

Recovery Dynamics of Passenger, Cruise and Vehicle Traffic in the Port of Split, 2005–2025: A Statistical Analysis

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The Port of Split handles more passengers than any other Croatian port, and its published traffic statistics offer a compact case for applying elementary statistical methods to a real transport problem. This study analyses twenty-one years of annual data, from 2005 to 2025, covering total passengers, cruise passengers and accompanied vehicles, and asks whether the three segments recovered from the COVID-19 pandemic at the same pace. Five methods are applied, each chosen so that its result can be checked by hand: descriptive statistics, year-on-year and compound annual growth rates, ordinary least-squares trend regression, Pearson correlation, and the ratio of passengers to vehicles. A linear trend fitted to the fifteen pre-pandemic years is projected forward to 2025, which turns the question of whether traffic has recovered into a measurable comparison against the path it was on beforehand. Figures published by the Split Port Authority form the primary source. Cruise passenger counts for 2005 to 2008 and annual cruise-call totals were provided by the Port Authority on request. Passenger data from the Croatian Bureau of Statistics serve as an independent cross-check and supply a domestic and international breakdown, and Split Airport figures give context on air arrivals. Passenger traffic fell by more than half in 2020 and returned to within four per cent of its pre-pandemic trend by 2023. Vehicle traffic crossed its own trend line in 2021 and finished 2025 twenty-six per cent above it, while the ratio of passengers to vehicles, steady between 6.7 and 7.0 across 2014 to 2019, has settled near 5.8 and shows no sign of returning. A separate result concerns the cruise segment: the number of calls has shown no trend since 2008, yet the average number of cruise passengers recorded per call rose from 475 to 1,273, so growth in cruise tourism at this port has come from what each call brings rather than from more calls arriving. Passenger volumes have therefore recovered while the composition of that traffic has not, and the paper examines why fewer people now travel per vehicle, including the possibility that fully occupied tourist coaches have become less common and that a growing share of air arrivals continues onward by rental car.

KEYWORDS

- ~ Port of Split
- ~ Passenger traffic
- ~ Cruise traffic
- ~ Vehicle traffic
- ~ COVID-19
- ~ Traffic recovery
- ~ Statistical analysis

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1. INTRODUCTION

The Port of Split handles more passengers than any other Croatian port and ranks among the busiest passenger ports in the Mediterranean. Ferries leave its quays for Brač, Hvar, Šolta, Vis and Korčula. International lines run to Ancona, and through the summer months cruise ships call at the outer berths. Its position sets it apart from most ports of comparable size. The terminal sits directly against the historic city centre, a few hundred metres from Diocletian's Palace. Whatever passes through it, the city absorbs.

Two events interrupted the port's growth over the past two decades. The financial crisis of 2008 and 2009 came first and, looking back at the figures, left a surprisingly light mark. COVID-19 was another matter. Passenger traffic in 2020 fell below any level recorded in the twenty years covered here, and cruise calls stopped almost completely. Earlier work on the port documented that collapse and the first signs of recovery through 2022 (Stanivuk et al., 2022). The global picture has been mapped in some detail too (March, Metcalfe and Tintoré, 2021).

What has not been examined is what happened afterwards, once the recovery had run its course. Now that five full post-pandemic years are available, a different question becomes answerable: did every part of the port's traffic come back the same way? Passengers, cruise guests and vehicles are counted separately, and there is no particular reason to assume they behaved identically. If they did not, the differences between them may say something about how travel to and through Split has changed.

This study sets out to answer three questions. First, how did passenger, cruise-passenger and vehicle traffic grow across 2005–2025, and how did each respond to the two crises? Second, where does each segment now stand relative to where its own pre-pandemic trend would have placed it? Third, has the relationship between passengers and vehicles shifted, and if so, what might account for that? The methods used are deliberately simple ones: growth rates, linear trends, correlations and a ratio. Each can be checked by hand, which matters for a paper whose value lies in the pattern it identifies rather than in the sophistication of the machinery used to find it.

2. LITERATURE REVIEW

Research on the Port of Split has approached it from several directions. Mihanović, Peronja and Vukić (2019) surveyed concessionaires operating inside the port area and found that businesses there regard the port as a genuine economic asset for the wider city, not merely as infrastructure they happen to occupy. That finding matters for the present study because it establishes port traffic as a regional economic indicator rather than a purely operational one. Ćorluka, Peronja and Tubić (2020) took a different angle, arguing that cruise ports cannot plan capacity or negotiate sensibly with local stakeholders unless they measure passenger flows consistently over time. Their argument applies directly here.

At the level of national policy, Luković, Piplica and Hruska (2021) identified a gap between how Croatia's nautical tourism sector is regulated and what the empirical data on that sector actually show. Their case is that regulation has tended to run ahead of evidence. A paper such as this one contributes to closing that gap in a small way, for one port.

The pandemic's effect on Croatian coastal tourism has attracted considerable attention, given how much of the national economy depends on it. Peronja (2025) traced the post-2020 recovery of nautical tourism across Croatian counties and found it markedly uneven, with clear differences between the northern and southern Adriatic and between sub-sectors within the same county. Split-Dalmatia County, as the largest coastal county, emerged as a case deserving closer attention. The present paper looks at one component of that county's recovery through the lens of port traffic statistics, which offers a narrower but more precisely measured view than sector-wide indicators can.

Simple time-based traffic modelling using port statistics has an established place in Croatian maritime research. Vidučić, Račić and Sladojević (2015) built a traffic model in support of sustainable maritime tourism planning, and Račić, Maričić and Vidučić (2019) applied comparable methods to cargo flows through the Rijeka port basin across an eleven-year series. Neither study needed advanced econometrics to produce useful results. The approach taken here follows that precedent, and also reflects a broader argument that quantitative literacy belongs at the centre of maritime education rather than at its margins (Stanivuk et al., 2019).

3. DATA AND METHODOLOGY

3.1. Data

The figures analysed here come from the traffic statistics published by the Split Port Authority (Split Port Authority, 2026a), which cover 2005 to 2025 and give twenty-one annual observations. Three series were used. Total passengers counts everyone travelling through the passenger terminal, on domestic ferry routes and international lines alike, and includes cruise passengers. Cruise passengers is published without a methodological note, and Section 4.5 returns to the question of what it counts. Vehicles counts motor vehicles carried through the port, without distinguishing between cars, vans and coaches.

Two items needed for this study are absent from the Port Authority's published statistics: cruise passenger figures for 2005 to 2008, and the number of cruise calls in any year. Both were obtained from the Port Authority on request (Split Port Authority, 2026b). The requested passenger series agrees with the published one on every overlapping year, so the combined series is treated here as continuous. Section 4.5 uses the call figures.

The Port Authority also publishes cargo tonnage, which has been left out of this analysis. The cargo terminal occupies the northern side of the Split peninsula and operates as a separate facility with its own traffic, its own customers and its own economic drivers. Including it would mix two unrelated systems in a single dataset and make the correlations between segments harder to interpret rather than easier.

3.2. Methods

Five methods were used, each chosen because its output can be read directly without specialist training.

Descriptive statistics establish the basic shape of each series. Mean, minimum, maximum and standard deviation were calculated across the full period. The standard deviation is informative in its own right here, since a series with high year-to-year variation relative to its mean is one where a single bad season can move the total substantially.

Growth rates were calculated in two ways. Year-on-year change measures how much a series moved between one year and the next:

$$g_t = \frac{x_t - x_{t-1}}{x_{t-1}} \times 100\% \quad (1)$$

where x_t is the value in year t . This is useful for pinpointing individual shocks but poor for comparing periods of different lengths, since a run of years cannot be summarised by averaging its annual percentage changes. For that, the *compound annual growth rate* was used:

$$CAGR = \left(\frac{x_{end}}{x_{start}} \right)^{\frac{1}{n}} - 1 \quad (2)$$

with n the number of years spanned. CAGR answers a specific question: at what constant annual rate would the series have had to grow to get from its starting value to its ending value? It smooths over what happened in between, which is exactly what is wanted when comparing, say, the decade before the pandemic against the decade before that.

Linear trend regression provides the baseline for the central part of the analysis. For each segment, a straight line was fitted by ordinary least squares to the fifteen pre-pandemic years:

$$x_t = \beta_0 + \beta_1 t + \varepsilon_t \quad (3)$$

The reasoning behind this step is straightforward. Traffic through the port was growing steadily and fairly predictably before 2020. If that growth had simply continued, the trend line drawn through 2005–2019 and extended forward gives a reasonable estimate of where each series would have been in 2021, 2023 or 2025. Comparing the actual figures against that projected line converts a vague question (has traffic recovered?) into a measurable one (by how much does it differ from where it was heading?). The difference was expressed as a percentage:

$$gap_t = \frac{x_t - T_t}{T_t} \times 100\% \quad (4)$$

where x_t is the traffic actually recorded in year t and T_t is the value the fitted trend line predicts for that year.

Correlation analysis, using the Pearson coefficient, tests how tightly the three segments move together. A coefficient close to 1 means two series rise and fall almost in step; a lower value means they are driven by at least partly separate forces.

Finally, the ratio of passengers to vehicles was calculated for each year:

$$R_t = \frac{P_t}{V_t} \quad (5)$$

where P_t and V_t are the total numbers of passengers and vehicles recorded in year t .

This ratio is arithmetically trivial but analytically useful, because it describes something neither of its component series can describe alone: how many people, on average, arrive with each vehicle. A stable ratio means the mix of foot passengers and vehicle passengers is holding steady. A falling ratio means vehicles are carrying fewer people each, which can happen either because more travellers bring a car or because the vehicles that do come are less full than they used to be. Distinguishing between those two possibilities turns out to matter, and Section 5 returns to it.

All calculations were carried out in Python 3 using standard statistical libraries (pandas, NumPy, SciPy and statsmodels) while figures were produced with Matplotlib. The same results could be reproduced in a spreadsheet.

3.3. Cross-validation with an independent data source

Before relying on a single source, it is worth checking it against another. The Croatian Bureau of Statistics (Državni zavod za statistiku) publishes monthly sea-port passenger figures broken down by direction and by domestic or international traffic, covering 2013 to 2025 (Croatian Bureau of Statistics, 2026). Comparing its annual totals against the Port Authority's gives an interesting result. Both sources trace the same curve. But the DZS figures sit consistently lower, on average by about 9 %. The gap ranges from 3.9 % to 17.3 % depending on the year.

The pattern of that gap is in itself revealing. It is at its narrowest in 2020, the year cruise traffic effectively disappeared, which points to cruise passengers being treated differently between the two sources. That cannot be the whole story, though. In 2014 the discrepancy is more than four times the total number of cruise passengers recorded that year, so something else must also differ, most likely in which vessels or which categories of movement each source counts. Without documentation of both methodologies it is not possible to say more.

The Port Authority data were retained as the primary source for two reasons. They cover the full 2005–2025 period, and they include vehicles and cruise passengers, neither of which appears in the DZS series at all. The DZS figures are used here as an external check, and again in Section 5, where their domestic and international breakdown supplies information the Port Authority data do not.

4. RESULTS

4.1. Descriptive statistics

Table 1 gives the basic figures for each series.

Segment	Mean	Std. Dev.	Minimum	Maximum	n
Passengers	4,580,789	925,041	2,625,106 (2020)	6,050,295 (2025)	21
Cruise passengers	219,531	137,374	503 (2020)	497,856 (2024)	21
Vehicles	754,466	139,537	612,952 (2020)	1,054,019 (2025)	21

Table 1. Descriptive statistics of Port of Split traffic, 2005–2025

The cruise series stands out immediately. Its standard deviation runs to roughly 63 % of its mean, against 20 % for passengers and 18 % for vehicles. Part of that comes from genuine growth across the period, since the series rose from 47,315 in 2005 to 359,955 in 2019, and part from 2020, when the figure fell to 503. Either way, cruise traffic is the volatile component of the port's business. Ferry and line traffic, which makes up the bulk of the passenger total, carries a stable domestic base that does not swing nearly as far.

4.2. Overall growth trends

Table 2 sets out compound annual growth for each segment across the periods that matter.

Period	Passengers	Cruise passengers	Vehicles
2005–2008 (pre-GFC)	+5.6%	+36.9%	+2.7%
2009–2019 (post-GFC to pre-COVID)	+3.6%	+10.6%	+2.4%
2020–2025 (COVID & recovery)	+18.2%	+295.6%*	+11.5%
2005–2019 (full pre-COVID)	+3.5%	+15.6%	+1.8%

* The 2020–2025 figure for cruise passengers is an artefact of dividing by 503. It measures recovery from near-zero, not growth in any meaningful sense, and should not be read as a trend.

Table 2. Compound annual growth rate (CAGR) by period and traffic segment

Passenger traffic climbed from 3.48 million in 2005 to 5.61 million in 2019, a rise of 61 % over fifteen years. Cruise traffic grew far faster in proportional terms, from 47,315 in 2005 to 359,955 in 2019, which works out at 15.6 % a year compounded. The early figures are small enough that the pre-2008 rate should be read with some caution, since percentage growth from a low base exaggerates easily.

The two crises left very different signatures. In 2009 passenger traffic slipped by 3.4 % and was growing again by 2010; on the chart it registers as a flat spot rather than a fall. In 2020 total passengers dropped 53.2 %, vehicles 26.1 %, and cruise passengers 99.9 %, from 359,955 down to 503 (Figure 1). One crisis slowed demand. The other removed the possibility of travelling.

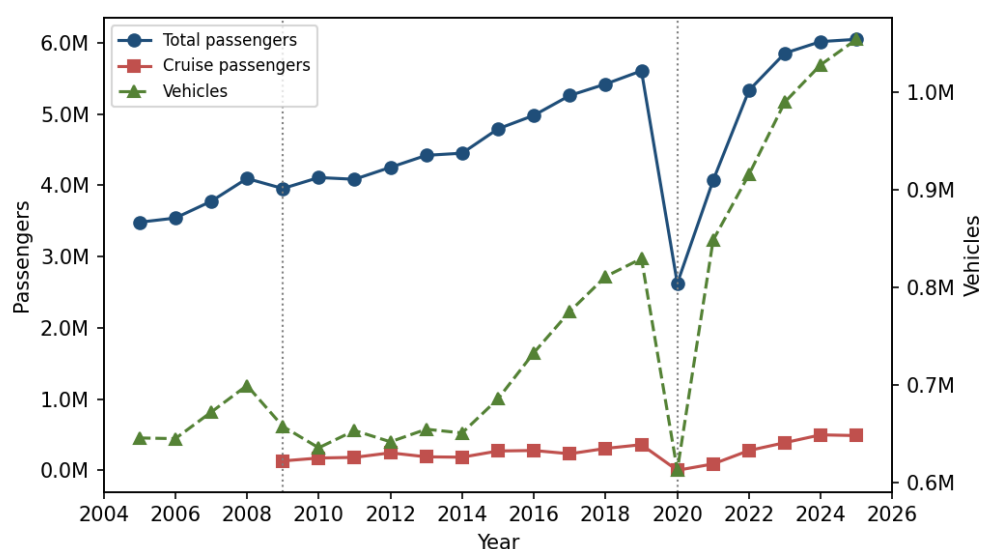


Figure 1. Passenger, cruise-passenger and vehicle traffic, Port of Split, 2005–2025

4.3. Deviation from the pre-pandemic trend

Trend lines fitted to 2005–2019 were extended to 2025 and compared with the recorded figures. The passenger series fits its line closely ($R^2 = 0.95$); the vehicle series fits less well ($R^2 = 0.57$), reflecting a flat stretch between 2009 and 2014 followed by sharp growth from 2015 onward. Results appear in Table 3 and Figure 2.

The passenger series does what one would expect of a recovery. It falls a long way, climbs back over three years, and from 2023 tracks its old trend line within a few per cent. By that measure the port's passenger business has returned to where it was heading.

Year	Passengers	Vehicles
2020	−52.9%	−21.4%
2021	−28.9%	+7.3%
2022	−9.1%	+14.2%
2023	−2.6%	+21.8%
2024	−2.3%	+24.8%
2025	−4.0%	+26.3%

Table 3. Deviation of actual traffic from extrapolated pre-COVID trend (%)

The vehicle series does not follow the same path. It was already above its projected trend by 2021, while passenger numbers were still 29 % below theirs, and it has moved further above it every year since. The 2025 figure sits 26.3 % higher than the pre-pandemic trend would have predicted. Whatever produced this, it was not a simple return to normal.

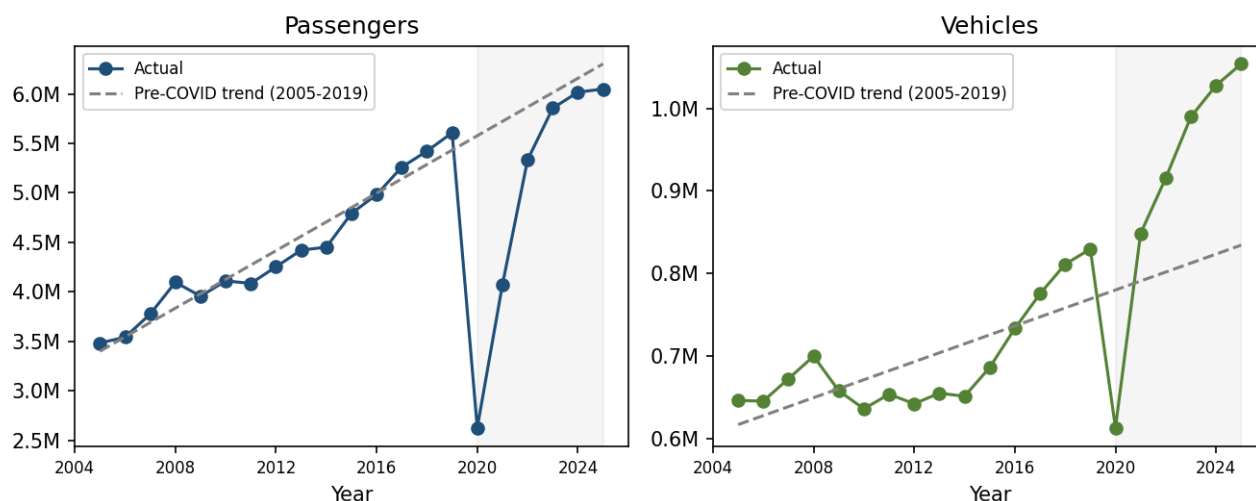


Figure 2. Actual traffic vs. extrapolated pre-COVID trend

4.4. Passenger-to-vehicle ratio

The ratio of passengers to vehicles (Figure 3) climbed slowly through the first decade, from 5.4 in 2005 to a peak just under 7.0 in 2015. It then held between 6.7 and 7.0 until the pandemic. In 2020 it fell to 4.3. It has since recovered, but only as far as 5.7 to 5.9, where it has now sat for three consecutive years. The gap between that and the pre-pandemic range is roughly one full passenger per vehicle, and it has not closed.

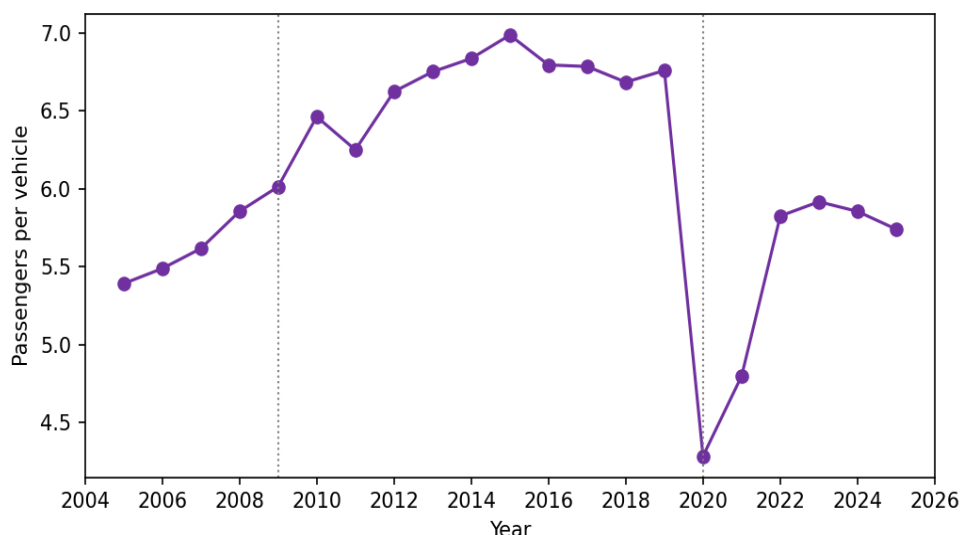


Figure 3. Ratio of passengers to vehicles, Port of Split, 2005–2025

4.5. Cruise calls and passengers per call

Cruise passenger totals can rise because more ships arrive, or because each arrival brings more people. Separating the two requires the number of calls (Split Port Authority, 2026b). Dividing recorded cruise passengers by calls gives the average number registered per visit.

The result (Table 4, Figure 4) is one-sided. Between 2008 and 2023 the number of calls rose from 256 to 305. That is an increase of 19 %. Across 2008–2019 the figure never left a band of 225 to 286, with no trend to speak of. Cruise passengers over the same 2008–2023 span rose by 219 %. The average per call went from 475 to 1,273, roughly a two-and-a-half-fold increase.

Year	Calls	Cruise passengers	Average per call
2005	183	47,315	259
2008	256	121,525	475
2012	269	245,451	912
2016	286	278,259	973
2019	282	359,955	1,276
2022	272	278,103	1,022
2023	305	388,204	1,273

Table 4. Cruise calls and average passengers per call, selected years

Split's cruise growth has therefore come from what each call brings rather than from how many calls there are. The port receives roughly the same number of ships it received fifteen years ago, and each one now registers between two and three times as many passengers.

What that increase represents is less certain than it may appear, and the distinction matters. The Port Authority publishes the series under the heading of cruise passengers without stating what the figure counts. Two readings are possible. It may record everyone aboard, in which case the rise tracks vessel size and occupancy. It may instead record only those who go ashore, in which case it tracks the number of visitors the city actually receives, which is a product of vessel size and the share who choose to disembark. The Croatian Bureau of Statistics is explicit on this point for its own series, defining passengers as persons who arrived by ship, crew excluded (Croatian Bureau of Statistics, 2026). The Port Authority offers no equivalent note. The two bodies may not be measuring the same thing.

The distinction does not affect the arithmetic, but it changes what the finding means. Under the first reading, ships calling at Split have grown substantially larger. Under the second, the number of cruise visitors set down in the city per call

has grown, whether because ships are larger, because a greater share now goes ashore, or both. For port and city planning the second quantity is arguably the more useful one, since it describes the load the historic centre absorbs on a given day. This paper reports the ratio as measured and leaves the interpretation open, since the published data do not settle it.

A second caveat concerns which vessels are counted at all. Small coastal cruise vessels have multiplied along the Adriatic over the past decade. These are converted or purpose-built motor yachts, typically with fifteen to twenty cabins and capacity for around forty guests, running multi-day itineraries along the coast. They are not incidental to the cruise segment; they are a distinct and growing part of it.

How such vessels are classified depends on which source one consults. The Croatian Bureau of Statistics defines a cruise ship by function rather than by size. What counts is that the vessel exists for enjoyment of the voyage rather than transport between ports, and that it is equipped for multi-day stays with accommodation and catering (Croatian Bureau of Statistics, 2026). Small coastal cruisers meet that definition. But the DZS survey observes only foreign-flagged vessels, so Croatian-flagged coastal cruisers fall outside its count entirely. The Port Authority's own classification is not documented, and the figures used here are the Port Authority's.

Here the arithmetic runs one way only, which is what makes this caveat manageable. Suppose such vessels are excluded from the Port Authority's counts. Then Table 4 describes large ocean-going ships and can be read as it stands. Suppose instead they are included. Each such call adds one to the denominator while contributing at most forty passengers to the numerator, far below the averages in Table 4, so every one of them pulls the average down. Their growing number would pull it down increasingly. Under that assumption the rise shown in Table 4 understates what has happened, rather than overstating it. The values are a lower bound, and the direction of the finding survives either classification.

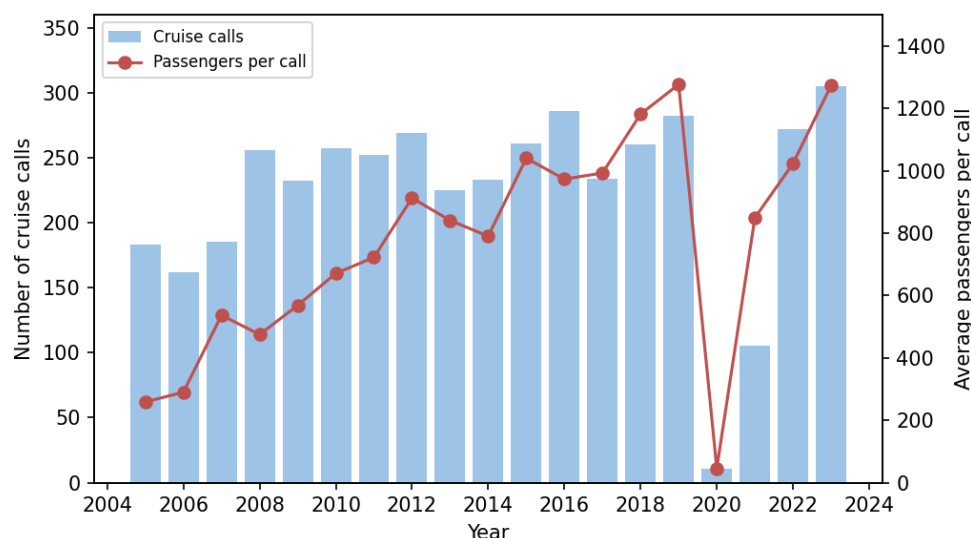


Figure 4. Cruise calls and average passengers per call, Port of Split, 2005–2023

4.6. Correlation between traffic segments

	Passengers	Cruise passengers	Vehicles
Passengers	1.00	0.95	0.84
Cruise passengers	0.95	1.00	0.81
Vehicles	0.84	0.81	1.00

Table 5. Pearson correlation coefficients between traffic segments (2005–2025)

All three series move together ($r = 0.81$ to 0.95), which is what one would expect of segments sharing a single underlying driver in tourism demand. The passenger and cruise series are the most tightly coupled, unsurprisingly, since cruise passengers form part of the passenger total. Vehicles correlate somewhat less closely with both, and that slight loosening is the first hint of the divergence examined in the next section.

5. DISCUSSION

Two findings need explaining. Passenger traffic recovered to its pre-pandemic trajectory and stopped there. Vehicle traffic recovered, kept going, and is now well above where it should be. Since the two series remain positively correlated ($r = 0.84$), vehicles have not grown by taking business away from foot passengers; both grew. What changed is the proportion between them, and the falling passenger-to-vehicle ratio is the same fact seen from another angle.

One explanation, suggested by one of the authors from direct observation of the port, fits the numbers unusually well. Before the pandemic, large tourist coaches were a common sight on the quays, arriving full with something like fifty passengers aboard, bound for the islands or for the Ancona line. In the traffic statistics each of those coaches counts as one vehicle, whatever it carries. Since 2020 the impression from the ground is that such coaches are fewer, smaller, or arriving less than full, with organised tourism having shifted toward smaller groups travelling in vans and minibuses.

If that impression is accurate, it produces both observed effects at once. Replacing one full fifty-seat coach with three half-full minibuses moves the same people while tripling the vehicle count, which pushes the vehicle series above its old trend without any corresponding rise in passengers. It also drags down the average number of passengers per vehicle, which is precisely what the ratio shows. No other single explanation accounts for both results as economically.

This cannot be tested with the data available. Neither the Port Authority nor the DZS distinguishes vehicles by type or records how full they are, so the hypothesis rests on observation rather than measurement. It is set out here in the hope that someone with access to vehicle-type breakdowns, whether from the Port Authority or from coach operators, will test it properly. The authors would consider a study that refuted it just as useful as one that confirmed it.

Other explanations remain in play and are not mutually exclusive with the first. Travellers may have developed a general preference for private vehicles over shared transport, a shift reported in tourism research elsewhere after 2020. The mix of visitors may also have moved toward domestic and regional travellers who arrive by car, and away from fly-in international tourists who traditionally cross as foot passengers. Annual totals for three aggregate categories cannot separate these effects from one another, or from the coach hypothesis. Data broken down by vehicle type, route, nationality or month would be needed for that.

Air arrivals complicate that last suggestion, and usefully so. Split Airport handled 3.88 million passengers in 2025 against 3.30 million in 2019, a rise of 17.5 % (Split Airport, 2026). Port passengers over the same interval rose only 7.9 %. If fly-in tourism were shrinking as a share of the port's business, air traffic should have lagged rather than led. It did the opposite, which weakens any straightforward account based on international visitors being replaced by domestic ones.

Year	Airport passengers	vs. 2019	Port passengers	vs. 2019	Vehicles	vs. 2019
2019	3,301,930	/	5,607,789	/	829,594	/
2021	1,577,584	-52.2%	4,070,845	-27.4%	848,520	+2.3%
2023	3,358,902	+1.7%	5,856,335	+4.4%	989,842	+19.3%
2025	3,881,186	+17.5%	6,050,295	+7.9%	1,054,019	+27.1%

Table 6. Split Airport and Port of Split traffic relative to 2019

A different reading fits these numbers better. Suppose a growing share of arriving air passengers now rents a car at the airport and drives it onto a ferry. Before, more of them would have reached the port by bus or taxi and crossed on foot. That single change moves air traffic, vehicle traffic and the passenger-to-vehicle ratio in exactly the directions observed. The visitor mix need not have changed at all. Authors note, from regular observation at Split Airport, that the number of rental companies operating there and the size of their fleets have grown conspicuously since 2019. That is an impression, not a measurement. No rental-volume statistics were available to test it. It does fit what the traffic figures show, and it would sit alongside the coach hypothesis rather than replace it.

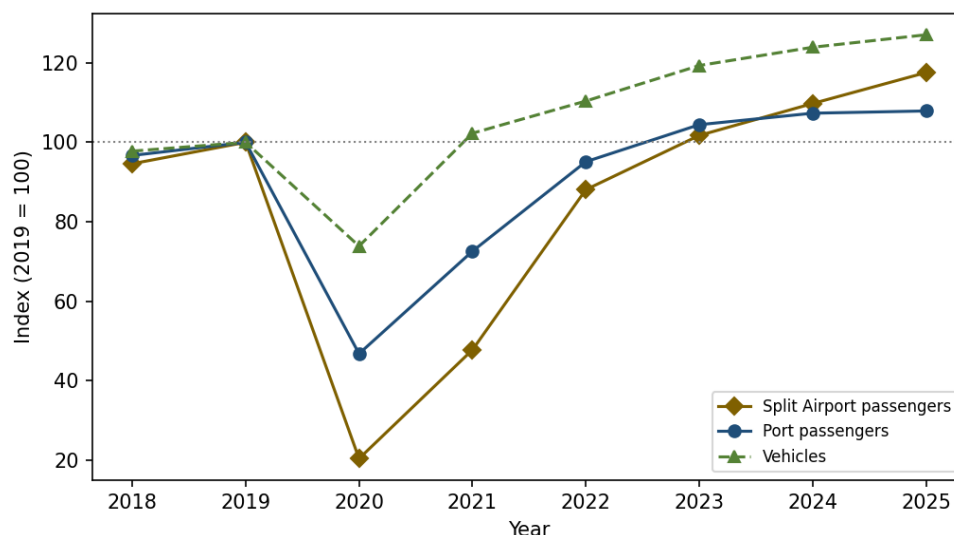


Figure 5. Air, passenger and vehicle traffic indexed to 2019 (2019 = 100)

Figure 5 makes the three paths easy to compare. Vehicles fell least in 2020 and were back above their 2019 level by 2021, ahead of everything else. Air traffic fell furthest, then climbed steeply and passed port passengers in 2024. Port passenger numbers sit between the two and have flattened since 2023. Three parts of what is nominally one tourism system, moving at three different speeds.

The contrast between the two crises deserves a note of its own. The 2008–2009 financial crisis worked through demand: people had less money, and some of them travelled less. Traffic dipped and resumed. COVID-19 worked through prohibition, and the difference in magnitude is visible at a glance in Figure 1. Both were severe economic events, but they reached maritime passenger transport through entirely different channels, and only one of them left a mark that is still measurable five years later.

The DZS figures support that reading. Their domestic and international breakdown (Table 7) shows domestic traffic falling by 48.0 % in 2020, while international traffic fell by 94.4 %, from 524,321 passengers to 29,419.

Traffic type	2019	2020	Change
Domestic	4,795,120	2,494,245	– 48.0%
International	524,321	29,419	– 94.4%

Table 7. Domestic vs. international passenger traffic, Port of Split (DZS data)

The international figure follows the cruise collapse almost exactly. Domestic ferry traffic, meanwhile, carried on at roughly half its usual volume, because island residents still needed to reach the mainland whatever else was happening. That asymmetry is the clearest available evidence that 2020 was a border and mobility event rather than a collapse in the appetite for travel.

Figure 6 shows the two series on separate scales, since domestic traffic is roughly ten times the international figure. The shapes differ in a telling way. The domestic line dips and returns. The international line drops almost to the axis in 2020 and takes until 2023 to recover, then goes on to exceed its pre-pandemic level in 2024.

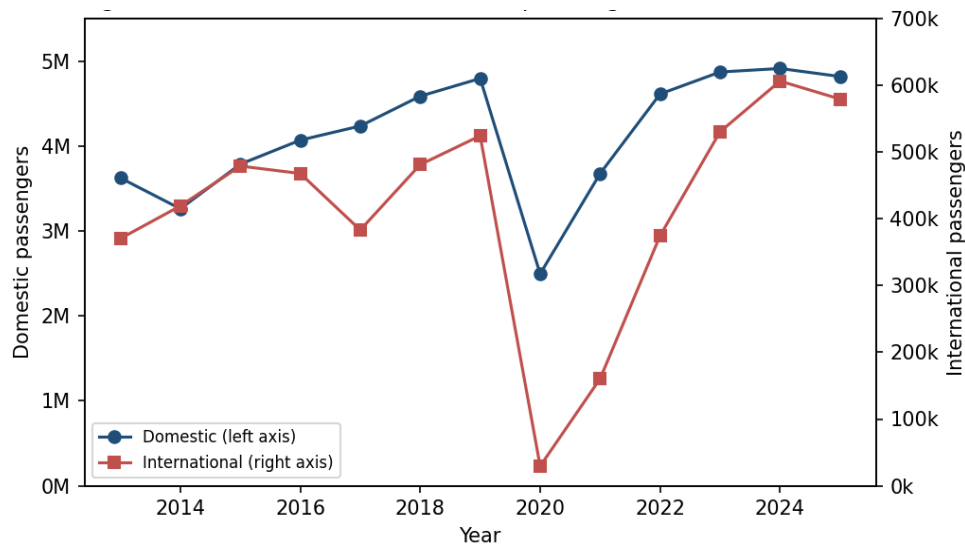


Figure 6. Domestic and international passenger traffic, Port of Split, 2013–2025 (DZS data)

Set against the wider region, these results fit a pattern others have found. Peronja (2025) reported an uneven recovery across nautical tourism in Split-Dalmatia County, with charter and cruising lagging behind marina operations, and attributed part of that unevenness to how flexible and capital-intensive each sub-sector is. The Port of Split shows the same thing at a smaller scale: recovery that is complete in one segment, overshooting in another, and driven by mechanisms that differ between them.

5.1. Limitations

Five limitations should temper how these results are read.

The data are annual, so nothing can be said about what happens within a year. Seasonality dominates Adriatic traffic, and a monthly series would show whether recovery arrived evenly across the calendar or concentrated in particular months.

Second, extrapolating a straight line assumes growth would have continued in a straight line, which is a convenient assumption rather than a demonstrated one; the reported gaps are indicative and should not be treated as precise counterfactuals.

Third, this is a single-port study. Whether the same pattern appears at Trogir, Omiš, Hvar or Stari Grad is an open question, and one that DZS data could answer, since they cover those ports on a consistent basis.

Fourth, and most directly relevant to the argument above, neither source breaks vehicles down by type or occupancy, which leaves the coach hypothesis untested. Nor were rental-car volumes at Split Airport available, which would be needed to test the rental hypothesis.

Fifth, the passengers-per-call figures rest on two undocumented definitions. The Port Authority does not state whether its cruise passenger count covers everyone aboard or only those going ashore, nor whether small coastal cruise vessels are included. Section 4.5 works through both. The first affects what the ratio means; the second affects its level, and only in the direction of understatement.

6. CONCLUSION

In terms of passenger volume, the Port of Split has recovered from the pandemic completely. By 2023 the passenger series was back within a few per cent of its pre-2020 trajectory. But the recovery is not a restoration. Vehicle traffic has run well past its old trend, and the number of passengers arriving per vehicle has settled about one full passenger below its pre-pandemic level, where it has now stayed for three years. Something about how people reach and pass through this port changed in 2020 and has not changed back.

A second finding concerns the cruise segment, and it predates the pandemic. Split receives roughly the same number of cruise ships each year as it did fifteen years ago, but each call now registers between two and three times as

many passengers. Cruise growth at this port has come from what arrives on each ship, not from more ships arriving. Whether that reflects larger vessels, a greater share of passengers going ashore, or both cannot be settled with the published data, and Section 4.5 sets out why. For berth planning the distinction matters less than the pattern: the same number of calls now delivers a far heavier load, and it arrives in concentrated bursts.

For the port itself the practical implication is straightforward enough. Vehicle numbers are growing faster than passenger numbers, and vehicle capacity, on the ferries and in the terminal, is the constraint that binds first. Planning built on passenger forecasts alone would understate the pressure.

The wider point concerns what gets measured. Aggregate tourism indicators would have shown Split recovering and left it there. It took separating the segments and comparing them against their own trends to find the divergence, which supports the argument for evidence-based, traffic-specific monitoring of Croatian ports made by Luković, Piplica and Hruska (2021).

Several questions are left open, and deliberately so. Monthly data would resolve the seasonal question. Comparison with neighbouring ports would establish whether this is a Split phenomenon or a regional one. Most of all, the coach hypothesis put forward in Section 5 needs someone with vehicle-type data to test it. As said before, authors would be glad to see it examined, and would find a refutation as informative as a confirmation.

CONFLICT OF INTEREST

Authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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