003	0.003	1.010	0.312	-0.003	0.009
EntryAnt ² Distance ²	-0.000	0.000	-0.930	0.354	-0.001	0.000
StayAntDistance	-0.036	0.051	-0.700	0.483	-0.135	0.064
StayAntDistance ²	0.003	0.004	0.660	0.508	-0.005	0.011
StayAnt ² Distance	0.001	0.001	0.640	0.524	-0.001	0.002
StayAnt ² Distance ²	-0.000	0.000	-0.990	0.320	-0.000	0.000
ExitAntDistance	-0.181	0.123	-1.470	0.142	-0.423	0.061
ExitAntDistance ²	0.016	0.010	1.600	0.109	-0.004	0.037
ExitAnt ² Distance	0.002	0.002	1.060	0.291	-0.002	0.006
ExitAnt ² Distance ²	-0.000	0.000	-1.090	0.274	-0.000	0.000
EntryPassengersDistance	-0.004	0.006	-0.680	0.493	-0.017	0.008
EntryPassengersDistance ²	0.000	0.001	0.520	0.601	-0.001	0.001
EntryPassengers ² Distance	0.000	0.000	0.120	0.904	-0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-0.080	0.940	-0.000	0.000
StayPassengersDistance	-0.003	0.002	-1.550	0.120	-0.007	0.001
StayPassengersDistance ²	0.000	0.000	0.860	0.389	-0.000	0.000
StayPassengers ² Distance	-0.000	0.000	-0.020	0.984	-0.000	0.000
StayPassengers ² Distance ²	0.000	0.000	0.300	0.768	-0.000	0.000
ExitPassengersDistance	-0.004	0.004	-0.910	0.362	-0.013	0.005
ExitPassengersDistance ²	0.000	0.000	0.850	0.393	-0.000	0.001
ExitPassengers ² Distance	0.000	0.000	0.700	0.486	-0.000	0.000
ExitPassengers ² Distance ²	-0.000	0.000	-0.770	0.439	-0.000	0.000
Baldovina	-2.619	0.302	-8.660	0.000	-3.212	-2.026
Ciutadella	-9.499	0.368	-25.830	0.000	-10.220	-8.778
Eixample	29.526	0.455	64.900	0.000	28.634	30.418
Gornal	-6.308	0.374	-16.890	0.000	-7.040	-5.576
Vall d'Hebron	34.292	0.640	53.570	0.000	33.037	35.546
Palau Reial	-12.671	0.354	-35.820	0.000	-13.364	-11.977
Poblenou	-3.309	0.351	-9.440	0.000	-3.997	-2.622
Prat1	-5.469	0.499	-10.960	0.000	-6.447	-4.490
Prat2	-3.163	0.531	-5.960	0.000	-4.203	-2.123
Sant Adrià	9.582	0.385	24.900	0.000	8.828	10.336
Sant Gervasi	20.313	0.425	47.830	0.000	19.480	21.145
Sants	-11.819	0.342	-34.560	0.000	-12.489	-11.148
2012	-0.068	12.631	-0.010	0.996	-24.825	24.688
2013	5.923	9.468	0.630	0.532	-12.634	24.480
2014	10.213	6.338	1.610	0.107	-2.209	22.636
2015	11.357	3.172	3.580	0.000	5.140	17.574
January	-8.790	2.935	-3.000	0.003	-14.542	-3.039
February	-12.402	2.709	-4.580	0.000	-17.712	-7.091
March	-18.260	2.443	-7.470	0.000	-23.048	-13.472
April	-31.030	2.190	-14.170	0.000	-35.323	-26.736
May	-38.102	1.937	-19.670	0.000	-41.899	-34.305

(continued on next page)

Table 7 (continued)

NO _x	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
June	-42.875	1.705	-25.140	0.000	-46.217	-39.532
July	-48.248	1.480	-32.600	0.000	-51.149	-45.348
August	-55.643	1.245	-44.690	0.000	-58.083	-53.202
September	-44.254	1.004	-44.070	0.000	-46.222	-42.286
October	-24.170	0.812	-29.750	0.000	-25.762	-22.578
November	-10.001	0.623	-16.060	0.000	-11.222	-8.780
h1	-5.569	0.292	-19.050	0.000	-6.142	-4.996
h2	-10.693	0.373	-28.650	0.000	-11.425	-9.962
h3	-13.862	0.364	-38.030	0.000	-14.576	-13.148
h4	-15.271	0.359	-42.510	0.000	-15.975	-14.567
h5	-11.522	0.356	-32.330	0.000	-12.221	-10.824
h6	1.004	0.370	2.720	0.007	0.280	1.728
h7	26.218	0.443	59.160	0.000	25.349	27.087
h8	42.780	0.533	80.210	0.000	41.734	43.825
h9	34.219	0.517	66.210	0.000	33.206	35.232
h10	18.180	0.453	40.090	0.000	17.291	19.069
h11	7.995	0.417	19.150	0.000	7.177	8.813
h12	2.589	0.411	6.290	0.000	1.782	3.395
h13	-0.778	0.408	-1.910	0.057	-1.579	0.022
h14	-4.334	0.404	-10.720	0.000	-5.126	-3.542
h15	-5.858	0.403	-14.520	0.000	-6.648	-5.067
h16	-3.813	0.403	-9.470	0.000	-4.602	-3.024
h17	1.364	0.404	3.380	0.001	0.574	2.155
h18	8.882	0.425	20.880	0.000	8.048	9.716
h19	15.429	0.456	33.870	0.000	14.536	16.322
h20	18.585	0.457	40.660	0.000	17.689	19.481
h21	17.095	0.455	37.610	0.000	16.204	17.986
h22	11.718	0.440	26.620	0.000	10.855	12.581
h23	5.725	0.325	17.620	0.000	5.089	6.362
Monday	17.618	0.259	68.030	0.000	17.110	18.126
Tuesday	21.412	0.266	80.650	0.000	20.892	21.933
Wednesday	24.673	0.280	88.020	0.000	24.124	25.222
Thursday	24.356	0.272	89.640	0.000	23.823	24.889
Friday	24.368	0.268	90.810	0.000	23.842	24.894
Saturday	10.218	0.237	43.030	0.000	9.753	10.683
Time	-0.002	0.000	-5.160	0.000	-0.003	-0.001
Time Squared	0.000	0.000	25.590	0.000	0.000	0.000
temperature	0.722	0.031	23.460	0.000	0.662	0.782
Relative humidity	0.099	0.006	16.270	0.000	0.087	0.111
Pressure	0.900	0.013	70.140	0.000	0.875	0.925
Precipitation	-0.077	0.128	-0.610	0.545	-0.328	0.173
Wind speed	-9.096	0.054	-169.870	0.000	-9.201	-8.991
NNE	-0.143	0.578	-0.250	0.805	-1.277	0.991
NE	-0.342	0.555	-0.620	0.538	-1.430	0.746
ENE	-7.521	0.544	-13.810	0.000	-8.589	-6.454
E	-6.067	0.563	-10.770	0.000	-7.171	-4.963
ESE	-8.976	0.578	-15.520	0.000	-10.110	-7.843
SE	-1.879	0.592	-3.170	0.002	-3.038	-0.719
SSE	4.040	0.578	6.990	0.000	2.906	5.173
S	3.373	0.579	5.820	0.000	2.237	4.509
SSW	3.060	0.564	5.430	0.000	1.955	4.165
SW	2.858	0.538	5.320	0.000	1.804	3.912
WSW	5.001	0.538	9.300	0.000	3.946	6.055
W	4.988	0.529	9.430	0.000	3.951	6.025
WNW	7.141	0.502	14.220	0.000	6.157	8.125
NW	3.880	0.513	7.560	0.000	2.874	4.886
NNW	-0.447	0.584	-0.770	0.444	-1.592	0.698
_cons	-836.049	20.587	-40.610	0.000	-876.399	-795.698

Number of obs = 493,895.

F(122, 493771) = 914.80.

Prob > F = 0.0000.

Table 8Effects of cruise activity at the new terminal in SO₂ levels. Controlling by passengers.

SO ₂	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval
Entry	-0.442	0.617	-0.720	0.474	-1.650	0.767
EntryPassengers	0.001	0.001	1.530	0.125	-0.000	0.002
EntryPassengers ²	-0.000	0.000	-1.420	0.157	-0.000	0.000
EntryAnt	-0.008	0.090	-0.090	0.926	-0.185	0.168
EntryAnt ²	-0.002	0.003	-0.700	0.486	-0.007	0.003
Stay	0.418	0.103	4.040	0.000	0.215	0.620
StayPassengers	0.000	0.000	1.250	0.212	-0.000	0.001
StayPassengers ²	0.000	0.000	0.120	0.901	-0.000	0.000
StayAnt	0.034	0.038	0.890	0.373	-0.041	0.109
StayAnt ²	-0.001	0.001	-0.590	0.553	-0.003	0.002
Exit	-0.778	0.251	-3.100	0.002	-1.271	-0.286
ExitPassengers	0.000	0.001	0.470	0.639	-0.001	0.002
ExitPassengers ²	0.000	0.000	0.600	0.547	-0.000	0.000
ExitAnt	0.272	0.100	2.730	0.006	0.077	0.468
ExitAnt ²	-0.009	0.003	-2.920	0.004	-0.014	-0.003
EntryDistance	0.143	0.165	0.860	0.388	-0.181	0.466
EntryDistance ²	-0.009	0.010	-0.900	0.366	-0.030	0.011
StayDistance	-0.085	0.028	-3.040	0.002	-0.141	-0.030
StayDistance ²	0.004	0.002	2.350	0.019	0.001	0.008
ExitDistance	0.331	0.071	4.650	0.000	0.192	0.471
ExitDistance ²	-0.029	0.005	-5.990	0.000	-0.038	-0.019
EntryAntDistance	0.003	0.024	0.140	0.885	-0.044	0.051
EntryAntDistance ²	-0.000	0.002	-0.160	0.875	-0.003	0.003
EntryAnt ² Distance	0.000	0.001	0.450	0.652	-0.001	0.002
EntryAnt ² Distance ²	-0.000	0.000	-0.290	0.773	-0.000	0.000
StayAntDistance	-0.010	0.010	-0.940	0.345	-0.030	0.011
StayAntDistance ²	0.001	0.001	0.930	0.352	-0.001	0.002
StayAnt ² Distance	0.000	0.000	0.340	0.735	-0.001	0.001
StayAnt ² Distance ²	-0.000	0.000	-0.130	0.896	-0.000	0.000
ExitAntDistance	-0.067	0.027	-2.490	0.013	-0.119	-0.014
ExitAntDistance ²	0.004	0.002	2.200	0.028	0.000	0.007
ExitAnt ² Distance	0.002	0.001	2.590	0.010	0.000	0.004
ExitAnt ² Distance ²	-0.000	0.000	-2.210	0.027	-0.000	-0.000
EntryPassengersDistance	-0.000	0.000	-1.180	0.238	-0.000	0.000
EntryPassengersDistance ²	0.000	0.000	0.900	0.369	-0.000	0.000
EntryPassengers ² Distance	0.000	0.000	1.180	0.237	-0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-0.920	0.359	-0.000	0.000
StayPassengersDistance	-0.000	0.000	-0.670	0.504	-0.000	0.000
StayPassengersDistance ²	0.000	0.000	0.190	0.852	-0.000	0.000
StayPassengers ² Distance	-0.000	0.000	-0.630	0.530	-0.000	0.000
StayPassengers ² Distance ²	0.000	0.000	0.980	0.326	-0.000	0.000
ExitPassengersDistance	-0.000	0.000	-0.610	0.540	-0.000	0.000
ExitPassengersDistance ²	0.000	0.000	0.740	0.460	-0.000	0.000
ExitPassengers ² Distance	-0.000	0.000	-0.420	0.671	-0.000	0.000
ExitPassengers ² Distance ²	0.000	0.000	0.260	0.795	-0.000	0.000
Eixample	-1.259	0.026	-48.360	0.000	-1.310	-1.208
Vall d'Hebron	1.010	0.043	23.750	0.000	0.927	1.093
Palau Reial	-0.928	0.022	-41.300	0.000	-0.972	-0.884
Prat1	0.372	0.036	10.290	0.000	0.301	0.442
Prat2	0.287	0.028	10.150	0.000	0.231	0.342
Sant Adrià	-0.429	0.027	-15.590	0.000	-0.482	-0.375
Sant Gervasi	-0.680	0.026	-26.130	0.000	-0.731	-0.629
2012	-0.573	0.903	-0.630	0.526	-2.342	1.197
2013	-0.350	0.677	-0.520	0.606	-1.677	0.977
2014	-0.162	0.453	-0.360	0.721	-1.050	0.726
2015	0.036	0.227	0.160	0.874	-0.408	0.480
January	-0.060	0.207	-0.290	0.774	-0.466	0.347
February	0.026	0.192	0.140	0.891	-0.350	0.403
March	-0.153	0.173	-0.880	0.377	-0.492	0.186
April	-0.279	0.154	-1.820	0.069	-0.581	0.022
May	-0.202	0.136	-1.490	0.137	-0.469	0.064
June	-0.498	0.122	-4.070	0.000	-0.738	-0.258
July	-0.931	0.100	-9.330	0.000	-1.127	-0.735
August	-0.850	0.084	-10.120	0.000	-1.015	-0.686
September	-0.638	0.066	-9.670	0.000	-0.767	-0.508
October	-0.343	0.048	-7.120	0.000	-0.438	-0.249

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Table 8 (continued)

Newey-West						
SO ₂	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
November	0.062	0.033	1.890	0.059	-0.002	0.127
h1	-0.104	0.022	-4.640	0.000	-0.148	-0.060
h2	-0.148	0.028	-5.350	0.000	-0.203	-0.094
h3	-0.177	0.027	-6.510	0.000	-0.230	-0.124
h4	-0.208	0.027	-7.750	0.000	-0.261	-0.156
h5	-0.212	0.027	-7.800	0.000	-0.266	-0.159
h6	-0.110	0.028	-3.980	0.000	-0.164	-0.056
h7	0.220	0.030	7.350	0.000	0.161	0.279
h8	0.536	0.032	16.500	0.000	0.472	0.599
h9	0.489	0.034	14.280	0.000	0.422	0.556
h10	0.307	0.033	9.250	0.000	0.242	0.372
h11	0.167	0.033	5.070	0.000	0.102	0.231
h12	0.102	0.033	3.050	0.002	0.036	0.167
h13	0.113	0.035	3.280	0.001	0.046	0.181
h14	0.028	0.035	0.820	0.413	-0.040	0.096
h15	-0.097	0.034	-2.850	0.004	-0.164	-0.031
h16	-0.162	0.034	-4.820	0.000	-0.228	-0.096
h17	-0.138	0.033	-4.200	0.000	-0.203	-0.074
h18	0.035	0.034	1.040	0.296	-0.031	0.102
h19	0.173	0.034	5.120	0.000	0.106	0.239
h20	0.311	0.033	9.370	0.000	0.246	0.377
h21	0.302	0.033	9.130	0.000	0.237	0.366
h22	0.157	0.031	5.130	0.000	0.097	0.216
h23	0.075	0.026	2.870	0.004	0.024	0.127
Monday	0.256	0.021	12.210	0.000	0.215	0.298
Tuesday	0.317	0.022	14.740	0.000	0.275	0.359
Wednesday	0.290	0.021	13.890	0.000	0.249	0.330
Thursday	0.285	0.021	13.590	0.000	0.244	0.326
Friday	0.330	0.022	14.890	0.000	0.286	0.373
Saturday	0.051	0.021	2.430	0.015	0.010	0.093
Time	-0.000	0.000	-1.550	0.122	-0.000	0.000
Time Squared	0.000	0.000	1.710	0.087	-0.000	0.000
Temperature	0.040	0.002	17.560	0.000	0.036	0.045
Relative Humidity	-0.008	0.000	-21.180	0.000	-0.009	-0.008
Pressure	0.025	0.001	30.600	0.000	0.023	0.027
Precipitation	-0.016	0.012	-1.320	0.186	-0.040	0.008
Wind speed	-0.130	0.003	-39.230	0.000	-0.137	-0.124
NNE	-0.055	0.030	-1.850	0.065	-0.112	0.003
NE	-0.042	0.028	-1.500	0.132	-0.096	0.013
ENE	0.028	0.028	0.980	0.328	-0.028	0.084
E	0.183	0.029	6.260	0.000	0.126	0.240
ESE	0.433	0.035	12.210	0.000	0.364	0.503
SE	0.955	0.041	23.540	0.000	0.875	1.034
SSE	1.430	0.041	35.120	0.000	1.351	1.510
S	0.949	0.038	25.240	0.000	0.875	1.022
SSW	0.494	0.033	15.100	0.000	0.430	0.558
SW	0.163	0.029	5.710	0.000	0.107	0.219
WSW	0.145	0.028	5.200	0.000	0.090	0.200
W	0.186	0.027	6.810	0.000	0.132	0.239
WNW	0.207	0.026	8.000	0.000	0.156	0.258
NW	0.330	0.026	12.610	0.000	0.279	0.382
NNW	0.025	0.028	0.870	0.385	-0.031	0.080
_cons	-21.417	1.428	-15.000	0.000	-24.216	-18.618

Number of obs = 250,554.

F(114, 250435) = 149.05.

Prob > F = 0.0000.

Table 9Effects of cruise activity at the old terminal in SO₂ levels. Controlling by passengers.

SO ₂	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval
Entry	-0.675	0.665	-1.020	0.310	-1.978	0.628
EntryPassengers	0.002	0.001	1.700	0.090	-0.000	0.005
EntryPassengers ²	-0.000	0.000	-1.400	0.162	-0.000	0.000
EntryAnt	-0.032	0.047	-0.680	0.496	-0.125	0.060
EntryAnt ²	0.001	0.001	0.900	0.369	-0.001	0.002
Stay	0.349	0.204	1.710	0.087	-0.051	0.749
StayPassengers	0.001	0.001	1.880	0.060	-0.000	0.002
StayPassengers ²	-0.000	0.000	-0.660	0.507	-0.000	0.000
StayAnt	-0.031	0.017	-1.840	0.065	-0.063	0.002
StayAnt ²	0.000	0.000	1.910	0.056	-0.000	0.001
Exit	0.966	1.159	0.830	0.405	-1.307	3.238
ExitPassengers	0.003	0.002	1.440	0.150	-0.001	0.006
ExitPassengers ²	-0.000	0.000	-1.290	0.196	-0.000	0.000
ExitAnt	-0.040	0.063	-0.630	0.531	-0.163	0.084
ExitAnt ²	0.000	0.001	0.390	0.697	-0.001	0.002
EntryDistance	0.092	0.225	0.410	0.683	-0.349	0.533
EntryDistance ²	-0.002	0.017	-0.120	0.903	-0.036	0.032
StayDistance	-0.114	0.067	-1.720	0.086	-0.245	0.016
StayDistance ²	0.007	0.005	1.340	0.181	-0.003	0.017
ExitDistance	-0.130	0.360	-0.360	0.718	-0.835	0.575
ExitDistance ²	-0.004	0.026	-0.170	0.868	-0.056	0.047
EntryAntDistance	0.014	0.016	0.860	0.391	-0.017	0.045
EntryAntDistance ²	-0.001	0.001	-0.950	0.340	-0.004	0.001
EntryAnt ² Distance	-0.000	0.000	-1.080	0.281	-0.001	0.000
EntryAnt ² Distance ²	0.000	0.000	1.180	0.237	-0.000	0.000
StayAntDistance	0.009	0.005	1.590	0.111	-0.002	0.020
StayAntDistance ²	-0.000	0.000	-1.170	0.241	-0.001	0.000
StayAnt ² Distance	-0.000	0.000	-1.550	0.120	-0.000	0.000
StayAnt ² Distance ²	0.000	0.000	1.190	0.234	-0.000	0.000
ExitAntDistance	0.002	0.020	0.110	0.909	-0.037	0.041
ExitAntDistance ²	0.000	0.001	0.340	0.736	-0.002	0.003
ExitAnt ² Distance	0.000	0.000	0.070	0.943	-0.000	0.000
ExitAnt ² Distance ²	-0.000	0.000	-0.480	0.630	-0.000	0.000
EntryPassengersDistance	-0.000	0.000	-1.010	0.313	-0.001	0.000
EntryPassengersDistance ²	0.000	0.000	0.770	0.441	-0.000	0.000
EntryPassengers ² Distance	0.000	0.000	0.720	0.471	-0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-0.510	0.613	-0.000	0.000
StayPassengersDistance	-0.000	0.000	-0.470	0.638	-0.000	0.000
StayPassengersDistance ²	-0.000	0.000	-0.530	0.594	-0.000	0.000
StayPassengers ² Distance	-0.000	0.000	-0.240	0.807	-0.000	0.000
StayPassengers ² Distance ²	0.000	0.000	1.060	0.289	-0.000	0.000
ExitPassengersDistance	-0.001	0.001	-0.990	0.321	-0.002	0.001
ExitPassengersDistance ²	0.000	0.000	0.680	0.499	-0.000	0.000
ExitPassengers ² Distance	0.000	0.000	0.960	0.335	-0.000	0.000
ExitPassengers ² Distance ²	-0.000	0.000	-0.650	0.513	-0.000	0.000
Eixample	-1.093	0.023	-46.640	0.000	-1.139	-1.048
Vall d'Hebron	0.939	0.041	23.010	0.000	0.859	1.019
Palau Reial	-0.914	0.019	-47.340	0.000	-0.952	-0.877
Prat1	0.333	0.032	10.280	0.000	0.269	0.396
Prat2	0.216	0.025	8.560	0.000	0.166	0.265
Sant Adrià	-0.485	0.026	-18.460	0.000	-0.537	-0.434
Sant Gervasi	-0.630	0.023	-26.880	0.000	-0.676	-0.584
2012	-0.624	0.906	-0.690	0.491	-2.399	1.151
2013	-0.394	0.679	-0.580	0.562	-1.725	0.937
2014	-0.201	0.454	-0.440	0.658	-1.092	0.689
2015	0.019	0.227	0.080	0.934	-0.427	0.465
January	-0.076	0.208	-0.360	0.717	-0.483	0.332
February	0.010	0.193	0.050	0.957	-0.367	0.388
March	-0.165	0.173	-0.950	0.341	-0.505	0.175
April	-0.260	0.154	-1.680	0.093	-0.563	0.043
May	-0.179	0.136	-1.310	0.190	-0.446	0.089
June	-0.474	0.123	-3.860	0.000	-0.715	-0.233
July	-0.903	0.100	-9.050	0.000	-1.099	-0.708
August	-0.819	0.084	-9.760	0.000	-0.984	-0.655
September	-0.604	0.066	-9.150	0.000	-0.734	-0.475
October	-0.312	0.048	-6.480	0.000	-0.406	-0.218

(continued on next page)

Table 9 (continued)

Newey-West						
SO ₂	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
November	0.080	0.033	2.420	0.016	0.015	0.144
h1	-0.107	0.022	-4.770	0.000	-0.151	-0.063
h2	-0.151	0.028	-5.450	0.000	-0.206	-0.097
h3	-0.181	0.027	-6.650	0.000	-0.234	-0.128
h4	-0.212	0.027	-7.900	0.000	-0.265	-0.160
h5	-0.181	0.027	-6.700	0.000	-0.234	-0.128
h6	-0.066	0.027	-2.400	0.016	-0.120	-0.012
h7	0.244	0.030	8.050	0.000	0.185	0.304
h8	0.590	0.033	18.070	0.000	0.526	0.654
h9	0.574	0.033	17.310	0.000	0.509	0.639
h10	0.366	0.033	11.200	0.000	0.302	0.430
h11	0.216	0.032	6.710	0.000	0.153	0.279
h12	0.158	0.032	4.880	0.000	0.095	0.222
h13	0.188	0.034	5.590	0.000	0.122	0.254
h14	0.123	0.033	3.680	0.000	0.057	0.189
h15	-0.026	0.033	-0.790	0.430	-0.090	0.038
h16	-0.097	0.032	-2.990	0.003	-0.160	-0.033
h17	-0.061	0.032	-1.910	0.057	-0.123	0.002
h18	0.126	0.034	3.720	0.000	0.060	0.192
h19	0.253	0.033	7.740	0.000	0.189	0.317
h20	0.365	0.033	11.070	0.000	0.301	0.430
h21	0.317	0.033	9.610	0.000	0.252	0.382
h22	0.165	0.031	5.410	0.000	0.105	0.225
h23	0.083	0.026	3.160	0.002	0.031	0.134
Monday	0.249	0.021	12.080	0.000	0.209	0.289
Tuesday	0.290	0.021	13.740	0.000	0.248	0.331
Wednesday	0.265	0.021	12.900	0.000	0.225	0.306
Thursday	0.252	0.020	12.350	0.000	0.212	0.292
Friday	0.308	0.022	14.210	0.000	0.265	0.350
Saturday	0.034	0.020	1.690	0.091	-0.005	0.074
Time	-0.000	0.000	-1.560	0.118	-0.000	0.000
Time Squared	0.000	0.000	1.550	0.122	-0.000	0.000
Temperature	0.040	0.002	17.470	0.000	0.035	0.044
Relative humidity	-0.008	0.000	-20.780	0.000	-0.009	-0.007
Pressure	0.025	0.001	30.390	0.000	0.023	0.027
Precipitation	-0.014	0.012	-1.150	0.249	-0.039	0.010
Wind speed	-0.127	0.003	-38.190	0.000	-0.133	-0.120
NNE	-0.055	0.030	-1.870	0.062	-0.113	0.003
NE	-0.048	0.028	-1.740	0.082	-0.103	0.006
ENE	0.014	0.029	0.480	0.632	-0.042	0.070
E	0.175	0.029	5.980	0.000	0.118	0.233
ESE	0.428	0.036	12.010	0.000	0.358	0.497
SE	0.954	0.041	23.510	0.000	0.874	1.033
SSE	1.422	0.041	34.790	0.000	1.342	1.502
S	0.931	0.038	24.730	0.000	0.857	1.005
SSW	0.462	0.033	14.110	0.000	0.398	0.526
SW	0.163	0.029	5.700	0.000	0.107	0.219
WSW	0.148	0.028	5.300	0.000	0.093	0.203
W	0.184	0.027	6.730	0.000	0.130	0.238
WNW	0.214	0.026	8.280	0.000	0.164	0.265
NW	0.344	0.026	13.120	0.000	0.293	0.396
NNW	0.038	0.028	1.330	0.184	-0.018	0.094
_cons	-21.278	1.434	-14.840	0.000	-24.089	-18.467

Number of obs = 250554.

F(116, 250435) = 145.97.

Prob > F = 0.0000.

Table 10Effects of cruise activity at the new terminal in O₃ levels. Controlling by passengers.

O ₃	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval
Entry	-0.958	3.212	-0.300	0.766	-7.254	5.338
EntryPassengers	-0.001	0.003	-0.180	0.855	-0.007	0.006
EntryPassengers ²	-0.000	0.000	-0.100	0.920	-0.000	0.000
EntryAnt	-0.567	0.522	-1.090	0.277	-1.591	0.456
EntryAnt ²	0.025	0.017	1.510	0.131	-0.007	0.057
Stay	-3.646	0.621	-5.870	0.000	-4.864	-2.428
StayPassengers	-0.007	0.002	-4.800	0.000	-0.011	-0.004
StayPassengers ²	0.000	0.000	4.090	0.000	0.000	0.000
StayAnt	0.265	0.271	0.980	0.329	-0.267	0.797
StayAnt ²	0.002	0.009	0.240	0.811	-0.016	0.021
Exit	9.006	1.161	7.760	0.000	6.731	11.282
ExitPassengers	-0.012	0.003	-4.190	0.000	-0.018	-0.006
ExitPassengers ²	0.000	0.000	2.860	0.004	0.000	0.000
ExitAnt	-0.893	0.525	-1.700	0.089	-1.921	0.135
ExitAnt ²	0.029	0.017	1.730	0.083	-0.004	0.063
EntryDistance	-0.208	0.964	-0.220	0.829	-2.099	1.682
EntryDistance ²	0.010	0.065	0.160	0.874	-0.118	0.138
StayDistance	0.939	0.187	5.020	0.000	0.572	1.306
StayDistance ²	-0.043	0.013	-3.340	0.001	-0.068	-0.018
ExitDistance	-3.241	0.407	-7.960	0.000	-4.038	-2.443
ExitDistance ²	0.238	0.032	7.510	0.000	0.176	0.301
EntryAntDistance	0.105	0.154	0.680	0.497	-0.198	0.407
EntryAntDistance ²	-0.008	0.010	-0.770	0.442	-0.028	0.012
EntryAnt ² Distance	-0.004	0.005	-0.780	0.436	-0.013	0.006
EntryAnt ² Distance ²	0.000	0.000	0.750	0.455	-0.000	0.001
StayAntDistance	-0.025	0.083	-0.300	0.764	-0.187	0.137
StayAntDistance ²	0.002	0.006	0.400	0.691	-0.009	0.013
StayAnt ² Distance	-0.001	0.003	-0.220	0.829	-0.006	0.005
StayAnt ² Distance ²	0.000	0.000	0.140	0.886	-0.000	0.000
ExitAntDistance	0.271	0.161	1.680	0.093	-0.045	0.587
ExitAntDistance ²	-0.014	0.011	-1.280	0.201	-0.036	0.008
ExitAnt ² Distance	-0.007	0.005	-1.380	0.168	-0.017	0.003
ExitAnt ² Distance ²	0.000	0.000	1.080	0.279	-0.000	0.001
EntryPassengersDistance	0.000	0.001	0.480	0.630	-0.001	0.002
EntryPassengersDistance ²	-0.000	0.000	-0.120	0.908	-0.000	0.000
EntryPassengers ² Distance	-0.000	0.000	-0.260	0.798	-0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-0.220	0.829	-0.000	0.000
StayPassengersDistance	0.001	0.000	1.980	0.048	0.000	0.002
StayPassengersDistance ²	-0.000	0.000	-0.850	0.393	-0.000	0.000
StayPassengers ² Distance	-0.000	0.000	-1.400	0.160	-0.000	0.000
StayPassengers ² Distance ²	0.000	0.000	0.470	0.640	-0.000	0.000
ExitPassengersDistance	0.002	0.001	2.800	0.005	0.001	0.004
ExitPassengersDistance ²	-0.000	0.000	-1.850	0.064	-0.000	0.000
ExitPassengers ² Distance	-0.000	0.000	-1.490	0.136	-0.000	0.000
ExitPassengers ² Distance ²	0.000	0.000	0.840	0.403	-0.000	0.000
Ciutadella	-1.805	0.226	-7.990	0.000	-2.248	-1.363
Eixample	-7.660	0.222	-34.560	0.000	-8.095	-7.226
Vall d'Hebron	-12.433	0.381	-32.660	0.000	-13.179	-11.687
Palau Reial	9.246	0.229	40.400	0.000	8.798	9.695
Prat2	-3.378	0.284	-11.890	0.000	-3.935	-2.821
Sant Adrià	-5.102	0.214	-23.820	0.000	-5.521	-4.682
Sant Gervasi	-3.752	0.227	-16.510	0.000	-4.197	-3.306
2012	-38.671	7.727	-5.000	0.000	-53.815	-23.527
2013	-29.105	5.801	-5.020	0.000	-40.474	-17.735
2014	-22.681	3.881	-5.840	0.000	-30.287	-15.075
2015	-11.892	1.948	-6.100	0.000	-15.710	-8.074
January	-5.391	1.779	-3.030	0.002	-8.876	-1.905
February	3.217	1.629	1.980	0.048	0.025	6.409
March	14.284	1.475	9.690	0.000	11.394	17.174
April	21.690	1.312	16.530	0.000	19.117	24.262
May	23.176	1.150	20.150	0.000	20.922	25.431
June	23.122	1.004	23.020	0.000	21.154	25.091
July	21.509	0.868	24.780	0.000	19.808	23.210
August	21.300	0.720	29.590	0.000	19.889	22.711
September	17.379	0.559	31.100	0.000	16.284	18.474
October	4.566	0.409	11.170	0.000	3.765	5.367

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Table 10 (continued)

O ₃	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
November	-0.363	0.260	-1.390	0.163	-0.873	0.147
h1	0.155	0.199	0.780	0.438	-0.236	0.545
h2	0.552	0.260	2.120	0.034	0.042	1.063
h3	0.136	0.261	0.520	0.602	-0.375	0.647
h4	-0.810	0.262	-3.090	0.002	-1.324	-0.296
h5	-3.233	0.263	-12.310	0.000	-3.748	-2.719
h6	-8.882	0.260	-34.200	0.000	-9.391	-8.373
h7	-15.369	0.250	-61.560	0.000	-15.858	-14.880
h8	-14.723	0.245	-60.150	0.000	-15.203	-14.243
h9	-9.059	0.252	-35.990	0.000	-9.553	-8.566
h10	-2.945	0.253	-11.650	0.000	-3.441	-2.450
h11	2.200	0.257	8.560	0.000	1.696	2.704
h12	6.478	0.263	24.590	0.000	5.962	6.995
h13	9.837	0.270	36.390	0.000	9.307	10.367
h14	12.623	0.276	45.670	0.000	12.081	13.165
h15	13.496	0.278	48.550	0.000	12.951	14.041
h16	11.884	0.278	42.670	0.000	11.338	12.430
h17	8.429	0.277	30.400	0.000	7.886	8.973
h18	5.054	0.273	18.500	0.000	4.519	5.589
h19	2.230	0.269	8.300	0.000	1.703	2.757
h20	0.431	0.258	1.670	0.094	-0.074	0.936
h21	-0.031	0.252	-0.120	0.902	-0.525	0.463
h22	0.249	0.253	0.980	0.325	-0.247	0.744
h23	0.307	0.201	1.530	0.126	-0.086	0.700
Monday	-7.047	0.175	-40.210	0.000	-7.390	-6.704
Tuesday	-8.004	0.181	-44.330	0.000	-8.358	-7.650
Wednesday	-8.471	0.180	-46.990	0.000	-8.825	-8.118
Thursday	-7.989	0.183	-43.570	0.000	-8.349	-7.630
Friday	-8.870	0.175	-50.620	0.000	-9.214	-8.527
Saturday	-3.814	0.179	-21.310	0.000	-4.164	-3.463
Time	-0.001	0.000	-2.670	0.008	-0.001	-0.000
Time Squared	-0.000	0.000	-13.930	0.000	-0.000	-0.000
Temperature	0.534	0.019	28.510	0.000	0.497	0.571
Relative humidity	-0.210	0.004	-58.740	0.000	-0.217	-0.203
Pressure	-0.349	0.007	-48.670	0.000	-0.363	-0.335
Precipitation	0.461	0.105	4.390	0.000	0.255	0.667
Wind speed	4.813	0.032	150.270	0.000	4.750	4.875
NNE	0.514	0.320	1.600	0.109	-0.114	1.142
NE	2.541	0.305	8.330	0.000	1.943	3.138
ENE	10.776	0.301	35.780	0.000	10.185	11.366
E	10.498	0.297	35.360	0.000	9.916	11.080
ESE	14.365	0.317	45.320	0.000	13.744	14.986
SE	10.168	0.321	31.640	0.000	9.538	10.798
SSE	5.799	0.313	18.550	0.000	5.186	6.412
S	3.532	0.315	11.220	0.000	2.915	4.150
SSW	3.170	0.297	10.670	0.000	2.588	3.752
SW	0.485	0.282	1.720	0.086	-0.069	1.038
WSW	-3.115	0.276	-11.290	0.000	-3.656	-2.574
W	-5.171	0.271	-19.110	0.000	-5.702	-4.641
WNW	-8.874	0.263	-33.690	0.000	-9.391	-8.358
NW	-5.965	0.268	-22.220	0.000	-6.491	-5.439
NNW	-2.773	0.303	-9.150	0.000	-3.367	-2.179
_cons	424.892	12.093	35.140	0.000	401.191	448.593

Number of obs = 311,030.

F(114, 310911) = 2808.54.

Prob > F = 0.0000.

Table 11Effects of cruise activity at the old terminal in O₃ levels. Controlling by passengers.

O ₃	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval
Entry	-1.046	3.643	-0.290	0.774	-8.186	6.094
EntryPassengers	-0.005	0.007	-0.720	0.474	-0.020	0.009
EntryPassengers ²	0.000	0.000	0.050	0.958	-0.000	0.000
EntryAnt	-0.177	0.230	-0.770	0.442	-0.629	0.274
EntryAnt ²	0.005	0.003	1.530	0.127	-0.001	0.012
Stay	-0.026	0.876	-0.030	0.977	-1.743	1.691
StayPassengers	-0.009	0.003	-3.150	0.002	-0.015	-0.003
StayPassengers ²	0.000	0.000	1.330	0.182	-0.000	0.000
StayAnt	-0.115	0.084	-1.360	0.173	-0.280	0.050
StayAnt ²	0.003	0.002	1.670	0.095	-0.000	0.006
Exit	4.751	3.856	1.230	0.218	-2.807	12.310
ExitPassengers	-0.008	0.008	-0.980	0.328	-0.023	0.008
ExitPassengers ²	0.000	0.000	0.600	0.549	-0.000	0.000
ExitAnt	-0.068	0.228	-0.300	0.766	-0.516	0.380
ExitAnt ²	0.000	0.003	0.090	0.932	-0.006	0.007
EntryDistance	-0.409	1.449	-0.280	0.778	-3.249	2.431
EntryDistance ²	0.011	0.122	0.090	0.927	-0.228	0.250
StayDistance	0.151	0.349	0.430	0.666	-0.533	0.834
StayDistance ²	0.017	0.030	0.560	0.572	-0.042	0.076
ExitDistance	-2.753	1.586	-1.740	0.083	-5.862	0.356
ExitDistance ²	0.302	0.138	2.190	0.029	0.031	0.572
EntryAntDistance	0.145	0.091	1.590	0.111	-0.033	0.323
EntryAntDistance ²	-0.015	0.008	-1.960	0.050	-0.030	-0.000
EntryAnt ² Distance	-0.003	0.001	-1.820	0.069	-0.005	0.000
EntryAnt ² Distance ²	0.000	0.000	2.110	0.035	0.000	0.000
StayAntDistance	0.033	0.034	0.980	0.329	-0.033	0.099
StayAntDistance ²	-0.003	0.003	-0.980	0.329	-0.008	0.003
StayAnt ² Distance	-0.001	0.001	-1.340	0.179	-0.002	0.000
StayAnt ² Distance ²	0.000	0.000	1.700	0.089	-0.000	0.000
ExitAntDistance	0.111	0.094	1.180	0.237	-0.073	0.294
ExitAntDistance ²	-0.010	0.008	-1.290	0.198	-0.026	0.005
ExitAnt ² Distance	-0.001	0.001	-1.050	0.292	-0.004	0.001
ExitAnt ² Distance ²	0.000	0.000	1.180	0.237	-0.000	0.000
EntryPassengersDistance	-0.000	0.003	-0.150	0.883	-0.006	0.005
EntryPassengersDistance ²	0.000	0.000	0.570	0.566	-0.000	0.001
EntryPassengers ² Distance	0.000	0.000	0.670	0.504	-0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-1.010	0.312	-0.000	0.000
StayPassengersDistance	0.002	0.001	1.660	0.097	-0.000	0.004
StayPassengersDistance ²	-0.000	0.000	-1.020	0.310	-0.000	0.000
StayPassengers ² Distance	-0.000	0.000	-0.280	0.779	-0.000	0.000
StayPassengers ² Distance ²	0.000	0.000	0.150	0.882	-0.000	0.000
ExitPassengersDistance	0.003	0.003	0.990	0.322	-0.003	0.010
ExitPassengersDistance ²	-0.000	0.000	-0.560	0.575	-0.001	0.000
ExitPassengers ² Distance	-0.000	0.000	-0.630	0.526	-0.000	0.000
ExitPassengers ² Distance ²	0.000	0.000	0.290	0.771	-0.000	0.000
Ciutadella	-4.735	0.196	-24.150	0.000	-5.119	-4.350
Eixample	-10.698	0.190	-56.160	0.000	-11.072	-10.325
Vall d'Hebron	-13.147	0.364	-36.090	0.000	-13.862	-12.433
Palau Reial	7.434	0.191	38.910	0.000	7.059	7.808
Prat2	-4.115	0.259	-15.890	0.000	-4.623	-3.608
Sant Adrià	-5.576	0.192	-29.070	0.000	-5.952	-5.200
Sant Gervasi	-5.843	0.193	-30.340	0.000	-6.220	-5.465
2012	-38.847	7.784	-4.990	0.000	-54.103	-23.590
2013	-29.161	5.843	-4.990	0.000	-40.614	-17.709
2014	-22.744	3.909	-5.820	0.000	-30.406	-15.083
2015	-11.776	1.962	-6.000	0.000	-15.622	-7.930
January	-5.454	1.792	-3.040	0.002	-8.966	-1.942
February	3.111	1.641	1.900	0.058	-0.104	6.327
March	14.338	1.486	9.650	0.000	11.426	17.250
April	21.773	1.323	16.460	0.000	19.180	24.366
May	23.253	1.159	20.060	0.000	20.981	25.525
June	23.266	1.012	22.990	0.000	21.283	25.250
July	21.747	0.874	24.870	0.000	20.034	23.461
August	21.582	0.725	29.790	0.000	20.162	23.002
September	17.462	0.562	31.050	0.000	16.360	18.565
October	4.600	0.411	11.190	0.000	3.794	5.406

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Table 11 (continued)

O ₃	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
November	-0.304	0.262	-1.160	0.245	-0.817	0.209
h1	0.146	0.200	0.730	0.465	-0.246	0.539
h2	0.547	0.262	2.090	0.037	0.034	1.060
h3	0.133	0.262	0.510	0.611	-0.381	0.648
h4	-0.820	0.264	-3.110	0.002	-1.337	-0.302
h5	-3.707	0.263	-14.070	0.000	-4.223	-3.191
h6	-9.143	0.258	-35.380	0.000	-9.650	-8.637
h7	-15.059	0.249	-60.370	0.000	-15.548	-14.570
h8	-14.552	0.243	-59.980	0.000	-15.028	-14.076
h9	-9.295	0.241	-38.520	0.000	-9.768	-8.822
h10	-2.791	0.245	-11.400	0.000	-3.271	-2.311
h11	2.488	0.249	9.990	0.000	2.000	2.976
h12	6.674	0.255	26.130	0.000	6.173	7.174
h13	9.910	0.262	37.880	0.000	9.398	10.423
h14	12.710	0.265	47.920	0.000	12.190	13.230
h15	13.742	0.267	51.450	0.000	13.219	14.266
h16	12.120	0.268	45.250	0.000	11.595	12.645
h17	8.937	0.266	33.540	0.000	8.415	9.459
h18	5.724	0.262	21.840	0.000	5.210	6.237
h19	2.853	0.259	11.020	0.000	2.345	3.360
h20	0.839	0.253	3.310	0.001	0.343	1.335
h21	0.009	0.252	0.030	0.973	-0.484	0.502
h22	0.293	0.253	1.160	0.247	-0.203	0.789
h23	0.379	0.201	1.880	0.060	-0.016	0.773
Monday	-7.478	0.172	-43.470	0.000	-7.815	-7.141
Tuesday	-8.420	0.174	-48.460	0.000	-8.761	-8.079
Wednesday	-8.884	0.174	-50.920	0.000	-9.226	-8.542
Thursday	-8.479	0.175	-48.510	0.000	-8.822	-8.137
Friday	-9.402	0.171	-54.830	0.000	-9.738	-9.066
Saturday	-3.638	0.173	-21.010	0.000	-3.978	-3.299
Time	-0.001	0.000	-2.690	0.007	-0.001	-0.000
Time Squared	-0.000	0.000	-13.750	0.000	-0.000	-0.000
Temperature	0.521	0.019	27.690	0.000	0.484	0.558
Relative humidity	-0.211	0.004	-58.680	0.000	-0.218	-0.204
Pressure	-0.350	0.007	-48.650	0.000	-0.364	-0.336
Precipitation	0.479	0.106	4.510	0.000	0.271	0.686
Wind speed	4.774	0.032	148.920	0.000	4.711	4.837
NNE	0.491	0.320	1.530	0.125	-0.137	1.119
NE	2.637	0.305	8.650	0.000	2.039	3.234
ENE	11.067	0.302	36.620	0.000	10.475	11.659
E	10.618	0.298	35.660	0.000	10.035	11.202
ESE	14.591	0.318	45.850	0.000	13.967	15.215
SE	10.315	0.323	31.940	0.000	9.682	10.948
SSE	6.070	0.313	19.370	0.000	5.455	6.684
S	3.769	0.315	11.970	0.000	3.151	4.386
SSW	3.378	0.297	11.360	0.000	2.795	3.961
SW	0.338	0.283	1.200	0.232	-0.216	0.893
WSW	-3.146	0.277	-11.370	0.000	-3.688	-2.603
W	-5.187	0.272	-19.100	0.000	-5.719	-4.655
WNW	-9.177	0.264	-34.740	0.000	-9.695	-8.659
NW	-6.101	0.270	-22.640	0.000	-6.629	-5.573
NNW	-2.844	0.304	-9.350	0.000	-3.440	-2.248
_cons	428.569	12.166	35.230	0.000	404.723	452.415

Number of obs = 311,030.

F(117, 310911) = 3002.60.

Prob > F = 0.0000.

Table 12

Effects of cruise activity at the new terminal in CO levels. Controlling by passengers.

CO	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
Entry	0.210	0.099	2.110	0.035	0.015	0.405
EntryPassengers	0.000	0.000	3.430	0.001	0.000	0.000
EntryPassengers ²	-0.000	0.000	-4.240	0.000	-0.000	-0.000
EntryAnt	-0.026	0.013	-1.950	0.051	-0.053	0.000
EntryAnt ²	0.000	0.000	0.190	0.846	-0.001	0.001
Stay	0.016	0.011	1.430	0.153	-0.006	0.038
StayPassengers	0.000	0.000	10.100	0.000	0.000	0.000
StayPassengers ²	-0.000	0.000	-10.020	0.000	-0.000	-0.000
StayAnt	-0.006	0.005	-1.210	0.226	-0.016	0.004
StayAnt ²	-0.000	0.000	-1.050	0.295	-0.000	0.000
Exit	0.043	0.027	1.600	0.110	-0.010	0.097
ExitPassengers	0.000	0.000	3.850	0.000	0.000	0.000
ExitPassengers ²	-0.000	0.000	-3.580	0.000	-0.000	-0.000
ExitAnt	0.012	0.011	1.100	0.271	-0.009	0.033
ExitAnt ²	-0.001	0.000	-2.170	0.030	-0.001	-0.000
EntryDistance	-0.053	0.026	-2.040	0.041	-0.105	-0.002
EntryDistance ²	0.003	0.002	2.050	0.040	0.000	0.006
StayDistance	-0.006	0.003	-1.960	0.050	-0.012	-0.000
StayDistance ²	0.000	0.000	2.440	0.015	0.000	0.001
ExitDistance	-0.015	0.008	-1.970	0.049	-0.031	-0.000
ExitDistance ²	0.001	0.001	1.600	0.110	-0.000	0.002
EntryAntDistance	0.007	0.004	2.080	0.038	0.000	0.015
EntryAntDistance ²	-0.000	0.000	-1.630	0.103	-0.001	0.000
EntryAnt ² Distance	-0.000	0.000	-0.640	0.524	-0.000	0.000
EntryAnt ² Distance ²	0.000	0.000	0.420	0.672	-0.000	0.000
StayAntDistance	0.001	0.001	0.430	0.665	-0.002	0.003
StayAntDistance ²	0.000	0.000	0.210	0.837	-0.000	0.000
StayAnt ² Distance	0.000	0.000	1.470	0.142	-0.000	0.000
StayAnt ² Distance ²	-0.000	0.000	-1.740	0.082	-0.000	0.000
ExitAntDistance	-0.004	0.003	-1.340	0.180	-0.010	0.002
ExitAntDistance ²	0.000	0.000	1.450	0.146	-0.000	0.001
ExitAnt ² Distance	0.000	0.000	2.060	0.039	0.000	0.000
ExitAnt ² Distance ²	-0.000	0.000	-1.890	0.059	-0.000	0.000
EntryPassengersDistance	-0.000	0.000	-3.130	0.002	-0.000	-0.000
EntryPassengersDistance ²	0.000	0.000	2.190	0.029	0.000	0.000
EntryPassengers ² Distance	0.000	0.000	3.790	0.000	0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-2.500	0.012	-0.000	-0.000
StayPassengersDistance	-0.000	0.000	-8.140	0.000	-0.000	-0.000
StayPassengersDistance ²	0.000	0.000	5.840	0.000	0.000	0.000
StayPassengers ² Distance	0.000	0.000	7.770	0.000	0.000	0.000
StayPassengers ² Distance ²	-0.000	0.000	-5.360	0.000	-0.000	-0.000
ExitPassengersDistance	-0.000	0.000	-2.770	0.006	-0.000	-0.000
ExitPassengersDistance ²	0.000	0.000	1.700	0.089	-0.000	0.000
ExitPassengers ² Distance	0.000	0.000	2.360	0.018	0.000	0.000
ExitPassengers ² Distance ²	-0.000	0.000	-1.320	0.188	-0.000	0.000
Eixample	0.297	0.004	82.740	0.000	0.290	0.304
Vall d'Hebron	0.202	0.006	33.050	0.000	0.190	0.214
Palau Reial	0.049	0.003	14.610	0.000	0.042	0.055
Prat2	0.099	0.004	24.940	0.000	0.091	0.107
Sant Gervasi	0.181	0.003	54.190	0.000	0.175	0.188
2012	-0.131	0.130	-1.010	0.314	-0.385	0.124
2013	-0.076	0.097	-0.780	0.436	-0.266	0.115
2014	-0.078	0.065	-1.200	0.231	-0.206	0.050
2015	0.022	0.033	0.670	0.500	-0.042	0.086
January	-0.053	0.030	-1.750	0.081	-0.112	0.006
February	-0.057	0.028	-2.020	0.043	-0.111	-0.002
March	-0.071	0.025	-2.800	0.005	-0.120	-0.021
April	-0.123	0.023	-5.420	0.000	-0.168	-0.079
May	-0.153	0.020	-7.590	0.000	-0.193	-0.114
June	-0.189	0.018	-10.630	0.000	-0.224	-0.154
July	-0.195	0.016	-12.500	0.000	-0.225	-0.164
August	-0.238	0.013	-18.210	0.000	-0.263	-0.212
September	-0.165	0.011	-15.620	0.000	-0.185	-0.144
October	-0.067	0.009	-7.780	0.000	-0.083	-0.050
November	-0.017	0.006	-2.590	0.010	-0.029	-0.004
h1	-0.040	0.003	-13.600	0.000	-0.046	-0.034

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Table 12 (continued)

Newey-West						
CO	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
h2	-0.066	0.004	-17.770	0.000	-0.073	-0.059
h3	-0.081	0.004	-22.150	0.000	-0.088	-0.074
h4	-0.090	0.004	-25.060	0.000	-0.097	-0.083
h5	-0.091	0.004	-25.100	0.000	-0.098	-0.083
h6	-0.055	0.004	-15.030	0.000	-0.063	-0.048
h7	0.057	0.004	13.770	0.000	0.049	0.065
h8	0.170	0.005	31.910	0.000	0.159	0.180
h9	0.137	0.005	25.410	0.000	0.126	0.148
h10	0.032	0.004	7.200	0.000	0.023	0.040
h11	-0.003	0.004	-0.660	0.506	-0.011	0.005
h12	-0.009	0.004	-2.080	0.038	-0.017	-0.000
h13	0.009	0.005	2.070	0.039	0.000	0.018
h14	0.027	0.005	5.740	0.000	0.018	0.036
h15	0.003	0.005	0.750	0.451	-0.006	0.012
h16	0.004	0.005	0.960	0.337	-0.005	0.013
h17	0.024	0.004	5.320	0.000	0.015	0.033
h18	0.081	0.005	17.380	0.000	0.072	0.090
h19	0.130	0.005	26.650	0.000	0.121	0.140
h20	0.150	0.005	30.790	0.000	0.140	0.159
h21	0.124	0.005	26.290	0.000	0.114	0.133
h22	0.066	0.005	14.680	0.000	0.058	0.075
h23	0.027	0.003	8.170	0.000	0.021	0.034
Monday	0.089	0.003	30.080	0.000	0.083	0.094
Tuesday	0.100	0.003	34.060	0.000	0.094	0.106
Wednesday	0.114	0.003	37.650	0.000	0.108	0.120
Thursday	0.111	0.003	37.040	0.000	0.105	0.117
Friday	0.098	0.003	35.210	0.000	0.092	0.103
Saturday	0.033	0.003	12.730	0.000	0.028	0.038
Time	-0.000	0.000	-2.650	0.008	-0.000	-0.000
Time Squared	0.000	0.000	8.120	0.000	0.000	0.000
Temperature	0.003	0.000	9.400	0.000	0.002	0.003
Relative humidity	0.001	0.000	13.930	0.000	0.001	0.001
Pressure	0.004	0.000	31.490	0.000	0.004	0.004
Precipitation	-0.010	0.001	-8.200	0.000	-0.012	-0.008
Wind speed	-0.020	0.000	-49.280	0.000	-0.021	-0.019
NNE	0.016	0.005	3.220	0.001	0.006	0.026
NE	0.022	0.005	4.550	0.000	0.013	0.032
ENE	0.033	0.005	6.590	0.000	0.023	0.043
E	0.064	0.005	11.970	0.000	0.054	0.075
ESE	0.057	0.006	9.910	0.000	0.045	0.068
SE	0.074	0.005	13.520	0.000	0.063	0.085
SSE	0.088	0.006	15.370	0.000	0.077	0.100
S	0.072	0.006	12.720	0.000	0.061	0.083
SSW	0.061	0.005	11.690	0.000	0.051	0.071
SW	0.029	0.005	6.130	0.000	0.020	0.039
WSW	0.021	0.005	4.590	0.000	0.012	0.031
W	0.007	0.005	1.500	0.133	-0.002	0.016
WNW	-0.005	0.004	-1.040	0.298	-0.013	0.004
NW	-0.001	0.004	-0.130	0.895	-0.009	0.008
NNW	-0.016	0.005	-3.350	0.001	-0.026	-0.007
_cons	-3.534	0.206	-17.140	0.000	-3.938	-3.130

Number of obs = 191,147.

F(109, 191030) = 349.68.

Prob > F = 0.0000.

Table 13

Effects of cruise activity at the old terminal in the CO levels. Controlling by passengers.

CO	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	0.005	0.107	0.040	0.965	-0.206	0.215
EntryPassengers	-0.000	0.000	-1.170	0.242	-0.001	0.000
EntryPassengers ²	0.000	0.000	1.520	0.130	-0.000	0.000
EntryAnt	0.005	0.007	0.710	0.475	-0.009	0.019
EntryAnt ²	-0.000	0.000	-0.280	0.776	-0.000	0.000
Stay	0.036	0.019	1.880	0.060	-0.001	0.074
StayPassengers	0.000	0.000	0.980	0.330	-0.000	0.000
StayPassengers ²	0.000	0.000	0.360	0.718	-0.000	0.000
StayAnt	-0.005	0.002	-2.940	0.003	-0.009	-0.002
StayAnt ²	0.000	0.000	5.090	0.000	0.000	0.000
Exit	0.120	0.091	1.320	0.187	-0.058	0.299
ExitPassengers	0.000	0.000	0.970	0.333	-0.000	0.001
ExitPassengers ²	-0.000	0.000	-0.580	0.561	-0.000	0.000
ExitAnt	-0.003	0.005	-0.590	0.558	-0.014	0.007
ExitAnt ²	0.000	0.000	1.340	0.179	-0.000	0.000
EntryDistance	0.007	0.035	0.200	0.840	-0.062	0.076
EntryDistance ²	-0.001	0.003	-0.260	0.792	-0.006	0.004
StayDistance	-0.017	0.006	-2.640	0.008	-0.029	-0.004
StayDistance ²	0.001	0.000	2.970	0.003	0.000	0.002
ExitDistance	-0.045	0.030	-1.490	0.135	-0.104	0.014
ExitDistance ²	0.003	0.002	1.440	0.150	-0.001	0.008
EntryAntDistance	-0.002	0.002	-1.010	0.312	-0.007	0.002
EntryAntDistance ²	0.000	0.000	1.060	0.289	-0.000	0.001
EntryAnt ² Distance	0.000	0.000	0.480	0.633	-0.000	0.000
EntryAnt ² Distance ²	-0.000	0.000	-0.500	0.616	-0.000	0.000
StayAntDistance	0.002	0.001	3.550	0.000	0.001	0.003
StayAntDistance ²	-0.000	0.000	-3.790	0.000	-0.000	-0.000
StayAnt ² Distance	-0.000	0.000	-6.030	0.000	-0.000	-0.000
StayAnt ² Distance ²	0.000	0.000	6.400	0.000	0.000	0.000
ExitAntDistance	0.001	0.002	0.450	0.656	-0.003	0.004
ExitAntDistance ²	-0.000	0.000	-0.380	0.705	-0.000	0.000
ExitAnt ² Distance	-0.000	0.000	-1.260	0.209	-0.000	0.000
ExitAnt ² Distance ²	0.000	0.000	1.140	0.256	-0.000	0.000
EntryPassengersDistance	0.000	0.000	1.130	0.258	-0.000	0.000
EntryPassengersDistance ²	-0.000	0.000	-1.110	0.269	-0.000	0.000
EntryPassengers ² Distance	-0.000	0.000	-1.540	0.125	-0.000	0.000
EntryPassengers ² Distance ²	0.000	0.000	1.500	0.135	-0.000	0.000
StayPassengersDistance	-0.000	0.000	-0.850	0.394	-0.000	0.000
StayPassengersDistance ²	0.000	0.000	0.350	0.724	-0.000	0.000
StayPassengers ² Distance	-0.000	0.000	-0.580	0.565	-0.000	0.000
StayPassengers ² Distance ²	0.000	0.000	1.150	0.250	-0.000	0.000
ExitPassengersDistance	-0.000	0.000	-0.690	0.492	-0.000	0.000
ExitPassengersDistance ²	0.000	0.000	0.210	0.834	-0.000	0.000
ExitPassengers ² Distance	0.000	0.000	0.300	0.766	-0.000	0.000
ExitPassengers ² Distance ²	0.000	0.000	0.090	0.925	-0.000	0.000
Eixample	0.326	0.003	103.820	0.000	0.320	0.332
Vall d'Hebron	0.193	0.006	32.530	0.000	0.182	0.205
Palau Reial	0.051	0.003	17.580	0.000	0.045	0.056
Prat2	0.084	0.004	23.330	0.000	0.077	0.091
Sant Gervasi	0.191	0.003	65.730	0.000	0.186	0.197
2012	-0.161	0.131	-1.230	0.220	-0.417	0.096
2013	-0.099	0.098	-1.010	0.314	-0.291	0.093
2014	-0.094	0.066	-1.430	0.152	-0.222	0.035
2015	0.013	0.033	0.390	0.695	-0.052	0.077
January	-0.060	0.031	-1.980	0.047	-0.120	-0.001
February	-0.063	0.028	-2.240	0.025	-0.118	-0.008
March	-0.077	0.025	-3.010	0.003	-0.127	-0.027
April	-0.126	0.023	-5.500	0.000	-0.171	-0.081
May	-0.155	0.020	-7.660	0.000	-0.195	-0.116
June	-0.191	0.018	-10.700	0.000	-0.226	-0.156
July	-0.196	0.016	-12.510	0.000	-0.226	-0.165
August	-0.238	0.013	-18.170	0.000	-0.264	-0.212
September	-0.164	0.011	-15.550	0.000	-0.185	-0.143
October	-0.065	0.009	-7.640	0.000	-0.082	-0.049
November	-0.016	0.006	-2.460	0.014	-0.028	-0.003
h1	-0.040	0.003	-13.550	0.000	-0.046	-0.034

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Table 13 (continued)

CO	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
h2	-0.066	0.004	-17.640	0.000	-0.073	-0.059
h3	-0.081	0.004	-21.950	0.000	-0.088	-0.074
h4	-0.090	0.004	-24.810	0.000	-0.097	-0.083
h5	-0.085	0.004	-23.590	0.000	-0.092	-0.078
h6	-0.051	0.004	-14.040	0.000	-0.058	-0.044
h7	0.056	0.004	13.600	0.000	0.048	0.064
h8	0.172	0.005	32.520	0.000	0.162	0.182
h9	0.139	0.005	27.000	0.000	0.129	0.150
h10	0.031	0.004	7.410	0.000	0.023	0.040
h11	-0.004	0.004	-0.920	0.357	-0.012	0.004
h12	-0.009	0.004	-2.120	0.034	-0.017	-0.001
h13	0.011	0.004	2.570	0.010	0.003	0.019
h14	0.029	0.004	6.580	0.000	0.021	0.038
h15	0.003	0.004	0.730	0.466	-0.005	0.012
h16	0.004	0.004	0.880	0.381	-0.005	0.012
h17	0.021	0.004	5.030	0.000	0.013	0.030
h18	0.076	0.004	17.180	0.000	0.067	0.085
h19	0.126	0.005	26.710	0.000	0.117	0.136
h20	0.148	0.005	30.930	0.000	0.139	0.158
h21	0.124	0.005	26.450	0.000	0.115	0.133
h22	0.066	0.005	14.690	0.000	0.058	0.075
h23	0.027	0.003	8.140	0.000	0.021	0.034
Monday	0.092	0.003	32.060	0.000	0.086	0.097
Tuesday	0.104	0.003	36.780	0.000	0.098	0.109
Wednesday	0.117	0.003	40.060	0.000	0.111	0.123
Thursday	0.114	0.003	40.530	0.000	0.109	0.120
Friday	0.101	0.003	37.590	0.000	0.096	0.107
Saturday	0.033	0.002	13.650	0.000	0.028	0.038
Time	-0.000	0.000	-2.820	0.005	-0.000	-0.000
Time Squared	0.000	0.000	7.850	0.000	0.000	0.000
Temperature	0.003	0.000	9.010	0.000	0.002	0.003
Relative humidity	0.001	0.000	14.910	0.000	0.001	0.001
Pressure	0.004	0.000	31.660	0.000	0.004	0.004
Precipitation	-0.010	0.001	-8.440	0.000	-0.013	-0.008
Wind speed	-0.020	0.000	-47.430	0.000	-0.020	-0.019
NNE	0.017	0.005	3.380	0.001	0.007	0.027
NE	0.021	0.005	4.350	0.000	0.012	0.031
ENE	0.031	0.005	6.110	0.000	0.021	0.041
E	0.063	0.005	11.770	0.000	0.053	0.074
ESE	0.057	0.006	9.870	0.000	0.045	0.068
SE	0.075	0.006	13.500	0.000	0.064	0.085
SSE	0.088	0.006	15.320	0.000	0.077	0.100
S	0.070	0.006	12.420	0.000	0.059	0.082
SSW	0.057	0.005	10.860	0.000	0.047	0.067
SW	0.030	0.005	6.210	0.000	0.020	0.039
WSW	0.023	0.005	4.850	0.000	0.014	0.032
W	0.008	0.005	1.650	0.098	-0.001	0.017
WNW	-0.003	0.004	-0.620	0.538	-0.011	0.006
NW	0.002	0.004	0.520	0.605	-0.006	0.011
NNW	-0.014	0.005	-2.990	0.003	-0.024	-0.005
_cons	-3.555	0.207	-17.140	0.000	-3.962	-3.148

Number of obs = 191,147.

F(112, 191030) = 343.45.

Prob > F = 0.0000.

Table 14Effects of cruise activity at the new terminal in PM₁₀ levels. Controlling by passengers.

PM ₁₀	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	4.186	6.339	0.660	0.509	-8.238	16.610
EntryPassengers	0.012	0.005	2.430	0.015	0.002	0.022
EntryPassengers ²	-0.000	0.000	-2.690	0.007	-0.000	-0.000
EntryAnt	-1.154	0.953	-1.210	0.226	-3.022	0.714
EntryAnt ²	0.013	0.030	0.430	0.666	-0.046	0.072
Stay	4.510	1.127	4.000	0.000	2.301	6.720
StayPassengers	0.015	0.003	5.520	0.000	0.010	0.021
StayPassengers ²	-0.000	0.000	-5.950	0.000	-0.000	-0.000
StayAnt	-1.307	0.470	-2.780	0.005	-2.229	-0.385
StayAnt ²	0.023	0.015	1.570	0.116	-0.006	0.052
Exit	-4.555	2.856	-1.590	0.111	-10.152	1.043
ExitPassengers	0.012	0.007	1.810	0.070	-0.001	0.026
ExitPassengers ²	-0.000	0.000	-1.880	0.059	-0.000	0.000
ExitAnt	-0.026	1.197	-0.020	0.983	-2.371	2.320
ExitAnt ²	-0.015	0.035	-0.430	0.669	-0.083	0.053
EntryDistance	-1.062	2.059	-0.520	0.606	-5.098	2.974
EntryDistance ²	0.084	0.156	0.540	0.589	-0.221	0.390
StayDistance	-1.468	0.365	-4.020	0.000	-2.183	-0.753
StayDistance ²	0.105	0.028	3.810	0.000	0.051	0.160
ExitDistance	2.716	1.360	2.000	0.046	0.050	5.382
ExitDistance ²	-0.316	0.144	-2.200	0.028	-0.597	-0.035
EntryAntDistance	0.426	0.310	1.380	0.169	-0.181	1.034
EntryAntDistance ²	-0.033	0.024	-1.390	0.164	-0.079	0.013
EntryAnt ² Distance	-0.008	0.010	-0.770	0.439	-0.027	0.012
EntryAnt ² Distance ²	0.001	0.001	0.870	0.385	-0.001	0.002
StayAntDistance	0.398	0.153	2.590	0.010	0.097	0.699
StayAntDistance ²	-0.029	0.012	-2.510	0.012	-0.052	-0.006
StayAnt ² Distance	-0.008	0.005	-1.620	0.106	-0.017	0.002
StayAnt ² Distance ²	0.001	0.000	1.590	0.113	-0.000	0.001
ExitAntDistance	-0.075	0.383	-0.200	0.845	-0.826	0.676
ExitAntDistance ²	0.008	0.029	0.260	0.791	-0.049	0.064
ExitAnt ² Distance	0.006	0.011	0.570	0.567	-0.015	0.028
ExitAnt ² Distance ²	-0.001	0.001	-0.640	0.524	-0.002	0.001
EntryPassengersDistance	-0.004	0.002	-2.510	0.012	-0.007	-0.001
EntryPassengersDistance ²	0.000	0.000	2.410	0.016	0.000	0.001
EntryPassengers ² Distance	0.000	0.000	2.730	0.006	0.000	0.000
EntryPassengers ² Distance ²	-0.000	0.000	-2.560	0.010	-0.000	-0.000
StayPassengersDistance	-0.004	0.001	-4.920	0.000	-0.006	-0.003
StayPassengersDistance ²	0.000	0.000	4.500	0.000	0.000	0.000
StayPassengers ² Distance	0.000	0.000	5.330	0.000	0.000	0.000
StayPassengers ² Distance ²	-0.000	0.000	-4.980	0.000	-0.000	-0.000
ExitPassengersDistance	-0.004	0.002	-1.690	0.091	-0.008	0.001
ExitPassengersDistance ²	0.000	0.000	1.570	0.116	-0.000	0.001
ExitPassengers ² Distance	0.000	0.000	1.820	0.069	-0.000	0.000
ExitPassengers ² Distance ²	-0.000	0.000	-1.770	0.077	-0.000	0.000
Eixample	1.460	0.265	5.510	0.000	0.941	1.980
Gornal	3.140	0.244	12.880	0.000	2.663	3.618
Vall d'Hebron	17.756	0.469	37.840	0.000	16.837	18.676
Palau Reial	0.430	0.236	1.820	0.069	-0.033	0.892
Poblenou	5.629	0.308	18.280	0.000	5.025	6.232
Sant Adrià	4.664	0.259	18.020	0.000	4.157	5.171
2012	95.116	8.516	11.170	0.000	78.424	111.807
2013	69.479	6.356	10.930	0.000	57.022	81.936
2014	47.909	4.261	11.240	0.000	39.558	56.260
2015	27.261	2.092	13.030	0.000	23.161	31.362
January	21.294	1.945	10.950	0.000	17.481	25.107
February	22.238	1.835	12.120	0.000	18.641	25.835
March	16.526	1.610	10.260	0.000	13.370	19.681
April	10.062	1.429	7.040	0.000	7.261	12.863
May	5.534	1.243	4.450	0.000	3.097	7.970
June	0.891	1.201	0.740	0.458	-1.463	3.244
July	-5.400	0.899	-6.010	0.000	-7.162	-3.638
August	-11.403	0.734	-15.540	0.000	-12.841	-9.966
September	-10.605	0.570	-18.610	0.000	-11.722	-9.488
October	-5.072	0.435	-11.670	0.000	-5.924	-4.221
November	0.404	0.316	1.280	0.202	-0.217	1.024

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Table 14 (continued)

PM ₁₀	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
h1	-1.644	0.300	-5.470	0.000	-2.232	-1.055
h2	-3.037	0.330	-9.200	0.000	-3.683	-2.390
h3	-3.755	0.330	-11.390	0.000	-4.401	-3.108
h4	-4.193	0.313	-13.390	0.000	-4.807	-3.579
h5	-3.858	0.314	-12.280	0.000	-4.474	-3.242
h6	-2.034	0.315	-6.450	0.000	-2.651	-1.416
h7	2.239	0.321	6.980	0.000	1.611	2.868
h8	6.796	0.337	20.190	0.000	6.136	7.456
h9	8.570	0.357	23.990	0.000	7.870	9.270
h10	6.217	0.350	17.740	0.000	5.531	6.904
h11	4.870	0.351	13.860	0.000	4.182	5.559
h12	3.233	0.356	9.090	0.000	2.536	3.931
h13	1.754	0.364	4.810	0.000	1.040	2.468
h14	0.127	0.367	0.350	0.729	-0.592	0.846
h15	-1.049	0.357	-2.940	0.003	-1.748	-0.350
h16	-0.718	0.355	-2.030	0.043	-1.414	-0.023
h17	1.022	0.361	2.830	0.005	0.313	1.730
h18	2.455	0.398	6.170	0.000	1.675	3.236
h19	2.863	0.363	7.900	0.000	2.152	3.574
h20	3.703	0.347	10.680	0.000	3.024	4.382
h21	3.961	0.350	11.330	0.000	3.276	4.647
h22	2.679	0.338	7.920	0.000	2.017	3.342
h23	1.354	0.287	4.720	0.000	0.791	1.917
Monday	2.310	0.201	11.460	0.000	1.915	2.705
Tuesday	3.766	0.224	16.820	0.000	3.327	4.204
Wednesday	4.491	0.213	21.070	0.000	4.074	4.909
Thursday	3.770	0.212	17.810	0.000	3.355	4.185
Friday	4.643	0.214	21.700	0.000	4.224	5.062
Saturday	1.521	0.202	7.510	0.000	1.124	1.918
Time	0.002	0.000	9.330	0.000	0.002	0.003
Time Squared	0.000	0.000	7.640	0.000	0.000	0.000
Temperature	1.475	0.021	70.530	0.000	1.434	1.516
Relative humidity	0.139	0.004	37.020	0.000	0.132	0.147
Pressure	0.325	0.008	39.000	0.000	0.309	0.341
Precipitation	-0.837	0.098	-8.520	0.000	-1.029	-0.644
Wind speed	-0.694	0.041	-17.050	0.000	-0.774	-0.614
NNE	-0.546	0.291	-1.870	0.061	-1.117	0.025
NE	0.637	0.321	1.990	0.047	0.008	1.266
ENE	1.035	0.286	3.630	0.000	0.476	1.595
E	1.468	0.319	4.600	0.000	0.843	2.093
ESE	-0.386	0.302	-1.280	0.201	-0.977	0.206
SE	0.720	0.306	2.350	0.019	0.120	1.320
SSE	1.449	0.305	4.760	0.000	0.852	2.046
S	0.567	0.303	1.870	0.062	-0.027	1.161
SSW	0.641	0.290	2.210	0.027	0.072	1.209
SW	1.215	0.275	4.420	0.000	0.676	1.753
WSW	0.702	0.276	2.540	0.011	0.160	1.244
W	-0.608	0.264	-2.300	0.021	-1.125	-0.091
WNW	0.663	0.252	2.630	0.008	0.170	1.157
NW	-0.494	0.258	-1.910	0.056	-1.000	0.012
NNW	-0.516	0.281	-1.840	0.066	-1.067	0.034
_cons	-447.752	12.993	-34.460	0.000	-473.218	-422.286

Number of obs = 156,466.

F(113, 156348) = 253.16.

Prob > F = 0.0000.

Table 15Effects of cruise activity at the old terminal in the PM₁₀ levels. Controlling by passengers.

PM ₁₀	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval
Entry	3.562	7.135	0.500	0.618	-10.423	17.547
EntryPassengers	-0.001	0.014	-0.100	0.917	-0.029	0.026
EntryPassengers ²	0.000	0.000	0.380	0.704	-0.000	0.000
EntryAnt	0.339	0.443	0.770	0.443	-0.528	1.207
EntryAnt ²	-0.011	0.007	-1.680	0.093	-0.024	0.002
Stay	-0.188	1.707	-0.110	0.912	-3.534	3.158
StayPassengers	0.011	0.005	2.090	0.036	0.001	0.022
StayPassengers ²	-0.000	0.000	-0.720	0.473	-0.000	0.000
StayAnt	0.167	0.144	1.160	0.245	-0.114	0.449
StayAnt ²	-0.004	0.002	-1.590	0.113	-0.008	0.001
Exit	-11.217	6.787	-1.650	0.098	-24.519	2.085
ExitPassengers	0.027	0.014	1.930	0.054	-0.000	0.055
ExitPassengers ²	-0.000	0.000	-1.800	0.072	-0.000	0.000
ExitAnt	0.122	0.388	0.320	0.752	-0.638	0.882
ExitAnt ²	-0.001	0.006	-0.090	0.925	-0.012	0.011
EntryDistance	-1.737	3.248	-0.530	0.593	-8.103	4.629
EntryDistance ²	0.231	0.339	0.680	0.495	-0.433	0.894
StayDistance	0.304	0.786	0.390	0.699	-1.236	1.844
StayDistance ²	-0.060	0.082	-0.720	0.469	-0.221	0.102
ExitDistance	5.937	3.099	1.920	0.055	-0.136	12.011
ExitDistance ²	-0.680	0.320	-2.120	0.034	-1.308	-0.052
EntryAntDistance	-0.211	0.200	-1.060	0.290	-0.603	0.180
EntryAntDistance ²	0.021	0.021	1.030	0.304	-0.019	0.061
EntryAnt ² Distance	0.006	0.003	1.900	0.057	-0.000	0.012
EntryAnt ² Distance ²	-0.001	0.000	-1.910	0.057	-0.001	0.000
StayAntDistance	-0.103	0.065	-1.590	0.112	-0.231	0.024
StayAntDistance ²	0.010	0.007	1.510	0.130	-0.003	0.023
StayAnt ² Distance	0.002	0.001	2.000	0.046	0.000	0.004
StayAnt ² Distance ²	-0.000	0.000	-2.060	0.039	-0.000	-0.000
ExitAntDistance	-0.064	0.177	-0.360	0.719	-0.410	0.283
ExitAntDistance ²	0.004	0.018	0.240	0.809	-0.032	0.041
ExitAnt ² Distance	0.000	0.002	0.200	0.840	-0.004	0.005
ExitAnt ² Distance ²	-0.000	0.000	-0.180	0.856	-0.001	0.000
EntryPassengersDistance	0.003	0.006	0.430	0.666	-0.010	0.015
EntryPassengersDistance ²	-0.000	0.001	-0.540	0.592	-0.002	0.001
EntryPassengers ² Distance	-0.000	0.000	-0.710	0.479	-0.000	0.000
EntryPassengers ² Distance ²	0.000	0.000	0.820	0.410	-0.000	0.000
StayPassengersDistance	-0.004	0.002	-1.550	0.121	-0.009	0.001
StayPassengersDistance ²	0.000	0.000	1.380	0.169	-0.000	0.001
StayPassengers ² Distance	0.000	0.000	0.520	0.604	-0.000	0.000
StayPassengers ² Distance ²	-0.000	0.000	-0.550	0.584	-0.000	0.000
ExitPassengersDistance	-0.013	0.007	-1.920	0.055	-0.025	0.000
ExitPassengersDistance ²	0.001	0.001	1.910	0.056	-0.000	0.003
ExitPassengers ² Distance	0.000	0.000	1.920	0.054	-0.000	0.000
ExitPassengers ² Distance ²	-0.000	0.000	-2.000	0.046	-0.000	-0.000
Eixample	2.154	13.068	0.160	0.869	-23.459	27.768
Gornal	3.342	13.020	0.260	0.797	-22.177	28.860
Vall d'Hebron	17.439	12.857	1.360	0.175	-7.761	42.640
Palau Reial	0.248	13.050	0.020	0.985	-25.331	25.827
Poblenou	5.353	13.057	0.410	0.682	-20.239	30.945
Sant Adrià	4.413	13.073	0.340	0.736	-21.211	30.036
2012	95.065	8.564	11.100	0.000	78.280	111.850
2013	69.428	6.391	10.860	0.000	56.902	81.955
2014	47.892	4.285	11.180	0.000	39.493	56.290
2015	27.183	2.103	12.920	0.000	23.061	31.305
January	21.297	1.957	10.880	0.000	17.462	25.132
February	22.250	1.845	12.060	0.000	18.634	25.867
March	16.475	1.619	10.180	0.000	13.302	19.649
April	10.031	1.437	6.980	0.000	7.214	12.848
May	5.445	1.248	4.360	0.000	2.999	7.891
June	0.738	1.205	0.610	0.540	-1.624	3.099
July	-5.642	0.903	-6.250	0.000	-7.412	-3.872
August	-11.564	0.736	-15.700	0.000	-13.007	-10.121
September	-10.726	0.571	-18.790	0.000	-11.844	-9.607
October	-5.142	0.434	-11.850	0.000	-5.992	-4.292
November	0.378	0.318	1.190	0.235	-0.246	1.001

(continued on next page)

Table 15 (continued)

Newey-West						
PM ₁₀	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
h1	-1.636	0.300	-5.440	0.000	-2.225	-1.047
h2	-3.029	0.331	-9.160	0.000	-3.677	-2.381
h3	-3.748	0.330	-11.350	0.000	-4.396	-3.101
h4	-4.186	0.314	-13.330	0.000	-4.802	-3.571
h5	-3.724	0.315	-11.830	0.000	-4.341	-3.107
h6	-2.025	0.317	-6.390	0.000	-2.646	-1.404
h7	2.042	0.325	6.290	0.000	1.406	2.679
h8	6.708	0.341	19.690	0.000	6.040	7.375
h9	8.477	0.353	23.990	0.000	7.784	9.169
h10	5.938	0.352	16.860	0.000	5.248	6.628
h11	4.549	0.353	12.880	0.000	3.857	5.241
h12	2.948	0.357	8.270	0.000	2.249	3.647
h13	1.500	0.367	4.090	0.000	0.781	2.219
h14	-0.122	0.364	-0.340	0.736	-0.835	0.590
h15	-1.377	0.355	-3.880	0.000	-2.073	-0.682
h16	-1.052	0.354	-2.970	0.003	-1.746	-0.358
h17	0.542	0.359	1.510	0.131	-0.162	1.245
h18	1.918	0.384	5.000	0.000	1.165	2.670
h19	2.432	0.350	6.950	0.000	1.746	3.117
h20	3.484	0.341	10.230	0.000	2.817	4.152
h21	3.898	0.350	11.150	0.000	3.213	4.583
h22	2.635	0.339	7.770	0.000	1.970	3.3
h23	1.306	0.287	4.540	0.000	0.743	1.869
Monday	2.536	0.193	13.120	0.000	2.157	2.915
Tuesday	4.079	0.207	19.700	0.000	3.673	4.484
Wednesday	4.785	0.197	24.230	0.000	4.398	5.172
Thursday	4.092	0.191	21.410	0.000	3.717	4.467
Friday	4.859	0.202	24.050	0.000	4.463	5.255
Saturday	1.531	0.186	8.240	0.000	1.167	1.895
Time	0.002	0.000	9.260	0.000	0.002	0.003
Time Squared	0.000	0.000	7.620	0.000	0.000	0.000
Temperature	1.477	0.021	70.820	0.000	1.436	1.518
Relative humidity	0.141	0.004	37.470	0.000	0.133	0.148
Pressure	0.327	0.008	39.190	0.000	0.311	0.343
Precipitation	-0.861	0.098	-8.750	0.000	-1.054	-0.668
Wind speed	-0.680	0.041	-16.670	0.000	-0.760	-0.600
NNE	-0.537	0.292	-1.840	0.066	-1.110	0.036
NE	0.586	0.322	1.820	0.069	-0.045	1.216
ENE	0.911	0.286	3.180	0.001	0.350	1.472
E	1.404	0.320	4.390	0.000	0.777	2.030
ESE	-0.488	0.303	-1.610	0.107	-1.082	0.105
SE	0.602	0.307	1.960	0.050	0.001	1.203
SSE	1.307	0.305	4.280	0.000	0.708	1.905
S	0.466	0.304	1.530	0.125	-0.130	1.062
SSW	0.563	0.291	1.940	0.053	-0.006	1.133
SW	1.239	0.275	4.500	0.000	0.699	1.778
WSW	0.742	0.277	2.680	0.007	0.199	1.284
W	-0.596	0.264	-2.250	0.024	-1.114	-0.078
WNW	0.729	0.252	2.890	0.004	0.235	1.223
NW	-0.474	0.259	-1.830	0.067	-0.981	0.034
NNW	-0.498	0.282	-1.770	0.077	-1.050	0.054
_cons	-450.212

Number of obs = 156466.

F(117, 156348) = 372205.72.

Prob > F = 0.0000.

Table 16Effects of cruise activity at the new terminal in the NO_x levels. Controlling by gross tonnage.

Newey-West						
NO _x	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
Entry	7.212	8.862	0.810	0.416	-10.158	24.582
EntryGT	0.001	0.000	2.670	0.008	0.000	0.001
EntryGT ²	-0.000	0.000	-3.210	0.001	-0.000	-0.000
EntryAnt	-1.084	1.295	-0.840	0.402	-3.622	1.453
EntryAnt ²	-0.021	0.041	-0.500	0.618	-0.102	0.061
Stay	13.014	1.087	11.970	0.000	10.884	15.144
StayGT	0.001	0.000	7.560	0.000	0.000	0.001
StayGT ²	-0.000	0.000	-7.470	0.000	-0.000	-0.000
StayAnt	-1.671	0.489	-3.410	0.001	-2.631	-0.712
StayAnt ²	0.032	0.016	2.010	0.045	0.001	0.063
Exit	-6.919	1.728	-4.000	0.000	-10.306	-3.532
ExitGT	0.000	0.000	2.480	0.013	0.000	0.001
ExitGT ²	-0.000	0.000	-1.770	0.077	-0.000	0.000
ExitAnt	0.914	1.067	0.860	0.392	-1.178	3.005
ExitAnt ²	-0.019	0.037	-0.500	0.614	-0.091	0.054
EntryDistance	-0.411	2.477	-0.170	0.868	-5.267	4.444
EntryDistance ²	-0.026	0.158	-0.170	0.868	-0.335	0.283
StayDistance	-3.018	0.308	-9.800	0.000	-3.621	-2.415
StayDistance ²	0.179	0.020	8.960	0.000	0.140	0.218
ExitDistance	2.721	0.599	4.540	0.000	1.548	3.895
ExitDistance ²	-0.185	0.050	-3.740	0.000	-0.282	-0.088
EntryAntDistance	0.338	0.361	0.940	0.349	-0.370	1.047
EntryAntDistance ²	-0.018	0.023	-0.780	0.437	-0.063	0.027
EntryAnt ² Distance	-0.001	0.012	-0.110	0.913	-0.024	0.021
EntryAnt ² Distance ²	0.000	0.001	0.060	0.949	-0.001	0.001
StayAntDistance	0.392	0.140	2.800	0.005	0.118	0.667
StayAntDistance ²	-0.027	0.009	-2.970	0.003	-0.045	-0.009
StayAnt ² Distance	-0.008	0.005	-1.780	0.076	-0.017	0.001
StayAnt ² Distance ²	0.001	0.000	2.120	0.034	0.000	0.001
ExitAntDistance	-0.281	0.307	-0.910	0.361	-0.883	0.322
ExitAntDistance ²	0.013	0.020	0.670	0.505	-0.026	0.053
ExitAnt ² Distance	0.005	0.010	0.500	0.615	-0.015	0.026
ExitAnt ² Distance ²	-0.000	0.001	-0.330	0.743	-0.002	0.001
EntryGTDistance	-0.000	0.000	-2.420	0.015	-0.000	-0.000
EntryGTDistance ²	0.000	0.000	2.050	0.040	0.000	0.000
EntryGT ² Distance	0.000	0.000	3.060	0.002	0.000	0.000
EntryGT ² Distance ²	-0.000	0.000	-2.530	0.012	-0.000	-0.000
StayGTDistance	-0.000	0.000	-6.220	0.000	-0.000	-0.000
StayGTDistance ²	0.000	0.000	5.300	0.000	0.000	0.000
StayGT ² Distance	0.000	0.000	5.730	0.000	0.000	0.000
StayGT ² Distance ²	-0.000	0.000	-4.840	0.000	-0.000	-0.000
ExitGTDistance	-0.000	0.000	-2.470	0.013	-0.000	-0.000
ExitGTDistance ²	0.000	0.000	2.290	0.022	0.000	0.000
ExitGT ² Distance	0.000	0.000	1.740	0.081	-0.000	0.000
ExitGT ² Distance ²	-0.000	0.000	-1.670	0.095	-0.000	0.000
Baldovina	-2.265	0.305	-7.430	0.000	-2.862	-1.667
Ciutadella	-12.674	0.409	-30.950	0.000	-13.477	-11.872
Eixample	26.262	0.490	53.560	0.000	25.301	27.223
Gornal	-8.010	0.418	-19.170	0.000	-8.829	-7.191
Vall d'Hebron	35.181	0.665	52.920	0.000	33.878	36.484
Palau Reial	-13.262	0.402	-32.980	0.000	-14.050	-12.474
Poblenou	-3.641	0.399	-9.120	0.000	-4.424	-2.859
Prat1	-5.011	0.550	-9.110	0.000	-6.089	-3.932
Prat2	-1.994	0.569	-3.500	0.000	-3.110	-0.879
Sant Adrià	10.547	0.417	25.270	0.000	9.729	11.365
Sant Gervasi	19.140	0.462	41.440	0.000	18.234	20.045
Sants	-14.607	0.384	-38.040	0.000	-15.359	-13.854
2012	-4.791	12.565	-0.380	0.703	-29.418	19.835
2013	2.357	9.418	0.250	0.802	-16.101	20.816
2014	7.969	6.304	1.260	0.206	-4.387	20.325
2015	10.441	3.155	3.310	0.001	4.257	16.625
January	-9.768	2.920	-3.340	0.001	-15.492	-4.044
February	-13.223	2.696	-4.910	0.000	-18.507	-7.940
March	-18.858	2.431	-7.760	0.000	-23.624	-14.093
April	-32.126	2.179	-14.740	0.000	-36.398	-27.855
May	-38.903	1.931	-20.150	0.000	-42.688	-35.119

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Table 16 (continued)

Newey-West						
NO _x	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
June	-43.372	1.700	-25.520	0.000	-46.703	-40.040
July	-48.534	1.476	-32.880	0.000	-51.427	-45.642
August	-56.002	1.244	-45.020	0.000	-58.440	-53.564
September	-44.746	1.004	-44.560	0.000	-46.714	-42.778
October	-24.901	0.816	-30.510	0.000	-26.501	-23.301
November	-10.336	0.623	-16.580	0.000	-11.558	-9.115
h1	-5.553	0.292	-19.020	0.000	-6.125	-4.981
h2	-10.676	0.373	-28.660	0.000	-11.406	-9.946
h3	-13.844	0.364	-38.060	0.000	-14.557	-13.131
h4	-15.261	0.358	-42.590	0.000	-15.964	-14.559
h5	-12.345	0.359	-34.380	0.000	-13.049	-11.641
h6	0.155	0.378	0.410	0.682	-0.586	0.896
h7	26.221	0.444	59.050	0.000	25.350	27.091
h8	42.131	0.537	78.460	0.000	41.078	43.183
h9	33.470	0.544	61.560	0.000	32.404	34.536
h10	17.605	0.470	37.480	0.000	16.684	18.526
h11	7.538	0.434	17.360	0.000	6.687	8.389
h12	1.913	0.428	4.460	0.000	1.073	2.753
h13	-1.822	0.428	-4.260	0.000	-2.661	-0.983
h14	-5.614	0.429	-13.100	0.000	-6.455	-4.774
h15	-6.683	0.426	-15.700	0.000	-7.517	-5.849
h16	-4.640	0.425	-10.920	0.000	-5.472	-3.807
h17	0.916	0.425	2.150	0.031	0.082	1.749
h18	8.763	0.446	19.630	0.000	7.888	9.638
h19	15.317	0.470	32.600	0.000	14.396	16.238
h20	18.860	0.465	40.580	0.000	17.949	19.771
h21	17.166	0.455	37.740	0.000	16.275	18.058
h22	11.801	0.440	26.820	0.000	10.939	12.663
h23	5.785	0.325	17.810	0.000	5.148	6.422
Monday	17.247	0.269	64.210	0.000	16.721	17.773
Tuesday	21.384	0.279	76.760	0.000	20.838	21.930
Wednesday	24.617	0.292	84.430	0.000	24.046	25.188
Thursday	24.338	0.288	84.420	0.000	23.773	24.903
Friday	23.960	0.274	87.330	0.000	23.422	24.498
Saturday	10.219	0.253	40.340	0.000	9.722	10.715
Time	-0.002	0.000	-5.580	0.000	-0.003	-0.001
Time Squared	0.000	0.000	25.870	0.000	0.000	0.000
Temperature	0.703	0.031	22.890	0.000	0.643	0.763
Relative humidity	0.099	0.006	16.350	0.000	0.087	0.111
Pressure	0.899	0.013	70.260	0.000	0.874	0.924
Precipitation	-0.093	0.127	-0.730	0.463	-0.342	0.156
Wind speed	-9.152	0.053	-171.100	0.000	-9.257	-9.047
NNE	-0.170	0.578	-0.290	0.769	-1.303	0.964
NE	-0.248	0.554	-0.450	0.654	-1.335	0.838
ENE	-7.341	0.543	-13.510	0.000	-8.406	-6.276
E	-6.031	0.562	-10.720	0.000	-7.133	-4.929
ESE	-8.967	0.577	-15.540	0.000	-10.098	-7.837
SE	-1.850	0.590	-3.130	0.002	-3.007	-0.693
SSE	4.208	0.577	7.290	0.000	3.077	5.340
S	3.503	0.578	6.060	0.000	2.370	4.637
SSW	3.224	0.563	5.720	0.000	2.120	4.329
SW	2.710	0.537	5.050	0.000	1.657	3.763
WSW	4.942	0.537	9.200	0.000	3.889	5.995
W	4.949	0.528	9.370	0.000	3.914	5.984
WNW	6.931	0.502	13.810	0.000	5.948	7.915
NW	3.742	0.513	7.300	0.000	2.737	4.747
NNW	-0.543	0.583	-0.930	0.352	-1.686	0.600
_cons	-827.679	20.477	-40.420	0.000	-867.814	-787.544

Number of obs = 493,895.

F(113, 493771) = 966.45.

Prob > F = 0.0000

Table 17Effects of cruise activity at the old terminal in the NO_x levels. Controlling by gross tonnage.

NO _x	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	-12.314	9.577	-1.290	0.199	-31.084	6.456
EntryGT	0.000	0.001	0.570	0.568	-0.001	0.001
EntryGT ²	0.000	0.000	0.090	0.928	-0.000	0.000
EntryAnt	0.567	0.593	0.960	0.338	-0.594	1.729
EntryAnt ²	-0.007	0.009	-0.830	0.404	-0.024	0.010
Stay	1.165	1.616	0.720	0.471	-2.002	4.332
StayGT	0.000	0.000	1.960	0.050	0.000	0.001
StayGT ²	0.000	0.000	0.180	0.858	-0.000	0.000
StayAnt	0.302	0.148	2.040	0.041	0.012	0.592
StayAnt ²	-0.003	0.002	-1.400	0.161	-0.008	0.001
Exit	-10.365	6.236	-1.660	0.097	-22.588	1.858
ExitGT	0.000	0.000	1.150	0.251	-0.000	0.001
ExitGT ²	-0.000	0.000	-0.720	0.469	-0.000	0.000
ExitAnt	0.332	0.334	0.990	0.321	-0.324	0.987
ExitAnt ²	-0.003	0.005	-0.540	0.590	-0.012	0.007
EntryDistance	4.545	3.524	1.290	0.197	-2.363	11.453
EntryDistance ²	-0.310	0.292	-1.060	0.289	-0.882	0.263
StayDistance	-1.093	0.572	-1.910	0.056	-2.213	0.028
StayDistance ²	0.075	0.046	1.640	0.100	-0.015	0.165
ExitDistance	3.399	2.325	1.460	0.144	-1.159	7.957
ExitDistance ²	-0.355	0.193	-1.840	0.066	-0.733	0.024
EntryAntDistance	-0.323	0.214	-1.510	0.131	-0.741	0.096
EntryAntDistance ²	0.024	0.017	1.380	0.168	-0.010	0.058
EntryAnt ² Distance	0.004	0.003	1.260	0.206	-0.002	0.010
EntryAnt ² Distance ²	-0.000	0.000	-1.090	0.274	-0.001	0.000
StayAntDistance	-0.068	0.052	-1.310	0.190	-0.169	0.034
StayAntDistance ²	0.005	0.004	1.260	0.206	-0.003	0.013
StayAnt ² Distance	0.001	0.001	0.850	0.397	-0.001	0.002
StayAnt ² Distance ²	-0.000	0.000	-1.270	0.202	-0.000	0.000
ExitAntDistance	-0.187	0.126	-1.490	0.137	-0.433	0.059
ExitAntDistance ²	0.015	0.010	1.470	0.141	-0.005	0.036
ExitAnt ² Distance	0.002	0.002	0.980	0.328	-0.002	0.006
ExitAnt ² Distance ²	-0.000	0.000	-0.920	0.359	-0.000	0.000
EntryGTDistance	-0.000	0.000	-0.220	0.825	-0.000	0.000
EntryGTDistance ²	0.000	0.000	0.200	0.843	-0.000	0.000
EntryGT ² Distance	-0.000	0.000	-0.370	0.708	-0.000	0.000
EntryGT ² Distance ²	0.000	0.000	0.260	0.796	-0.000	0.000
StayGTDistance	-0.000	0.000	-0.440	0.657	-0.000	0.000
StayGTDistance ²	-0.000	0.000	-0.300	0.764	-0.000	0.000
StayGT ² Distance	-0.000	0.000	-1.100	0.270	-0.000	0.000
StayGT ² Distance ²	0.000	0.000	1.510	0.132	-0.000	0.000
ExitGTDistance	-0.000	0.000	-1.130	0.258	-0.000	0.000
ExitGTDistance ²	0.000	0.000	1.210	0.225	-0.000	0.000
ExitGT ² Distance	0.000	0.000	0.770	0.439	-0.000	0.000
ExitGT ² Distance ²	-0.000	0.000	-1.010	0.310	-0.000	0.000
Baldovina	-2.617	0.302	-8.650	0.000	-3.209	-2.024
Ciutadella	-9.553	0.368	-25.950	0.000	-10.274	-8.831
Eixample	29.484	0.455	64.790	0.000	28.592	30.375
Gornal	-6.316	0.374	-16.900	0.000	-7.049	-5.584
Vall d'Hebron	34.287	0.640	53.550	0.000	33.032	35.542
Palau Reial	-12.677	0.354	-35.820	0.000	-13.371	-11.984
Poblenou	-3.328	0.351	-9.480	0.000	-4.016	-2.640
Prat1	-5.441	0.499	-10.900	0.000	-6.420	-4.463
Prat2	-3.147	0.531	-5.930	0.000	-4.188	-2.107
Sant Adrià	9.583	0.385	24.900	0.000	8.828	10.337
Sant Gervasi	20.288	0.425	47.760	0.000	19.456	21.121
Sants	-11.843	0.342	-34.620	0.000	-12.514	-11.173
2012	2.041	12.628	0.160	0.872	-22.710	26.791
2013	7.510	9.466	0.790	0.428	-11.042	26.063
2014	11.315	6.336	1.790	0.074	-1.103	23.733
2015	11.894	3.171	3.750	0.000	5.680	18.109
January	-8.285	2.933	-2.820	0.005	-14.034	-2.536
February	-11.937	2.708	-4.410	0.000	-17.245	-6.629
March	-17.847	2.442	-7.310	0.000	-22.632	-13.061
April	-30.670	2.190	-14.010	0.000	-34.962	-26.379
May	-37.824	1.937	-19.530	0.000	-41.619	-34.028

(continued on next page)

Table 17 (continued)

NO _x	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
June	-42.611	1.704	-25.000	0.000	-45.951	-39.270
July	-48.031	1.479	-32.480	0.000	-50.930	-45.133
August	-55.483	1.244	-44.590	0.000	-57.922	-53.044
September	-44.089	1.003	-43.940	0.000	-46.056	-42.122
October	-24.020	0.811	-29.600	0.000	-25.610	-22.430
November	-9.956	0.622	-16.000	0.000	-11.176	-8.736
h1	-5.571	0.292	-19.060	0.000	-6.144	-4.998
h2	-10.696	0.373	-28.660	0.000	-11.427	-9.964
h3	-13.865	0.364	-38.050	0.000	-14.579	-13.150
h4	-15.273	0.359	-42.520	0.000	-15.978	-14.569
h5	-11.524	0.356	-32.330	0.000	-12.222	-10.825
h6	1.011	0.370	2.730	0.006	0.286	1.735
h7	26.202	0.443	59.190	0.000	25.334	27.070
h8	42.751	0.533	80.170	0.000	41.706	43.797
h9	34.222	0.517	66.230	0.000	33.209	35.234
h10	18.175	0.453	40.090	0.000	17.287	19.064
h11	7.988	0.417	19.150	0.000	7.170	8.805
h12	2.589	0.411	6.300	0.000	1.783	3.395
h13	-0.778	0.408	-1.910	0.057	-1.578	0.022
h14	-4.331	0.404	-10.720	0.000	-5.123	-3.539
h15	-5.852	0.403	-14.510	0.000	-6.642	-5.061
h16	-3.808	0.402	-9.460	0.000	-4.596	-3.019
h17	1.368	0.403	3.390	0.001	0.577	2.158
h18	8.881	0.425	20.880	0.000	8.047	9.714
h19	15.439	0.455	33.910	0.000	14.546	16.331
h20	18.584	0.457	40.670	0.000	17.689	19.480
h21	17.093	0.454	37.610	0.000	16.203	17.984
h22	11.715	0.440	26.610	0.000	10.852	12.578
h23	5.722	0.325	17.610	0.000	5.085	6.359
Monday	17.581	0.260	67.620	0.000	17.071	18.090
Tuesday	21.376	0.266	80.280	0.000	20.854	21.898
Wednesday	24.656	0.281	87.700	0.000	24.105	25.207
Thursday	24.340	0.272	89.360	0.000	23.807	24.874
Friday	24.365	0.268	91.080	0.000	23.841	24.889
Saturday	10.205	0.238	42.970	0.000	9.739	10.670
Time	-0.002	0.000	-5.010	0.000	-0.003	-0.001
Time Squared	0.000	0.000	25.670	0.000	0.000	0.000
Temperature	0.722	0.031	23.460	0.000	0.662	0.782
Relative humidity	0.099	0.006	16.270	0.000	0.087	0.111
Pressure	0.899	0.013	70.110	0.000	0.874	0.925
Precipitation	-0.081	0.128	-0.640	0.525	-0.331	0.169
Wind speed	-9.096	0.054	-169.880	0.000	-9.201	-8.991
NNE	-0.149	0.578	-0.260	0.797	-1.283	0.985
NE	-0.338	0.555	-0.610	0.543	-1.426	0.750
ENE	-7.526	0.544	-13.820	0.000	-8.593	-6.459
E	-6.055	0.563	-10.750	0.000	-7.159	-4.952
ESE	-8.977	0.578	-15.520	0.000	-10.110	-7.843
SE	-1.872	0.592	-3.160	0.002	-3.032	-0.713
SSE	4.032	0.578	6.970	0.000	2.899	5.165
S	3.349	0.579	5.780	0.000	2.214	4.485
SSW	3.043	0.564	5.400	0.000	1.937	4.148
SW	2.847	0.538	5.290	0.000	1.793	3.900
WSW	4.987	0.538	9.270	0.000	3.933	6.042
W	4.986	0.529	9.430	0.000	3.949	6.023
WNW	7.147	0.502	14.230	0.000	6.163	8.131
NW	3.879	0.513	7.560	0.000	2.873	4.885
NNW	-0.456	0.584	-0.780	0.435	-1.601	0.689
_cons	-838.408	20.580	-40.740	0.000	-878.744	-798.072

Number of obs = 493,895.

F(116, 493771) = 943.61.

Prob > F = 0.0000.

Table 18Effects of cruise activity at the new terminal in the SO₂ levels. Controlling by gross tonnage.

SO ₂	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval
Entry	-0.406	0.634	-0.640	0.522	-1.649	0.836
EntryGT	0.000	0.000	1.390	0.166	-0.000	0.000
EntryGT ²	-0.000	0.000	-1.270	0.204	-0.000	0.000
EntryAnt	-0.000	0.089	0.000	0.996	-0.175	0.174
EntryAnt ²	-0.002	0.003	-0.740	0.462	-0.007	0.003
Stay	0.444	0.104	4.290	0.000	0.241	0.647
StayGT	0.000	0.000	1.020	0.306	-0.000	0.000
StayGT ²	0.000	0.000	0.240	0.813	-0.000	0.000
StayAnt	0.040	0.038	1.040	0.298	-0.035	0.115
StayAnt ²	-0.001	0.001	-0.670	0.501	-0.003	0.002
Exit	-0.785	0.258	-3.040	0.002	-1.291	-0.278
ExitGT	0.000	0.000	1.190	0.235	-0.000	0.000
ExitGT ²	0.000	0.000	0.080	0.934	-0.000	0.000
ExitAnt	0.232	0.094	2.460	0.014	0.047	0.417
ExitAnt ²	-0.007	0.003	-2.550	0.011	-0.013	-0.002
EntryDistance	0.122	0.169	0.720	0.471	-0.210	0.454
EntryDistance ²	-0.008	0.011	-0.730	0.466	-0.029	0.013
StayDistance	-0.094	0.028	-3.330	0.001	-0.149	-0.039
StayDistance ²	0.005	0.002	2.670	0.008	0.001	0.008
ExitDistance	0.332	0.073	4.550	0.000	0.189	0.474
ExitDistance ²	-0.029	0.005	-5.910	0.000	-0.038	-0.019
EntryAntDistance	0.000	0.024	0.010	0.993	-0.046	0.047
EntryAntDistance ²	-0.000	0.002	-0.010	0.991	-0.003	0.003
EntryAnt ² Distance	0.000	0.001	0.550	0.579	-0.001	0.002
EntryAnt ² Distance ²	-0.000	0.000	-0.410	0.679	-0.000	0.000
StayAntDistance	-0.012	0.011	-1.180	0.239	-0.033	0.008
StayAntDistance ²	0.001	0.001	1.230	0.219	-0.001	0.002
StayAnt ² Distance	0.000	0.000	0.510	0.610	-0.000	0.001
StayAnt ² Distance ²	-0.000	0.000	-0.380	0.707	-0.000	0.000
ExitAntDistance	-0.056	0.025	-2.220	0.026	-0.106	-0.007
ExitAntDistance ²	0.003	0.002	1.920	0.055	-0.000	0.006
ExitAnt ² Distance	0.002	0.001	2.220	0.026	0.000	0.003
ExitAnt ² Distance ²	-0.000	0.000	-1.850	0.064	-0.000	0.000
EntryGTDistance	-0.000	0.000	-0.940	0.345	-0.000	0.000
EntryGTDistance ²	0.000	0.000	0.640	0.525	-0.000	0.000
EntryGT ² Distance	0.000	0.000	0.960	0.337	-0.000	0.000
EntryGT ² Distance ²	-0.000	0.000	-0.680	0.494	-0.000	0.000
StayGTDistance	-0.000	0.000	-0.350	0.723	-0.000	0.000
StayGTDistance ²	-0.000	0.000	-0.210	0.837	-0.000	0.000
StayGT ² Distance	-0.000	0.000	-0.800	0.426	-0.000	0.000
StayGT ² Distance ²	0.000	0.000	1.210	0.227	-0.000	0.000
ExitGTDistance	-0.000	0.000	-1.330	0.182	-0.000	0.000
ExitGTDistance ²	0.000	0.000	1.450	0.147	-0.000	0.000
ExitGT ² Distance	0.000	0.000	0.130	0.894	-0.000	0.000
ExitGT ² Distance ²	-0.000	0.000	-0.310	0.753	-0.000	0.000
Eixample	-1.263	0.026	-48.380	0.000	-1.314	-1.212
Vall d'Hebron	1.005	0.043	23.630	0.000	0.922	1.089
Palau Reial	-0.933	0.023	-41.420	0.000	-0.977	-0.889
Prat1	0.365	0.036	10.110	0.000	0.294	0.436
Prat2	0.282	0.028	9.950	0.000	0.226	0.337
Sant Adrià	-0.432	0.028	-15.690	0.000	-0.486	-0.378
Sant Gervasi	-0.685	0.026	-26.290	0.000	-0.736	-0.634
2012	-0.570	0.903	-0.630	0.528	-2.339	1.200
2013	-0.347	0.677	-0.510	0.608	-1.674	0.980
2014	-0.160	0.453	-0.350	0.724	-1.047	0.728
2015	0.037	0.227	0.160	0.870	-0.407	0.482
January	-0.058	0.207	-0.280	0.778	-0.465	0.348
February	0.027	0.192	0.140	0.886	-0.349	0.404
March	-0.151	0.173	-0.880	0.381	-0.490	0.187
April	-0.278	0.154	-1.810	0.070	-0.579	0.023
May	-0.201	0.136	-1.480	0.139	-0.468	0.065
June	-0.497	0.122	-4.060	0.000	-0.737	-0.257
July	-0.930	0.100	-9.320	0.000	-1.126	-0.735
August	-0.850	0.084	-10.120	0.000	-1.014	-0.685
September	-0.637	0.066	-9.670	0.000	-0.766	-0.508
October	-0.342	0.048	-7.110	0.000	-0.437	-0.248

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Table 18 (continued)

Newey-West						
SO ₂	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
November	0.062	0.033	1.890	0.059	-0.002	0.127
h1	-0.104	0.022	-4.630	0.000	-0.148	-0.060
h2	-0.148	0.028	-5.340	0.000	-0.203	-0.094
h3	-0.177	0.027	-6.500	0.000	-0.230	-0.123
h4	-0.208	0.027	-7.750	0.000	-0.261	-0.155
h5	-0.211	0.027	-7.750	0.000	-0.264	-0.158
h6	-0.111	0.028	-4.030	0.000	-0.166	-0.057
h7	0.219	0.030	7.320	0.000	0.160	0.277
h8	0.535	0.032	16.510	0.000	0.471	0.598
h9	0.490	0.034	14.320	0.000	0.423	0.557
h10	0.307	0.033	9.240	0.000	0.242	0.372
h11	0.167	0.033	5.080	0.000	0.103	0.231
h12	0.102	0.033	3.040	0.002	0.036	0.167
h13	0.113	0.035	3.260	0.001	0.045	0.180
h14	0.028	0.035	0.800	0.422	-0.040	0.096
h15	-0.097	0.034	-2.860	0.004	-0.164	-0.031
h16	-0.162	0.034	-4.820	0.000	-0.228	-0.096
h17	-0.140	0.033	-4.250	0.000	-0.204	-0.075
h18	0.035	0.034	1.020	0.308	-0.032	0.101
h19	0.175	0.034	5.180	0.000	0.109	0.241
h20	0.312	0.033	9.380	0.000	0.247	0.377
h21	0.302	0.033	9.130	0.000	0.237	0.366
h22	0.157	0.031	5.130	0.000	0.097	0.216
h23	0.075	0.026	2.880	0.004	0.024	0.127
Monday	0.257	0.021	12.180	0.000	0.216	0.298
Tuesday	0.318	0.022	14.750	0.000	0.276	0.360
Wednesday	0.290	0.021	13.890	0.000	0.249	0.331
Thursday	0.286	0.021	13.620	0.000	0.245	0.327
Friday	0.331	0.022	14.900	0.000	0.287	0.374
Saturday	0.053	0.021	2.460	0.014	0.011	0.094
Time	-0.000	0.000	-1.540	0.123	-0.000	0.000
Time Squared	0.000	0.000	1.720	0.085	-0.000	0.000
Temperature	0.040	0.002	17.550	0.000	0.036	0.045
Relative humidity	-0.008	0.000	-21.160	0.000	-0.009	-0.008
Pressure	0.025	0.001	30.610	0.000	0.023	0.027
Precipitation	-0.016	0.012	-1.340	0.181	-0.040	0.007
Wind speed	-0.130	0.003	-39.210	0.000	-0.136	-0.123
NNE	-0.055	0.030	-1.850	0.064	-0.113	0.003
NE	-0.042	0.028	-1.510	0.130	-0.097	0.012
ENE	0.028	0.028	0.970	0.330	-0.028	0.084
E	0.183	0.029	6.260	0.000	0.126	0.241
ESE	0.433	0.036	12.210	0.000	0.364	0.503
SE	0.955	0.041	23.540	0.000	0.876	1.035
SSE	1.431	0.041	35.120	0.000	1.351	1.511
S	0.949	0.038	25.240	0.000	0.875	1.022
SSW	0.493	0.033	15.080	0.000	0.429	0.558
SW	0.163	0.029	5.710	0.000	0.107	0.220
WSW	0.145	0.028	5.210	0.000	0.091	0.200
W	0.186	0.027	6.800	0.000	0.132	0.239
WNW	0.207	0.026	7.990	0.000	0.156	0.258
NW	0.331	0.026	12.620	0.000	0.279	0.382
NNW	0.025	0.028	0.870	0.385	-0.031	0.080
_cons	-21.424	1.428	-15.000	0.000	-24.223	-18.625

Number of obs = 250,554.

F(108, 250435) = 154.25.

Prob > F = 0.0000.

Table 19Effects of cruise activity at the old terminal in the SO₂ levels. Controlling by gross tonnage.

SO ₂	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval
Entry	-0.740	0.728	-1.020	0.309	-2.168	0.687
EntryGT	0.000	0.000	0.570	0.572	-0.000	0.000
EntryGT ²	-0.000	0.000	-0.020	0.983	-0.000	0.000
EntryAnt	-0.010	0.050	-0.210	0.835	-0.108	0.087
EntryAnt ²	0.000	0.001	0.560	0.575	-0.001	0.002
Stay	0.391	0.204	1.920	0.055	-0.009	0.790
StayGT	-0.000	0.000	-0.190	0.852	-0.000	0.000
StayGT ²	0.000	0.000	1.350	0.176	-0.000	0.000
StayAnt	-0.015	0.017	-0.900	0.368	-0.049	0.018
StayAnt ²	0.000	0.000	1.310	0.189	-0.000	0.001
Exit	0.925	1.318	0.700	0.483	-1.658	3.507
ExitGT	0.000	0.000	0.760	0.447	-0.000	0.000
ExitGT ²	-0.000	0.000	-0.400	0.687	-0.000	0.000
ExitAnt	-0.023	0.067	-0.340	0.737	-0.154	0.109
ExitAnt ²	0.000	0.001	0.170	0.862	-0.001	0.002
EntryDistance	0.106	0.245	0.430	0.667	-0.375	0.586
EntryDistance ²	-0.002	0.019	-0.120	0.907	-0.039	0.035
StayDistance	-0.120	0.066	-1.820	0.069	-0.249	0.009
StayDistance ²	0.007	0.005	1.420	0.156	-0.003	0.017
ExitDistance	-0.093	0.408	-0.230	0.819	-0.894	0.707
ExitDistance ²	-0.008	0.030	-0.270	0.788	-0.066	0.050
EntryAntDistance	0.007	0.016	0.440	0.660	-0.025	0.039
EntryAntDistance ²	-0.001	0.001	-0.560	0.573	-0.003	0.002
EntryAnt ² Distance	-0.000	0.000	-0.770	0.443	-0.001	0.000
EntryAnt ² Distance ²	0.000	0.000	0.880	0.377	-0.000	0.000
StayAntDistance	0.005	0.006	0.870	0.384	-0.006	0.016
StayAntDistance ²	-0.000	0.000	-0.470	0.639	-0.001	0.001
StayAnt ² Distance	-0.000	0.000	-1.100	0.273	-0.000	0.000
StayAnt ² Distance ²	0.000	0.000	0.720	0.474	-0.000	0.000
ExitAntDistance	-0.001	0.021	-0.030	0.977	-0.042	0.041
ExitAntDistance ²	0.001	0.002	0.450	0.655	-0.002	0.004
ExitAnt ² Distance	0.000	0.000	0.150	0.881	-0.000	0.001
ExitAnt ² Distance ²	-0.000	0.000	-0.540	0.589	-0.000	0.000
EntryGTDistance	-0.000	0.000	-0.050	0.960	-0.000	0.000
EntryGTDistance ²	-0.000	0.000	-0.170	0.862	-0.000	0.000
EntryGT ² Distance	-0.000	0.000	-0.420	0.678	-0.000	0.000
EntryGT ² Distance ²	0.000	0.000	0.600	0.551	-0.000	0.000
StayGTDistance	0.000	0.000	1.200	0.229	-0.000	0.000
StayGTDistance ²	-0.000	0.000	-2.190	0.029	-0.000	-0.000
StayGT ² Distance	-0.000	0.000	-2.050	0.040	-0.000	-0.000
StayGT ² Distance ²	0.000	0.000	2.860	0.004	0.000	0.000
ExitGTDistance	-0.000	0.000	-0.670	0.501	-0.000	0.000
ExitGTDistance ²	0.000	0.000	0.450	0.655	-0.000	0.000
ExitGT ² Distance	0.000	0.000	0.450	0.653	-0.000	0.000
ExitGT ² Distance ²	-0.000	0.000	-0.240	0.810	-0.000	0.000
Eixample	-1.093	0.023	-46.600	0.000	-1.139	-1.047
Vall d'Hebron	0.939	0.041	23.000	0.000	0.859	1.019
Palau Reial	-0.914	0.019	-47.320	0.000	-0.952	-0.876
Prat1	0.332	0.032	10.240	0.000	0.268	0.395
Prat2	0.214	0.025	8.450	0.000	0.164	0.263
Sant Adrià	-0.485	0.026	-18.470	0.000	-0.537	-0.434
Sant Gervasi	-0.630	0.023	-26.870	0.000	-0.676	-0.584
2012	-0.452	0.905	-0.500	0.618	-2.226	1.322
2013	-0.265	0.679	-0.390	0.697	-1.595	1.066
2014	-0.114	0.454	-0.250	0.801	-1.004	0.776
2015	0.061	0.227	0.270	0.787	-0.384	0.507
January	-0.036	0.208	-0.170	0.864	-0.443	0.372
February	0.047	0.193	0.240	0.807	-0.330	0.424
March	-0.132	0.173	-0.760	0.448	-0.471	0.208
April	-0.235	0.154	-1.520	0.128	-0.538	0.067
May	-0.152	0.136	-1.120	0.263	-0.419	0.115
June	-0.449	0.123	-3.660	0.000	-0.689	-0.209
July	-0.886	0.100	-8.880	0.000	-1.081	-0.690
August	-0.799	0.084	-9.530	0.000	-0.963	-0.634
September	-0.588	0.066	-8.920	0.000	-0.718	-0.459
October	-0.297	0.048	-6.160	0.000	-0.391	-0.202

(continued on next page)

Table 19 (continued)

Newey-West						
SO ₂	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
November	0.086	0.033	2.610	0.009	0.021	0.151
h1	-0.107	0.022	-4.750	0.000	-0.151	-0.063
h2	-0.151	0.028	-5.440	0.000	-0.206	-0.097
h3	-0.180	0.027	-6.640	0.000	-0.234	-0.127
h4	-0.212	0.027	-7.890	0.000	-0.265	-0.159
h5	-0.181	0.027	-6.690	0.000	-0.234	-0.128
h6	-0.065	0.027	-2.370	0.018	-0.119	-0.011
h7	0.244	0.030	8.040	0.000	0.184	0.303
h8	0.588	0.033	18.020	0.000	0.524	0.652
h9	0.576	0.033	17.370	0.000	0.511	0.640
h10	0.369	0.033	11.320	0.000	0.305	0.433
h11	0.221	0.032	6.870	0.000	0.158	0.284
h12	0.164	0.032	5.060	0.000	0.101	0.228
h13	0.194	0.034	5.770	0.000	0.128	0.260
h14	0.129	0.033	3.850	0.000	0.063	0.194
h15	-0.020	0.033	-0.610	0.545	-0.084	0.044
h16	-0.091	0.032	-2.810	0.005	-0.154	-0.028
h17	-0.055	0.032	-1.730	0.083	-0.117	0.007
h18	0.131	0.034	3.860	0.000	0.064	0.197
h19	0.256	0.033	7.830	0.000	0.192	0.320
h20	0.367	0.033	11.130	0.000	0.303	0.432
h21	0.318	0.033	9.620	0.000	0.253	0.382
h22	0.165	0.031	5.410	0.000	0.105	0.225
h23	0.083	0.026	3.160	0.002	0.031	0.134
Monday	0.253	0.021	12.230	0.000	0.212	0.293
Tuesday	0.292	0.021	13.840	0.000	0.251	0.333
Wednesday	0.268	0.021	13.010	0.000	0.228	0.309
Thursday	0.255	0.020	12.450	0.000	0.215	0.295
Friday	0.317	0.022	14.600	0.000	0.275	0.360
Saturday	0.033	0.020	1.640	0.101	-0.007	0.073
Time	-0.000	0.000	-1.390	0.165	-0.000	0.000
Time Squared	0.000	0.000	1.620	0.106	-0.000	0.000
Temperature	0.040	0.002	17.430	0.000	0.035	0.044
Relative humidity	-0.008	0.000	-20.680	0.000	-0.009	-0.007
Pressure	0.025	0.001	30.390	0.000	0.023	0.027
Precipitation	-0.014	0.012	-1.100	0.271	-0.038	0.011
Wind speed	-0.127	0.003	-38.170	0.000	-0.133	-0.120
NNE	-0.056	0.030	-1.900	0.057	-0.114	0.002
NE	-0.049	0.028	-1.760	0.079	-0.103	0.006
ENE	0.013	0.029	0.470	0.639	-0.043	0.069
E	0.177	0.029	6.030	0.000	0.119	0.234
ESE	0.429	0.036	12.040	0.000	0.359	0.499
SE	0.956	0.041	23.540	0.000	0.877	1.036
SSE	1.423	0.041	34.810	0.000	1.343	1.503
S	0.931	0.038	24.730	0.000	0.857	1.005
SSW	0.463	0.033	14.150	0.000	0.399	0.527
SW	0.165	0.029	5.750	0.000	0.109	0.221
WSW	0.148	0.028	5.300	0.000	0.093	0.203
W	0.184	0.027	6.740	0.000	0.131	0.238
WNW	0.215	0.026	8.320	0.000	0.165	0.266
NW	0.345	0.026	13.130	0.000	0.293	0.396
NNW	0.038	0.028	1.330	0.183	-0.018	0.094
_cons	-21.505	1.433	-15.010	0.000	-24.313	-18.697

Number of obs = 250,554.

F(108, 250435) = 154.19.

Prob > F = 0.0000.

Table 20Effects of cruise activity at the new terminal in the O₃ levels. Controlling by gross tonnage.

O ₃	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval
Entry	-0.476	3.272	-0.150	0.884	-6.889	5.937
EntryGT	-0.000	0.000	-0.490	0.624	-0.000	0.000
EntryGT ²	0.000	0.000	0.180	0.854	-0.000	0.000
EntryAnt	-0.494	0.509	-0.970	0.332	-1.491	0.504
EntryAnt ²	0.023	0.016	1.370	0.170	-0.010	0.055
Stay	-3.673	0.621	-5.920	0.000	-4.890	-2.456
StayGT	-0.000	0.000	-4.750	0.000	-0.000	-0.000
StayGT ²	0.000	0.000	3.940	0.000	0.000	0.000
StayAnt	0.277	0.273	1.010	0.312	-0.259	0.812
StayAnt ²	0.001	0.010	0.110	0.912	-0.018	0.020
Exit	9.386	1.176	7.980	0.000	7.081	11.691
ExitGT	-0.000	0.000	-4.870	0.000	-0.001	-0.000
ExitGT ²	0.000	0.000	3.460	0.001	0.000	0.000
ExitAnt	-0.739	0.519	-1.420	0.154	-1.757	0.278
ExitAnt ²	0.023	0.017	1.360	0.174	-0.010	0.057
EntryDistance	-0.380	0.982	-0.390	0.699	-2.305	1.545
EntryDistance ²	0.028	0.066	0.410	0.679	-0.103	0.158
StayDistance	0.932	0.187	4.980	0.000	0.565	1.298
StayDistance ²	-0.041	0.013	-3.210	0.001	-0.066	-0.016
ExitDistance	-3.308	0.410	-8.070	0.000	-4.112	-2.504
ExitDistance ²	0.244	0.032	7.660	0.000	0.182	0.307
EntryAntDistance	0.090	0.151	0.600	0.549	-0.205	0.385
EntryAntDistance ²	-0.006	0.010	-0.600	0.550	-0.026	0.014
EntryAnt ² Distance	-0.003	0.005	-0.670	0.503	-0.013	0.006
EntryAnt ² Distance ²	0.000	0.000	0.550	0.585	-0.000	0.001
StayAntDistance	-0.041	0.083	-0.490	0.627	-0.204	0.123
StayAntDistance ²	0.004	0.006	0.710	0.476	-0.007	0.015
StayAnt ² Distance	-0.000	0.003	-0.020	0.981	-0.006	0.006
StayAnt ² Distance ²	-0.000	0.000	-0.130	0.895	-0.000	0.000
ExitAntDistance	0.213	0.160	1.340	0.182	-0.100	0.526
ExitAntDistance ²	-0.010	0.011	-0.920	0.359	-0.032	0.011
ExitAnt ² Distance	-0.005	0.005	-0.970	0.333	-0.015	0.005
ExitAnt ² Distance ²	0.000	0.000	0.690	0.490	-0.000	0.001
EntryGTDistance	0.000	0.000	0.740	0.458	-0.000	0.000
EntryGTDistance ²	-0.000	0.000	-0.510	0.613	-0.000	0.000
EntryGT ² Distance	-0.000	0.000	-0.480	0.630	-0.000	0.000
EntryGT ² Distance ²	0.000	0.000	0.090	0.926	-0.000	0.000
StayGTDistance	0.000	0.000	2.260	0.024	0.000	0.000
StayGTDistance ²	-0.000	0.000	-1.360	0.174	-0.000	0.000
StayGT ² Distance	-0.000	0.000	-1.660	0.097	-0.000	0.000
StayGT ² Distance ²	0.000	0.000	0.940	0.346	-0.000	0.000
ExitGTDistance	0.000	0.000	3.510	0.000	0.000	0.000
ExitGTDistance ²	-0.000	0.000	-2.530	0.011	-0.000	-0.000
ExitGT ² Distance	-0.000	0.000	-2.130	0.033	-0.000	-0.000
ExitGT ² Distance ²	0.000	0.000	1.440	0.149	-0.000	0.000
Ciutadella	-1.846	0.227	-8.150	0.000	-2.290	-1.402
Eixample	-7.697	0.222	-34.630	0.000	-8.133	-7.262
Vall d'Hebron	-12.455	0.381	-32.690	0.000	-13.202	-11.709
Palau Reial	9.208	0.230	40.100	0.000	8.758	9.658
Prat2	-3.416	0.285	-12.000	0.000	-3.974	-2.858
Sant Adrià	-5.127	0.215	-23.880	0.000	-5.548	-4.706
Sant Gervasi	-3.794	0.228	-16.640	0.000	-4.240	-3.347
2012	-38.732	7.727	-5.010	0.000	-53.877	-23.587
2013	-29.185	5.801	-5.030	0.000	-40.556	-17.815
2014	-22.773	3.881	-5.870	0.000	-30.380	-15.166
2015	-11.922	1.948	-6.120	0.000	-15.740	-8.104
January	-5.420	1.779	-3.050	0.002	-8.906	-1.934
February	3.212	1.629	1.970	0.049	0.020	6.405
March	14.268	1.475	9.680	0.000	11.378	17.159
April	21.662	1.313	16.500	0.000	19.089	24.234
May	23.151	1.150	20.120	0.000	20.897	25.406
June	23.119	1.004	23.020	0.000	21.150	25.087
July	21.490	0.868	24.760	0.000	19.789	23.191
August	21.289	0.720	29.560	0.000	19.877	22.700
September	17.349	0.559	31.040	0.000	16.253	18.444
October	4.525	0.409	11.070	0.000	3.724	5.326

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Table 20 (continued)

Newey-West						
O ₃	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
November	-0.371	0.260	-1.420	0.155	-0.881	0.140
h1	0.155	0.199	0.780	0.436	-0.235	0.546
h2	0.553	0.260	2.120	0.034	0.043	1.063
h3	0.139	0.261	0.530	0.594	-0.372	0.651
h4	-0.809	0.262	-3.090	0.002	-1.323	-0.296
h5	-3.301	0.262	-12.590	0.000	-3.815	-2.787
h6	-8.795	0.260	-33.830	0.000	-9.304	-8.285
h7	-15.325	0.250	-61.360	0.000	-15.815	-14.835
h8	-14.657	0.245	-59.840	0.000	-15.138	-14.177
h9	-9.031	0.252	-35.880	0.000	-9.525	-8.538
h10	-2.875	0.253	-11.380	0.000	-3.371	-2.380
h11	2.250	0.257	8.750	0.000	1.746	2.753
h12	6.531	0.263	24.800	0.000	6.015	7.047
h13	9.908	0.270	36.660	0.000	9.378	10.438
h14	12.692	0.276	45.930	0.000	12.150	13.233
h15	13.532	0.278	48.710	0.000	12.987	14.076
h16	11.917	0.278	42.820	0.000	11.371	12.462
h17	8.457	0.277	30.520	0.000	7.914	9.000
h18	5.107	0.273	18.700	0.000	4.572	5.643
h19	2.332	0.268	8.690	0.000	1.806	2.858
h20	0.477	0.258	1.850	0.064	-0.028	0.982
h21	-0.027	0.252	-0.110	0.913	-0.521	0.466
h22	0.252	0.253	1.000	0.318	-0.243	0.748
h23	0.311	0.201	1.550	0.121	-0.082	0.704
Monday	-7.069	0.176	-40.070	0.000	-7.415	-6.723
Tuesday	-8.101	0.181	-44.860	0.000	-8.455	-7.747
Wednesday	-8.567	0.180	-47.460	0.000	-8.920	-8.213
Thursday	-8.107	0.184	-44.140	0.000	-8.466	-7.747
Friday	-8.977	0.175	-51.280	0.000	-9.320	-8.634
Saturday	-3.883	0.180	-21.610	0.000	-4.236	-3.531
Time	-0.001	0.000	-2.650	0.008	-0.001	-0.000
Time Squared	-0.000	0.000	-14.080	0.000	-0.000	-0.000
Temperature	0.535	0.019	28.570	0.000	0.499	0.572
Relative humidity	-0.210	0.004	-58.710	0.000	-0.217	-0.203
Pressure	-0.349	0.007	-48.670	0.000	-0.363	-0.335
Precipitation	0.459	0.105	4.370	0.000	0.253	0.665
Wind speed	4.810	0.032	150.170	0.000	4.747	4.872
NNE	0.516	0.320	1.610	0.107	-0.112	1.144
NE	2.544	0.305	8.350	0.000	1.946	3.141
ENE	10.787	0.301	35.830	0.000	10.197	11.377
E	10.491	0.297	35.340	0.000	9.909	11.073
ESE	14.369	0.317	45.340	0.000	13.748	14.990
SE	10.165	0.321	31.630	0.000	9.535	10.795
SSE	5.803	0.313	18.560	0.000	5.190	6.416
S	3.540	0.315	11.250	0.000	2.923	4.157
SSW	3.168	0.297	10.670	0.000	2.586	3.750
SW	0.479	0.282	1.700	0.090	-0.075	1.032
WSW	-3.119	0.276	-11.300	0.000	-3.660	-2.579
W	-5.168	0.271	-19.100	0.000	-5.698	-4.637
WNW	-8.879	0.263	-33.710	0.000	-9.395	-8.363
NW	-5.968	0.268	-22.240	0.000	-6.494	-5.442
NNW	-2.767	0.303	-9.130	0.000	-3.361	-2.173
_cons	425.006	12.095	35.140	0.000	401.300	448.712

Number of obs = 311,030.

F(108, 310911) = 2878.46.

Prob > F = 0.0000.

Table 21Effects of cruise activity at the old terminal in the O₃ levels. Controlling by gross tonnage.

O ₃	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval
Entry	-0.143	4.007	-0.040	0.972	-7.997	7.710
EntryGT	-0.000	0.000	-0.290	0.774	-0.001	0.000
EntryGT ²	-0.000	0.000	-0.310	0.756	-0.000	0.000
EntryAnt	-0.279	0.235	-1.190	0.235	-0.739	0.181
EntryAnt ²	0.006	0.003	1.820	0.068	-0.000	0.013
Stay	0.498	0.892	0.560	0.577	-1.251	2.247
StayGT	-0.000	0.000	-1.750	0.080	-0.000	0.000
StayGT ²	-0.000	0.000	-0.180	0.859	-0.000	0.000
StayAnt	-0.165	0.087	-1.900	0.058	-0.336	0.006
StayAnt ²	0.003	0.002	1.750	0.081	-0.000	0.006
Exit	6.782	4.311	1.570	0.116	-1.668	15.231
ExitGT	-0.000	0.000	-1.220	0.222	-0.001	0.000
ExitGT ²	0.000	0.000	0.770	0.443	-0.000	0.000
ExitAnt	-0.103	0.235	-0.440	0.661	-0.564	0.358
ExitAnt ²	0.000	0.003	0.090	0.928	-0.006	0.007
EntryDistance	-0.491	1.595	-0.310	0.758	-3.617	2.635
EntryDistance ²	0.018	0.135	0.130	0.895	-0.246	0.282
StayDistance	0.140	0.355	0.400	0.692	-0.555	0.836
StayDistance ²	0.014	0.030	0.460	0.648	-0.046	0.074
ExitDistance	-3.524	1.765	-2.000	0.046	-6.984	-0.065
ExitDistance ²	0.362	0.153	2.360	0.018	0.061	0.662
EntryAntDistance	0.180	0.093	1.930	0.054	-0.003	0.363
EntryAntDistance ²	-0.018	0.008	-2.230	0.026	-0.033	-0.002
EntryAnt ² Distance	-0.003	0.001	-2.070	0.038	-0.006	-0.000
EntryAnt ² Distance ²	0.000	0.000	2.320	0.021	0.000	0.001
StayAntDistance	0.069	0.035	1.990	0.047	0.001	0.137
StayAntDistance ²	-0.005	0.003	-1.840	0.066	-0.011	0.000
StayAnt ² Distance	-0.001	0.001	-1.860	0.063	-0.002	0.000
StayAnt ² Distance ²	0.000	0.000	2.180	0.029	0.000	0.000
ExitAntDistance	0.128	0.096	1.340	0.181	-0.060	0.316
ExitAntDistance ²	-0.011	0.008	-1.350	0.176	-0.027	0.005
ExitAnt ² Distance	-0.001	0.001	-1.080	0.281	-0.004	0.001
ExitAnt ² Distance ²	0.000	0.000	1.160	0.247	-0.000	0.000
EntryGTDistance	-0.000	0.000	-0.680	0.494	-0.000	0.000
EntryGTDistance ²	0.000	0.000	0.990	0.321	-0.000	0.000
EntryGT ² Distance	0.000	0.000	1.160	0.246	-0.000	0.000
EntryGT ² Distance ²	-0.000	0.000	-1.400	0.162	-0.000	0.000
StayGTDistance	-0.000	0.000	-0.900	0.369	-0.000	0.000
StayGTDistance ²	0.000	0.000	1.350	0.177	-0.000	0.000
StayGT ² Distance	0.000	0.000	2.520	0.012	0.000	0.000
StayGT ² Distance ²	-0.000	0.000	-2.580	0.010	-0.000	-0.000
ExitGTDistance	0.000	0.000	1.060	0.290	-0.000	0.000
ExitGTDistance ²	-0.000	0.000	-0.760	0.445	-0.000	0.000
ExitGT ² Distance	-0.000	0.000	-0.570	0.568	-0.000	0.000
ExitGT ² Distance ²	0.000	0.000	0.390	0.694	-0.000	0.000
Ciutadella	-4.709	0.196	-24.000	0.000	-5.093	-4.324
Eixample	-10.678	0.191	-56.020	0.000	-11.051	-10.304
Vall d'Hebron	-13.167	0.364	-36.140	0.000	-13.881	-12.453
Palau Reial	7.429	0.191	38.860	0.000	7.054	7.803
Prat2	-4.130	0.259	-15.950	0.000	-4.638	-3.623
Sant Adrià	-5.581	0.192	-29.080	0.000	-5.957	-5.205
Sant Gervasi	-5.833	0.193	-30.270	0.000	-6.211	-5.455
2012	-38.328	7.788	-4.920	0.000	-53.592	-23.064
2013	-28.756	5.846	-4.920	0.000	-40.214	-17.297
2014	-22.508	3.911	-5.760	0.000	-30.173	-14.843
2015	-11.661	1.963	-5.940	0.000	-15.509	-7.813
January	-5.355	1.793	-2.990	0.003	-8.868	-1.841
February	3.199	1.641	1.950	0.051	-0.018	6.416
March	14.428	1.486	9.710	0.000	11.515	17.342
April	21.860	1.324	16.510	0.000	19.265	24.454
May	23.389	1.160	20.170	0.000	21.116	25.662
June	23.331	1.012	23.050	0.000	21.347	25.314
July	21.745	0.874	24.870	0.000	20.031	23.459
August	21.673	0.724	29.920	0.000	20.253	23.092
September	17.505	0.562	31.120	0.000	16.402	18.607
October	4.622	0.411	11.240	0.000	3.816	5.428

(continued on next page)

Table 21 (continued)

Newey-West						
O ₃	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
November	-0.288	0.262	-1.100	0.271	-0.801	0.225
h1	0.146	0.200	0.730	0.465	-0.246	0.538
h2	0.546	0.262	2.090	0.037	0.033	1.059
h3	0.132	0.262	0.500	0.615	-0.382	0.646
h4	-0.822	0.264	-3.120	0.002	-1.339	-0.305
h5	-3.710	0.263	-14.090	0.000	-4.226	-3.194
h6	-9.148	0.258	-35.400	0.000	-9.654	-8.641
h7	-15.059	0.249	-60.430	0.000	-15.548	-14.571
h8	-14.553	0.242	-60.020	0.000	-15.028	-14.078
h9	-9.300	0.241	-38.560	0.000	-9.773	-8.827
h10	-2.802	0.245	-11.450	0.000	-3.282	-2.323
h11	2.476	0.249	9.950	0.000	1.989	2.964
h12	6.667	0.255	26.130	0.000	6.167	7.167
h13	9.908	0.261	37.890	0.000	9.395	10.420
h14	12.708	0.265	47.930	0.000	12.188	13.227
h15	13.740	0.267	51.470	0.000	13.217	14.263
h16	12.117	0.268	45.260	0.000	11.592	12.642
h17	8.936	0.266	33.560	0.000	8.414	9.457
h18	5.719	0.262	21.840	0.000	5.206	6.232
h19	2.856	0.259	11.050	0.000	2.350	3.363
h20	0.856	0.253	3.380	0.001	0.360	1.352
h21	0.019	0.251	0.080	0.938	-0.473	0.512
h22	0.298	0.253	1.180	0.239	-0.198	0.794
h23	0.381	0.201	1.900	0.058	-0.012	0.775
Monday	-7.373	0.172	-42.840	0.000	-7.711	-7.036
Tuesday	-8.295	0.174	-47.690	0.000	-8.636	-7.954
Wednesday	-8.772	0.175	-50.270	0.000	-9.114	-8.430
Thursday	-8.375	0.175	-47.900	0.000	-8.718	-8.032
Friday	-9.348	0.171	-54.680	0.000	-9.683	-9.013
Saturday	-3.582	0.173	-20.720	0.000	-3.921	-3.243
Time	-0.001	0.000	-2.620	0.009	-0.001	-0.000
Time Squared	-0.000	0.000	-13.730	0.000	-0.000	-0.000
Temperature	0.519	0.019	27.560	0.000	0.482	0.556
Relative humidity	-0.211	0.004	-58.640	0.000	-0.218	-0.204
Pressure	-0.351	0.007	-48.720	0.000	-0.365	-0.337
Precipitation	0.484	0.106	4.570	0.000	0.276	0.691
Wind speed	4.772	0.032	148.930	0.000	4.709	4.835
NNE	0.491	0.320	1.530	0.125	-0.137	1.119
NE	2.627	0.305	8.620	0.000	2.029	3.224
ENE	11.067	0.302	36.640	0.000	10.475	11.659
E	10.616	0.298	35.660	0.000	10.032	11.199
ESE	14.599	0.318	45.880	0.000	13.975	15.222
SE	10.322	0.323	31.970	0.000	9.690	10.955
SSE	6.079	0.313	19.400	0.000	5.465	6.693
S	3.755	0.315	11.920	0.000	3.137	4.372
SSW	3.365	0.297	11.320	0.000	2.782	3.947
SW	0.341	0.283	1.200	0.228	-0.214	0.896
WSW	-3.138	0.276	-11.350	0.000	-3.680	-2.596
W	-5.183	0.271	-19.100	0.000	-5.715	-4.651
WNW	-9.174	0.264	-34.740	0.000	-9.692	-8.656
NW	-6.090	0.269	-22.600	0.000	-6.619	-5.562
NNW	-2.832	0.304	-9.320	0.000	-3.428	-2.236
_cons	428.240	12.163	35.210	0.000	404.401	452.079

Number of obs = 311,030.

F(111, 310911) = 2966.57.

Prob > F = 0.0000.

Table 22

Effects of cruise activity at the new terminal in the CO levels. Controlling by gross tonnage.

CO	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	0.215	0.102	2.100	0.036	0.014	0.416
EntryGT	0.000	0.000	3.610	0.000	0.000	0.000
EntryGT ²	-0.000	0.000	-4.920	0.000	-0.000	-0.000
EntryAnt	-0.025	0.013	-1.890	0.059	-0.052	0.001
EntryAnt ²	0.000	0.000	0.080	0.938	-0.001	0.001
Stay	0.016	0.011	1.430	0.152	-0.006	0.037
StayGT	0.000	0.000	11.010	0.000	0.000	0.000
StayGT ²	-0.000	0.000	-11.140	0.000	-0.000	-0.000
StayAnt	-0.009	0.005	-1.740	0.081	-0.019	0.001
StayAnt ²	-0.000	0.000	-0.530	0.596	-0.000	0.000
Exit	0.042	0.028	1.530	0.125	-0.012	0.096
ExitGT	0.000	0.000	4.020	0.000	0.000	0.000
ExitGT ²	-0.000	0.000	-3.880	0.000	-0.000	-0.000
ExitAnt	0.013	0.011	1.240	0.216	-0.008	0.034
ExitAnt ²	-0.001	0.000	-2.270	0.023	-0.001	-0.000
EntryDistance	-0.055	0.027	-2.060	0.040	-0.108	-0.003
EntryDistance ²	0.003	0.002	2.040	0.042	0.000	0.007
StayDistance	-0.006	0.003	-1.870	0.061	-0.012	0.000
StayDistance ²	0.000	0.000	2.250	0.024	0.000	0.001
ExitDistance	-0.015	0.008	-1.930	0.053	-0.031	0.000
ExitDistance ²	0.001	0.001	1.550	0.122	-0.000	0.002
EntryAntDistance	0.007	0.004	1.970	0.049	0.000	0.014
EntryAntDistance ²	-0.000	0.000	-1.580	0.113	-0.001	0.000
EntryAnt ² Distance	-0.000	0.000	-0.480	0.629	-0.000	0.000
EntryAnt ² Distance ²	0.000	0.000	0.340	0.734	-0.000	0.000
StayAntDistance	0.002	0.001	1.080	0.281	-0.001	0.004
StayAntDistance ²	-0.000	0.000	-0.560	0.578	-0.000	0.000
StayAnt ² Distance	0.000	0.000	0.860	0.387	-0.000	0.000
StayAnt ² Distance ²	-0.000	0.000	-1.050	0.292	-0.000	0.000
ExitAntDistance	-0.004	0.003	-1.450	0.147	-0.010	0.002
ExitAntDistance ²	0.000	0.000	1.570	0.115	-0.000	0.001
ExitAnt ² Distance	0.000	0.000	2.140	0.033	0.000	0.000
ExitAnt ² Distance ²	-0.000	0.000	-1.970	0.049	-0.000	-0.000
EntryGTDistance	-0.000	0.000	-3.230	0.001	-0.000	-0.000
EntryGTDistance ²	0.000	0.000	2.380	0.017	0.000	0.000
EntryGT ² Distance	0.000	0.000	4.340	0.000	0.000	0.000
EntryGT ² Distance ²	-0.000	0.000	-3.090	0.002	-0.000	-0.000
StayGTDistance	-0.000	0.000	-9.210	0.000	-0.000	-0.000
StayGTDistance ²	0.000	0.000	7.090	0.000	0.000	0.000
StayGT ² Distance	0.000	0.000	9.020	0.000	0.000	0.000
StayGT ² Distance ²	-0.000	0.000	-6.770	0.000	-0.000	-0.000
ExitGTDistance	-0.000	0.000	-2.920	0.004	-0.000	-0.000
ExitGTDistance ²	0.000	0.000	1.750	0.079	-0.000	0.000
ExitGT ² Distance	0.000	0.000	2.610	0.009	0.000	0.000
ExitGT ² Distance ²	-0.000	0.000	-1.420	0.157	-0.000	0.000
Eixample	0.297	0.004	82.560	0.000	0.290	0.304
Vall d'Hebron	0.203	0.006	33.170	0.000	0.191	0.215
Palau Reial	0.049	0.003	14.790	0.000	0.043	0.056
Prat2	0.101	0.004	25.260	0.000	0.093	0.108
Sant Gervasi	0.182	0.003	54.220	0.000	0.175	0.188
2012	-0.133	0.130	-1.020	0.306	-0.387	0.121
2013	-0.077	0.097	-0.790	0.429	-0.267	0.114
2014	-0.079	0.065	-1.210	0.226	-0.206	0.049
2015	0.022	0.033	0.670	0.504	-0.042	0.086
January	-0.053	0.030	-1.760	0.078	-0.113	0.006
February	-0.057	0.028	-2.040	0.042	-0.112	-0.002
March	-0.071	0.025	-2.820	0.005	-0.121	-0.022
April	-0.124	0.023	-5.440	0.000	-0.168	-0.079
May	-0.153	0.020	-7.590	0.000	-0.193	-0.114
June	-0.189	0.018	-10.640	0.000	-0.224	-0.154
July	-0.194	0.016	-12.490	0.000	-0.225	-0.164
August	-0.237	0.013	-18.200	0.000	-0.263	-0.212
September	-0.164	0.011	-15.600	0.000	-0.185	-0.144
October	-0.066	0.009	-7.760	0.000	-0.083	-0.050
November	-0.017	0.006	-2.620	0.009	-0.029	-0.004
h1	-0.040	0.003	-13.600	0.000	-0.046	-0.034

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Table 22 (continued)

Newey-West						
CO	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
h2	-0.066	0.004	-17.770	0.000	-0.073	-0.059
h3	-0.081	0.004	-22.150	0.000	-0.088	-0.074
h4	-0.090	0.004	-25.060	0.000	-0.097	-0.083
h5	-0.090	0.004	-24.880	0.000	-0.097	-0.083
h6	-0.056	0.004	-15.050	0.000	-0.063	-0.048
h7	0.057	0.004	13.820	0.000	0.049	0.065
h8	0.170	0.005	31.870	0.000	0.159	0.180
h9	0.137	0.005	25.430	0.000	0.126	0.148
h10	0.031	0.004	7.160	0.000	0.023	0.040
h11	-0.003	0.004	-0.680	0.499	-0.011	0.005
h12	-0.009	0.004	-2.110	0.035	-0.017	-0.001
h13	0.009	0.005	1.980	0.047	0.000	0.018
h14	0.027	0.005	5.630	0.000	0.017	0.036
h15	0.003	0.005	0.740	0.457	-0.006	0.012
h16	0.004	0.005	0.950	0.344	-0.005	0.013
h17	0.024	0.004	5.330	0.000	0.015	0.033
h18	0.080	0.005	17.340	0.000	0.071	0.090
h19	0.130	0.005	26.550	0.000	0.120	0.139
h20	0.149	0.005	30.750	0.000	0.140	0.159
h21	0.124	0.005	26.310	0.000	0.114	0.133
h22	0.066	0.005	14.680	0.000	0.058	0.075
h23	0.027	0.003	8.170	0.000	0.021	0.034
Monday	0.088	0.003	29.820	0.000	0.082	0.094
Tuesday	0.100	0.003	33.980	0.000	0.094	0.106
Wednesday	0.114	0.003	37.530	0.000	0.108	0.120
Thursday	0.110	0.003	36.930	0.000	0.105	0.116
Friday	0.097	0.003	35.220	0.000	0.092	0.103
Saturday	0.032	0.003	12.450	0.000	0.027	0.037
Time	-0.000	0.000	-2.680	0.007	-0.000	-0.000
Time Squared	0.000	0.000	8.200	0.000	0.000	0.000
Temperature	0.003	0.000	9.370	0.000	0.002	0.003
Relative humidity	0.001	0.000	13.990	0.000	0.001	0.001
Pressure	0.004	0.000	31.510	0.000	0.004	0.004
Precipitation	-0.010	0.001	-8.150	0.000	-0.012	-0.007
Wind speed	-0.020	0.000	-49.270	0.000	-0.021	-0.019
NNE	0.016	0.005	3.180	0.001	0.006	0.026
NE	0.022	0.005	4.530	0.000	0.013	0.032
ENE	0.033	0.005	6.560	0.000	0.023	0.043
E	0.064	0.005	11.940	0.000	0.053	0.074
ESE	0.056	0.006	9.870	0.000	0.045	0.068
SE	0.074	0.005	13.510	0.000	0.063	0.085
SSE	0.088	0.006	15.360	0.000	0.077	0.100
S	0.072	0.006	12.690	0.000	0.061	0.083
SSW	0.061	0.005	11.660	0.000	0.051	0.071
SW	0.029	0.005	6.110	0.000	0.020	0.038
WSW	0.021	0.005	4.590	0.000	0.012	0.031
W	0.007	0.005	1.470	0.142	-0.002	0.016
WNW	-0.005	0.004	-1.060	0.289	-0.013	0.004
NW	-0.001	0.004	-0.140	0.891	-0.009	0.008
NNW	-0.016	0.005	-3.390	0.001	-0.026	-0.007
_cons	-3.532	0.206	-17.140	0.000	-3.935	-3.128

Number of obs = 191,147.

F(106, 191030) = 303.74.

Prob > F = 0.0000.

Table 23

Effects of cruise activity at the old terminal in the CO levels. Controlling by gross tonnage.

Newey-West						
CO	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	0.000	0.117	0.000	0.998	-0.230	0.230
EntryGT	-0.000	0.000	-1.220	0.222	-0.000	0.000
EntryGT ²	0.000	0.000	1.450	0.148	-0.000	0.000
EntryAnt	0.007	0.007	0.940	0.345	-0.007	0.020
EntryAnt ²	-0.000	0.000	-0.550	0.583	-0.000	0.000
Stay	0.003	0.019	0.130	0.895	-0.036	0.041
StayGT	0.000	0.000	3.440	0.001	0.000	0.000
StayGT ²	-0.000	0.000	-2.280	0.022	-0.000	-0.000
StayAnt	-0.007	0.002	-3.640	0.000	-0.010	-0.003
StayAnt ²	0.000	0.000	5.880	0.000	0.000	0.000
Exit	0.085	0.100	0.850	0.396	-0.111	0.281
ExitGT	0.000	0.000	0.630	0.526	-0.000	0.000
ExitGT ²	-0.000	0.000	-0.070	0.945	-0.000	0.000
ExitAnt	-0.001	0.005	-0.190	0.847	-0.011	0.009
ExitAnt ²	0.000	0.000	1.120	0.263	-0.000	0.000
EntryDistance	0.011	0.038	0.280	0.782	-0.065	0.086
EntryDistance ²	-0.001	0.003	-0.350	0.728	-0.007	0.005
StayDistance	-0.005	0.006	-0.820	0.415	-0.018	0.007
StayDistance ²	0.001	0.000	1.190	0.235	-0.000	0.002
ExitDistance	-0.033	0.033	-1.010	0.311	-0.098	0.031
ExitDistance ²	0.003	0.002	1.050	0.294	-0.002	0.008
EntryAntDistance	-0.003	0.002	-1.240	0.214	-0.007	0.002
EntryAntDistance ²	0.000	0.000	1.280	0.201	-0.000	0.001
EntryAnt ² Distance	0.000	0.000	0.730	0.465	-0.000	0.000
EntryAnt ² Distance ²	-0.000	0.000	-0.730	0.463	-0.000	0.000
StayAntDistance	0.002	0.001	4.130	0.000	0.001	0.004
StayAntDistance ²	-0.000	0.000	-4.190	0.000	-0.000	-0.000
StayAnt ² Distance	-0.000	0.000	-6.720	0.000	-0.000	-0.000
StayAnt ² Distance ²	0.000	0.000	6.950	0.000	0.000	0.000
ExitAntDistance	0.000	0.002	0.010	0.992	-0.003	0.003
ExitAntDistance ²	0.000	0.000	0.010	0.991	-0.000	0.000
ExitAnt ² Distance	-0.000	0.000	-0.980	0.327	-0.000	0.000
ExitAnt ² Distance ²	0.000	0.000	0.860	0.388	-0.000	0.000
EntryGTDistance	0.000	0.000	1.140	0.253	-0.000	0.000
EntryGTDistance ²	-0.000	0.000	-1.120	0.263	-0.000	0.000
EntryGT ² Distance	-0.000	0.000	-1.440	0.149	-0.000	0.000
EntryGT ² Distance ²	0.000	0.000	1.430	0.153	-0.000	0.000
StayGTDistance	-0.000	0.000	-3.100	0.002	-0.000	-0.000
StayGTDistance ²	0.000	0.000	2.340	0.019	0.000	0.000
StayGT ² Distance	0.000	0.000	1.750	0.080	-0.000	0.000
StayGT ² Distance ²	-0.000	0.000	-0.890	0.372	-0.000	0.000
ExitGTDistance	-0.000	0.000	-0.270	0.786	-0.000	0.000
ExitGTDistance ²	-0.000	0.000	-0.220	0.828	-0.000	0.000
ExitGT ² Distance	-0.000	0.000	-0.320	0.751	-0.000	0.000
ExitGT ² Distance ²	0.000	0.000	0.700	0.485	-0.000	0.000
Eixample	0.326	0.003	103.610	0.000	0.320	0.332
Vall d'Hebron	0.194	0.006	32.570	0.000	0.182	0.205
Palau Reial	0.051	0.003	17.630	0.000	0.045	0.056
Prat2	0.083	0.004	23.150	0.000	0.076	0.090
Sant Gervasi	0.191	0.003	65.680	0.000	0.186	0.197
2012	-0.153	0.131	-1.170	0.242	-0.410	0.103
2013	-0.093	0.098	-0.950	0.341	-0.285	0.099
2014	-0.090	0.066	-1.370	0.170	-0.219	0.039
2015	0.015	0.033	0.450	0.654	-0.050	0.079
January	-0.059	0.031	-1.930	0.054	-0.119	0.001
February	-0.061	0.028	-2.180	0.029	-0.117	-0.006
March	-0.075	0.025	-2.950	0.003	-0.125	-0.025
April	-0.125	0.023	-5.460	0.000	-0.170	-0.080
May	-0.154	0.020	-7.610	0.000	-0.194	-0.115
June	-0.190	0.018	-10.620	0.000	-0.225	-0.155
July	-0.195	0.016	-12.460	0.000	-0.226	-0.164
August	-0.237	0.013	-18.100	0.000	-0.263	-0.211
September	-0.163	0.011	-15.470	0.000	-0.184	-0.143
October	-0.065	0.009	-7.580	0.000	-0.082	-0.048
November	-0.016	0.006	-2.430	0.015	-0.028	-0.003
h1	-0.040	0.003	-13.550	0.000	-0.046	-0.034

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Table 23 (continued)

Newey-West						
CO	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
h2	-0.066	0.004	-17.640	0.000	-0.073	-0.059
h3	-0.081	0.004	-21.960	0.000	-0.088	-0.074
h4	-0.090	0.004	-24.810	0.000	-0.097	-0.083
h5	-0.085	0.004	-23.590	0.000	-0.092	-0.078
h6	-0.051	0.004	-14.040	0.000	-0.058	-0.044
h7	0.056	0.004	13.630	0.000	0.048	0.064
h8	0.172	0.005	32.530	0.000	0.162	0.182
h9	0.139	0.005	27.020	0.000	0.129	0.150
h10	0.032	0.004	7.470	0.000	0.023	0.040
h11	-0.003	0.004	-0.850	0.398	-0.011	0.004
h12	-0.008	0.004	-2.050	0.041	-0.016	-0.000
h13	0.011	0.004	2.650	0.008	0.003	0.020
h14	0.030	0.004	6.650	0.000	0.021	0.038
h15	0.003	0.004	0.800	0.424	-0.005	0.012
h16	0.004	0.004	0.950	0.344	-0.004	0.013
h17	0.022	0.004	5.100	0.000	0.013	0.030
h18	0.076	0.004	17.240	0.000	0.067	0.085
h19	0.127	0.005	26.740	0.000	0.117	0.136
h20	0.148	0.005	30.910	0.000	0.139	0.157
h21	0.124	0.005	26.440	0.000	0.115	0.133
h22	0.066	0.005	14.680	0.000	0.057	0.075
h23	0.027	0.003	8.130	0.000	0.021	0.034
Monday	0.091	0.003	31.980	0.000	0.086	0.097
Tuesday	0.103	0.003	36.640	0.000	0.098	0.109
Wednesday	0.117	0.003	39.880	0.000	0.111	0.123
Thursday	0.114	0.003	40.380	0.000	0.109	0.120
Friday	0.102	0.003	37.830	0.000	0.097	0.107
Saturday	0.033	0.002	13.620	0.000	0.028	0.038
Time	-0.000	0.000	-2.760	0.006	-0.000	-0.000
Time Squared	0.000	0.000	7.870	0.000	0.000	0.000
Temperature	0.003	0.000	8.960	0.000	0.002	0.003
Relative humidity	0.001	0.000	14.940	0.000	0.001	0.001
Pressure	0.004	0.000	31.690	0.000	0.004	0.004
Precipitation	-0.010	0.001	-8.460	0.000	-0.013	-0.008
Wind speed	-0.020	0.000	-47.400	0.000	-0.020	-0.019
NNE	0.017	0.005	3.350	0.001	0.007	0.027
NE	0.021	0.005	4.340	0.000	0.012	0.031
ENE	0.031	0.005	6.110	0.000	0.021	0.041
E	0.063	0.005	11.790	0.000	0.053	0.074
ESE	0.057	0.006	9.870	0.000	0.045	0.068
SE	0.075	0.006	13.530	0.000	0.064	0.085
SSE	0.088	0.006	15.310	0.000	0.077	0.100
S	0.071	0.006	12.450	0.000	0.060	0.082
SSW	0.057	0.005	10.890	0.000	0.047	0.068
SW	0.030	0.005	6.220	0.000	0.020	0.039
WSW	0.023	0.005	4.850	0.000	0.014	0.032
W	0.008	0.005	1.660	0.098	-0.001	0.017
WNW	-0.003	0.004	-0.610	0.540	-0.011	0.006
NW	0.002	0.004	0.510	0.611	-0.006	0.011
NNW	-0.014	0.005	-2.980	0.003	-0.024	-0.005
_cons	-3.567	0.207	-17.190	0.000	-3.974	-3.161

Number of obs = 191,147.

F(106, 191030) = 328.97.

Prob > F = 0.0000.

Table 24Effects of cruise activity at new terminal in the PM₁₀ levels. Controlling by gross tonnage.

PM ₁₀	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
Entry	4.886	6.462	0.760	0.450	-7.779	17.551
EntryGT	0.000	0.000	2.280	0.023	0.000	0.001
EntryGT ²	-0.000	0.000	-2.770	0.006	-0.000	-0.000
EntryAnt	-1.041	0.953	-1.090	0.275	-2.909	0.827
EntryAnt ²	0.011	0.031	0.340	0.732	-0.050	0.071
Stay	4.715	1.128	4.180	0.000	2.504	6.925
StayGT	0.000	0.000	4.920	0.000	0.000	0.001
StayGT ²	-0.000	0.000	-5.330	0.000	-0.000	-0.000
StayAnt	-1.146	0.476	-2.410	0.016	-2.079	-0.214
StayAnt ²	0.020	0.015	1.320	0.188	-0.010	0.049
Exit	-4.154	2.856	-1.450	0.146	-9.753	1.444
ExitGT	0.000	0.000	1.460	0.146	-0.000	0.001
ExitGT ²	-0.000	0.000	-1.570	0.117	-0.000	0.000
ExitAnt	0.385	1.144	0.340	0.736	-1.858	2.628
ExitAnt ²	-0.025	0.034	-0.740	0.462	-0.092	0.042
EntryDistance	-1.304	2.101	-0.620	0.535	-5.422	2.815
EntryDistance ²	0.103	0.159	0.640	0.519	-0.209	0.415
StayDistance	-1.523	0.365	-4.170	0.000	-2.238	-0.807
StayDistance ²	0.109	0.028	3.940	0.000	0.055	0.163
ExitDistance	2.541	1.362	1.870	0.062	-0.129	5.210
ExitDistance ²	-0.298	0.144	-2.070	0.038	-0.580	-0.016
EntryAntDistance	0.384	0.309	1.240	0.214	-0.222	0.991
EntryAntDistance ²	-0.030	0.023	-1.260	0.206	-0.076	0.016
EntryAnt ² Distance	-0.007	0.010	-0.670	0.502	-0.026	0.013
EntryAnt ² Distance ²	0.001	0.001	0.770	0.440	-0.001	0.002
StayAntDistance	0.347	0.155	2.240	0.025	0.043	0.651
StayAntDistance ²	-0.025	0.012	-2.150	0.031	-0.049	-0.002
StayAnt ² Distance	-0.007	0.005	-1.370	0.171	-0.016	0.003
StayAnt ² Distance ²	0.001	0.000	1.340	0.181	-0.000	0.001
ExitAntDistance	-0.217	0.367	-0.590	0.555	-0.936	0.503
ExitAntDistance ²	0.019	0.028	0.670	0.501	-0.036	0.073
ExitAnt ² Distance	0.010	0.011	0.910	0.364	-0.012	0.031
ExitAnt ² Distance ²	-0.001	0.001	-0.990	0.324	-0.002	0.001
EntryGTDistance	-0.000	0.000	-2.320	0.020	-0.000	-0.000
EntryGTDistance ²	0.000	0.000	2.220	0.026	0.000	0.000
EntryGT ² Distance	0.000	0.000	2.760	0.006	0.000	0.000
EntryGT ² Distance ²	-0.000	0.000	-2.570	0.010	-0.000	-0.000
StayGTDistance	-0.000	0.000	-4.300	0.000	-0.000	-0.000
StayGTDistance ²	0.000	0.000	3.880	0.000	0.000	0.000
StayGT ² Distance	0.000	0.000	4.650	0.000	0.000	0.000
StayGT ² Distance ²	-0.000	0.000	-4.290	0.000	-0.000	-0.000
ExitGTDistance	-0.000	0.000	-1.260	0.208	-0.000	0.000
ExitGTDistance ²	0.000	0.000	1.100	0.271	-0.000	0.000
ExitGT ² Distance	0.000	0.000	1.420	0.156	-0.000	0.000
ExitGT ² Distance ²	-0.000	0.000	-1.330	0.183	-0.000	0.000
Eixample	1.452	0.266	5.470	0.000	0.932	1.973
Gornal	3.134	0.244	12.860	0.000	2.656	3.611
Vall d'Hebron	17.756	0.469	37.830	0.000	16.836	18.676
Palau Reial	0.435	0.236	1.840	0.065	-0.027	0.898
Poblenou	5.635	0.308	18.290	0.000	5.031	6.239
Sant Adrià	4.658	0.260	17.950	0.000	4.149	5.166
2012	95.087	8.520	11.160	0.000	78.388	111.787
2013	69.467	6.359	10.920	0.000	57.004	81.930
2014	47.906	4.263	11.240	0.000	39.551	56.260
2015	27.260	2.093	13.020	0.000	23.158	31.362
January	21.288	1.946	10.940	0.000	17.474	25.103
February	22.228	1.836	12.110	0.000	18.629	25.826
March	16.519	1.611	10.260	0.000	13.363	19.676
April	10.058	1.429	7.040	0.000	7.257	12.859
May	5.544	1.244	4.460	0.000	3.107	7.981
June	0.900	1.201	0.750	0.453	-1.453	3.254
July	-5.386	0.899	-5.990	0.000	-7.148	-3.624
August	-11.395	0.734	-15.530	0.000	-12.833	-9.957
September	-10.580	0.570	-18.570	0.000	-11.696	-9.463
October	-5.054	0.434	-11.630	0.000	-5.906	-4.203
November	0.396	0.316	1.250	0.211	-0.224	1.016

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Table 24 (continued)

PM ₁₀	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
h1	-1.643	0.300	-5.470	0.000	-2.231	-1.055
h2	-3.036	0.330	-9.200	0.000	-3.683	-2.389
h3	-3.755	0.330	-11.390	0.000	-4.401	-3.109
h4	-4.193	0.313	-13.390	0.000	-4.807	-3.579
h5	-3.844	0.314	-12.240	0.000	-4.459	-3.228
h6	-2.035	0.315	-6.460	0.000	-2.653	-1.417
h7	2.257	0.321	7.040	0.000	1.629	2.886
h8	6.807	0.336	20.230	0.000	6.147	7.466
h9	8.584	0.357	24.060	0.000	7.884	9.283
h10	6.223	0.350	17.770	0.000	5.537	6.909
h11	4.878	0.351	13.890	0.000	4.190	5.567
h12	3.238	0.356	9.110	0.000	2.541	3.935
h13	1.754	0.364	4.820	0.000	1.041	2.468
h14	0.124	0.366	0.340	0.734	-0.594	0.842
h15	-1.046	0.356	-2.940	0.003	-1.744	-0.348
h16	-0.715	0.355	-2.020	0.044	-1.410	-0.020
h17	1.027	0.361	2.840	0.004	0.319	1.735
h18	2.469	0.398	6.200	0.000	1.688	3.249
h19	2.859	0.363	7.890	0.000	2.149	3.570
h20	3.700	0.347	10.670	0.000	3.020	4.379
h21	3.960	0.350	11.330	0.000	3.275	4.645
h22	2.681	0.338	7.930	0.000	2.018	3.343
h23	1.354	0.287	4.720	0.000	0.791	1.916
Monday	2.263	0.202	11.190	0.000	1.866	2.659
Tuesday	3.745	0.223	16.770	0.000	3.307	4.183
Wednesday	4.471	0.212	21.060	0.000	4.055	4.887
Thursday	3.739	0.211	17.690	0.000	3.325	4.153
Friday	4.628	0.213	21.730	0.000	4.211	5.046
Saturday	1.481	0.203	7.300	0.000	1.083	1.878
Time	0.002	0.000	9.320	0.000	0.002	0.003
Time Squared	0.000	0.000	7.690	0.000	0.000	0.000
Temperature	1.474	0.021	70.570	0.000	1.433	1.515
Relative humidity	0.139	0.004	37.010	0.000	0.132	0.147
Pressure	0.325	0.008	39.000	0.000	0.309	0.341
Precipitation	-0.836	0.098	-8.520	0.000	-1.028	-0.644
Wind speed	-0.694	0.041	-17.040	0.000	-0.774	-0.614
NNE	-0.549	0.291	-1.880	0.059	-1.120	0.022
NE	0.637	0.321	1.990	0.047	0.008	1.266
ENE	1.029	0.286	3.600	0.000	0.470	1.589
E	1.467	0.319	4.600	0.000	0.842	2.092
ESE	-0.386	0.302	-1.280	0.201	-0.977	0.206
SE	0.724	0.306	2.370	0.018	0.124	1.325
SSE	1.455	0.305	4.780	0.000	0.858	2.052
S	0.572	0.303	1.890	0.059	-0.022	1.166
SSW	0.644	0.290	2.220	0.026	0.076	1.213
SW	1.217	0.275	4.430	0.000	0.678	1.755
WSW	0.704	0.276	2.550	0.011	0.163	1.246
W	-0.610	0.264	-2.310	0.021	-1.127	-0.093
WNW	0.663	0.252	2.630	0.008	0.170	1.157
NW	-0.491	0.258	-1.900	0.057	-0.998	0.015
NNW	-0.518	0.281	-1.840	0.065	-1.068	0.033
_cons	-447.666	12.995	-34.450	0.000	-473.136	-422.196

Number of obs = 156,466.

F(107, 156348) = 256.55.

Prob > F = 0.0000.

Table 25Effects of cruise activity at old terminal in the PM₁₀ levels. Controlling by gross tonnage.

PM ₁₀	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.	Interval]
Entry	4.488	7.935	0.570	0.572	-11.065	20.041
EntryGT	-0.000	0.000	-0.350	0.730	-0.001	0.001
EntryGT ²	0.000	0.000	0.470	0.640	-0.000	0.000
EntryAnt	0.416	0.453	0.920	0.359	-0.473	1.304
EntryAnt ²	-0.012	0.007	-1.810	0.071	-0.025	0.001
Stay	0.033	1.726	0.020	0.985	-3.350	3.416
StayGT	0.000	0.000	1.040	0.299	-0.000	0.001
StayGT ²	-0.000	0.000	-0.170	0.861	-0.000	0.000
StayAnt	0.263	0.149	1.770	0.077	-0.029	0.556
StayAnt ²	-0.004	0.002	-1.860	0.062	-0.009	0.000
Exit	-12.129	7.487	-1.620	0.105	-26.803	2.546
ExitGT	0.001	0.000	1.710	0.087	-0.000	0.002
ExitGT ²	-0.000	0.000	-1.500	0.135	-0.000	0.000
ExitAnt	0.156	0.403	0.390	0.698	-0.633	0.945
ExitAnt ²	-0.000	0.006	-0.070	0.947	-0.012	0.011
EntryDistance	-2.234	3.656	-0.610	0.541	-9.400	4.931
EntryDistance ²	0.296	0.388	0.760	0.445	-0.463	1.056
StayDistance	0.087	0.794	0.110	0.912	-1.469	1.644
StayDistance ²	-0.031	0.083	-0.380	0.707	-0.194	0.132
ExitDistance	6.113	3.427	1.780	0.074	-0.604	12.829
ExitDistance ²	-0.664	0.355	-1.870	0.061	-1.359	0.032
EntryAntDistance	-0.251	0.207	-1.210	0.224	-0.657	0.154
EntryAntDistance ²	0.026	0.021	1.230	0.218	-0.016	0.068
EntryAnt ² Distance	0.006	0.003	2.030	0.042	0.000	0.012
EntryAnt ² Distance ²	-0.001	0.000	-2.080	0.038	-0.001	-0.000
StayAntDistance	-0.147	0.068	-2.160	0.031	-0.280	-0.014
StayAntDistance ²	0.014	0.007	2.040	0.041	0.001	0.028
StayAnt ² Distance	0.002	0.001	2.320	0.021	0.000	0.004
StayAnt ² Distance ²	-0.000	0.000	-2.380	0.017	-0.000	-0.000
ExitAntDistance	-0.054	0.183	-0.300	0.767	-0.413	0.304
ExitAntDistance ²	0.002	0.019	0.120	0.908	-0.035	0.039
ExitAnt ² Distance	0.000	0.003	0.060	0.949	-0.005	0.005
ExitAnt ² Distance ²	0.000	0.000	0.000	0.999	-0.001	0.001
EntryGTDistance	0.000	0.000	0.700	0.481	-0.000	0.001
EntryGTDistance ²	-0.000	0.000	-0.920	0.358	-0.000	0.000
EntryGT ² Distance	-0.000	0.000	-0.830	0.407	-0.000	0.000
EntryGT ² Distance ²	0.000	0.000	1.060	0.288	-0.000	0.000
StayGTDistance	-0.000	0.000	-0.380	0.702	-0.000	0.000
StayGTDistance ²	0.000	0.000	0.200	0.843	-0.000	0.000
StayGT ² Distance	-0.000	0.000	-0.220	0.829	-0.000	0.000
StayGT ² Distance ²	0.000	0.000	0.250	0.802	-0.000	0.000
ExitGTDistance	-0.000	0.000	-1.810	0.070	-0.001	0.000
ExitGTDistance ²	0.000	0.000	1.800	0.072	-0.000	0.000
ExitGT ² Distance	0.000	0.000	1.730	0.084	-0.000	0.000
ExitGT ² Distance ²	-0.000	0.000	-1.810	0.070	-0.000	0.000
Eixample	2.155	13.045	0.170	0.869	-23.413	27.723
Gornal	3.350	12.996	0.260	0.797	-22.123	28.823
Vall d'Hebron	17.462	12.834	1.360	0.174	-7.693	42.617
Palau Reial	0.262	13.027	0.020	0.984	-25.271	25.795
Poblenou	5.355	13.034	0.410	0.681	-20.191	30.902
Sant Adrià	4.425	13.050	0.340	0.735	-21.153	30.003
2012	95.533	8.553	11.170	0.000	78.769	112.296
2013	69.776	6.383	10.930	0.000	57.265	82.287
2014	48.143	4.279	11.250	0.000	39.756	56.530
2015	27.307	2.100	13.000	0.000	23.190	31.423
January	21.413	1.954	10.960	0.000	17.584	25.243
February	22.357	1.843	12.130	0.000	18.745	25.969
March	16.571	1.617	10.250	0.000	13.402	19.740
April	10.096	1.436	7.030	0.000	7.283	12.910
May	5.500	1.247	4.410	0.000	3.057	7.944
June	0.792	1.203	0.660	0.510	-1.566	3.150
July	-5.566	0.902	-6.170	0.000	-7.333	-3.799
August	-11.528	0.735	-15.680	0.000	-12.969	-10.087
September	-10.677	0.570	-18.730	0.000	-11.794	-9.560
October	-5.081	0.433	-11.740	0.000	-5.929	-4.233
November	0.392	0.318	1.230	0.217	-0.231	1.014

(continued on next page)

Table 25 (continued)

PM ₁₀	Newey-West					
	Coef.	Std.Err.	t	P > t	[95%Conf.]	Interval]
h1	-1.635	0.300	-5.440	0.000	-2.224	-1.046
h2	-3.028	0.331	-9.160	0.000	-3.676	-2.380
h3	-3.747	0.330	-11.350	0.000	-4.395	-3.100
h4	-4.185	0.314	-13.330	0.000	-4.801	-3.570
h5	-3.722	0.315	-11.830	0.000	-4.339	-3.105
h6	-2.022	0.317	-6.390	0.000	-2.643	-1.402
h7	2.041	0.325	6.290	0.000	1.405	2.678
h8	6.700	0.341	19.680	0.000	6.033	7.368
h9	8.484	0.353	24.020	0.000	7.791	9.176
h10	5.950	0.352	16.900	0.000	5.260	6.641
h11	4.568	0.353	12.930	0.000	3.876	5.260
h12	2.966	0.357	8.320	0.000	2.267	3.665
h13	1.517	0.367	4.130	0.000	0.798	2.236
h14	-0.108	0.364	-0.300	0.768	-0.820	0.605
h15	-1.359	0.355	-3.830	0.000	-2.055	-0.663
h16	-1.035	0.354	-2.920	0.003	-1.729	-0.341
h17	0.555	0.359	1.540	0.122	-0.149	1.259
h18	1.929	0.384	5.030	0.000	1.177	2.682
h19	2.449	0.350	7.010	0.000	1.764	3.134
h20	3.486	0.341	10.240	0.000	2.819	4.154
h21	3.898	0.350	11.150	0.000	3.213	4.583
h22	2.632	0.339	7.760	0.000	1.967	3.297
h23	1.304	0.287	4.540	0.000	0.740	1.867
Monday	2.509	0.194	12.930	0.000	2.128	2.889
Tuesday	4.035	0.208	19.430	0.000	3.628	4.442
Wednesday	4.748	0.198	23.970	0.000	4.360	5.136
Thursday	4.059	0.192	21.160	0.000	3.683	4.435
Friday	4.861	0.202	24.030	0.000	4.465	5.258
Saturday	1.500	0.186	8.060	0.000	1.135	1.865
Time	0.002	0.000	9.320	0.000	0.002	0.003
Time Squared	0.000	0.000	7.650	0.000	0.000	0.000
Temperature	1.477	0.021	70.790	0.000	1.436	1.518
Relative humidity	0.141	0.004	37.480	0.000	0.133	0.148
Pressure	0.327	0.008	39.220	0.000	0.311	0.344
Precipitation	-0.863	0.099	-8.760	0.000	-1.056	-0.670
Wind speed	-0.680	0.041	-16.650	0.000	-0.760	-0.600
NNE	-0.541	0.292	-1.850	0.064	-1.114	0.031
NE	0.588	0.322	1.830	0.068	-0.043	1.218
ENE	0.909	0.286	3.180	0.001	0.348	1.470
E	1.411	0.320	4.420	0.000	0.785	2.038
ESE	-0.481	0.303	-1.590	0.112	-1.075	0.112
SE	0.608	0.307	1.980	0.047	0.007	1.210
SSE	1.311	0.305	4.290	0.000	0.713	1.910
S	0.473	0.304	1.560	0.120	-0.123	1.069
SSW	0.565	0.291	1.940	0.052	-0.005	1.135
SW	1.236	0.275	4.490	0.000	0.696	1.775
WSW	0.736	0.277	2.660	0.008	0.194	1.279
W	-0.598	0.264	-2.260	0.024	-1.116	-0.080
WNW	0.730	0.252	2.900	0.004	0.236	1.224
NW	-0.474	0.259	-1.830	0.067	-0.982	0.033
NNW	-0.502	0.282	-1.780	0.075	-1.054	0.050
_cons	-450.967

Number of obs = 156,466.

F(111, 156348) = 384280.73.

Prob > F = 0.0000.

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