High season, low growth: The impact of tourism seasonality and vulnerability to tourism on the emergence of high growth firms[[1]](#footnote-1)

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**Highlights:**

* Higher tourism seasonality and vulnerability to tourism reduce the share of high-growth firms.
* Seasonality introduces economic uncertainties and risks that reduce growth opportunities at tourism-driven locations.
* Constrained by seasonality, tourism-led growth has its limits and may act as a brake for higher economic growth.

**Abstract**

Beneficial effects of tourism for growth are well known but the negative ones are also among increasingly investigated issues. One of open questions relates to individual channels through which tourism effects translate into local economic outcomes. Using datasets on population of firms and tourist arrivals over 2012-2019 period in small, tourism-led economy we show that seasonality and overall vulnerability of destination to tourism exert negative effects on the share of high growth firms consistent with recent findings of their effects on housing affordability. Several times stronger effects of seasonality can be associated with features such as capital underutilization, revenue instability and sensitivity to external shocks but future research is needed to corroborate on these issues across space and time.

Keywords: seasonality, tourism vulnerability, high growth firms

**1. Introduction**

Over recent years several studies have provided evidence on beneficial effects of tourism-led growth (Tang & Tan, 2013; Shahzad et al., 2017). However, the “Dutch disease” or “Beach disease” theories (Holzner, 2011) as well as some empirical evidence (Romao et al., 2016) have also indicated that high shares of tourism in economic structure may exhibit adverse effects on economic development and regional resilience. While both positive and negative effects of tourism on economic outcomes are known the individual channels through which their materialization takes place have been investigated to much lesser extent. Recent study by Mikulic et al. (2021) showed in context of tourism effects on housing market differing effects of individual supply side (e.g. accommodation capacities) and demand side (e.g. intensity and seasonality of arrivals) tourism channels on economic outcomes.

Whether same findings hold outside of housing context and through which channels tourism effects translate into different economic outcomes is still unknown issue that calls for further research. The above issue becomes particularly relevant with many tourism-dependent destinations being severely hit with Covid-19 pandemics. Post Covid-19 touristic development will have to pay greater attention to sustainability of tourism-led growth and strengthening of destination resilience to external shocks (Sharma, Thomas & Paul, 2021). Understanding channels through which tourism materializes its effects on destinations presents first step in providing of evidence-based recommendations for formulation of policies towards that aim.

One of areas that calls for future research is the one of tourism effects on firm growth, particularly the emergence of high growth firms (HGR). HGRs are commonly seen as catalysts of social and economic development (Hechavarria et al., 2019). Across many world economies, they account for up to 50% of new jobs and sales in service sector but also generate spillover effects to downstream or upstream counterparts in value chain (Goswami et al., 2019). In the past, HGRs have been associated with high-tech sectors and sources of their growth were looked for in technological breakthroughs, innovation or human capital. However, recently it has been also suggested that HGRs exist across range of sectors regardless of their technological and knowledge intensity (Goswami et al., 2019).

With exception of few studies (Omerzel and Jurdana, 2016; Perić and Vitezić, 2016; Srhoj et al., 2021) which investigated impact of innovativeness, firm size and public grants the phenomenon of high growth firms has not been touched in the tourism literature. Tourism businesses are commonly associated with small profit margins and long periods of return on investment for which reason their growth rates are expected to be inferior to other sectors (Papathanassis, 2011). Furthermore, negative effects of tourism on economic development such as instability of revenues, capital underutilization or exposure to external shocks (Chung, 2009; Batista e Silva et al., 2018) further reduce growth opportunities. These effects are particularly present in seasonally driven touristic destinations (Mikulic et al., 2021). This calls for research on understanding whether higher overall vulnerability of destinations to tourism or its seasonal component matter more for the share of HGRs in the total business population.

The aim of our research note is to analyse for the first time the effects of tourism seasonality and vulnerability on the share of HGRs in a destination. The analysis focuses on cities and towns of Croatia, a small and open European economy with high dependent on tourism and one of highest rates of tourism seasonality in the Mediterranean. Croatia makes suitable context for our analysis not only due to its economic dependence on the seasonal tourism but also due to the fact that tourism prevails in its southern parts while the north of the country is driven with agriculture and manufacturing sectors. This allows us to assess the effects of tourism seasonality on high growth firms in tourism-driven economy but at the same time within a sample that is not biased towards the tourism.

Our research establishes a bridge among three previously unconnected theoretical perspectives. We start from entrepreneurial ecosystems argument (Audretsch and Belitski, 2017) that local institutional and systemic features influence firm entry, survival and growth. To this we add from gentrification literature that tourism induced sociospatial restructuring deprives cities of resources relevant for their functioning and that these processes constrain ability of local entrepreneurial ecosystems to yield and facilitate growth opportunities (Gotham, 2005). Finally, we argue that these adverse effects are particularly pronounced in areas with high tourism seasonality as it leads to high risk of capital underutilisation, revenue instabilities and shortage of some worker profiles (Lee et al., 2008). Empirically, our study is close to recent findings of negative effects of tourism seasonality and vulnerability to tourism on housing affordability (Mikulic et al., 2021) as it draws on Batista e Silva et al. (2018) concept of measuring tourism seasonality and vulnerability of destination to both seasonality and intensity of tourism.

The issue of vulnerability to tourism gained considerable attention with the recent rise of Covid-19 pandemics. Across studies the concept has been applied to explore the chances of tourism sector workers becoming unemployed (Lopes et al., 2021) or the effects of Covid-19 related tourism vulnerability on local employment levels (Duro et al., 2021) as well as effects on gross value added (Arbulu et al., 2021) or the resilience of local firms (Ntounis et al., 2021). However, the definitions of vulnerability employed in these studies considerably differ from ours and do not reflect on the seasonality of tourism. Furthermore, existing investigations of vulnerability are nested in short cross-sectional framework of Covid-19 pandemics. Our research covers period between 2012-2019, the most recent available years allowing us to trace the effects of studied phenomena in longitudinal dimension which is another contribution to the existing literature.

Our findings, robust across different estimation techniques and sample structures, reveal that both seasonality and vulnerability to tourism exhibit adverse effects on high growth firms but the effect of seasonality is stronger than that of overall vulnerability. Together with findings of Mikulic et al. (2021) for housing market this signals that it is not tourism per se but its individual features, particularly seasonality at given destination that produce adverse effects to local economic outcomes. The note calls for future research that would empirically assess the relevance of tourism seasonality and intensity but also its other dimensions such as supply side characteristics for different economic outcomes and to answer whether these findings hold across socio-economic settings of different countries and time periods.

**2. Empirical setting**

Our analysis is nested within Croatia, one of the tourism-dominated European economies characterized by the highest level of tourism seasonality in the Mediterranean region (Kožić, 2013). It combines three population-based datasets previously used in studies of the impact of tourism on local economic outcomes (Mikulić et al., 2021) and covering most recent available period between 2012 and 2019. Firm-level data comes from the Croatian Financial Agency (FINA), a public institution to which all firms must submit their annual financial reports. The analysis is based on 920,977 observations and an annual population of firms ranging from 101,615 in 2012 to 136,628 firms in 2019. The data on tourist arrivals comes from the Croatian Bureau of Statistics. Both sources were aggregated at the level of all 556 local cities and municipalities in Croatia. Finally, several categorical variables were constructed on the basis of characteristics of Croatian cities and municipalities (e.g., location).

Common definition of HGRs is the OECD/Eurostat one. To this end, firm is characterised as HGR if it achieved sales growth of at least 20% over a three-year period and had at least 10 employees at the beginning of that period. Using such definition, the dependent variable in our model is defined as share of HGRs in the total population of businesses within the city in a given year and expressed in percentages. Similar measures were previously used in analyses of high growth firms(Stojcic et al., 2020).

Two tourism-related variables of key interest are seasonality and vulnerability of destination to tourism. Following established approach in the literature (Batista et Silva et al., 2018; Mikulić et al., 2021), the seasonality of tourism is measured with the coefficient of variation of the monthly series of average daily overnight stays by tourists in the city. Destination vulnerability to tourism is defined as the product of tourism seasonality and tourist arrivals intensity (concentration), the proportion of overnight stays per capita in a municipality relative to the country as a whole. Hence it can be said that our vulnerability measure is weighted measure of seasonality with tourism intensity being used as weight. Batista e Silva et al. (2018) interpret this variable also as a measure of a place's vulnerability to external shocks to tourism, such as socioeconomic, environmental, health, or terrorist shocks. Since the effects of vulnerability and seasonality are expected to occur with a lag, both variables enter the model with a one-year lag.

The model controls for local market dynamism with the share of entrants and firms surviving one year since start-up (in all sectors) in the total population of firms in the city or town. Export intensity (i.e., the share of exports in sales) controls for productivity-enhancing learning-by-exporting effects. Four categorical variables control for the existence of an entrepreneurial zone in the locality, whether the locality belongs to one of Croatia's metropolitan areas, to a coastal area where most tourism activities are concentrated, and whether it has access to railway infrastructure. These variables take value of one if city has entrepreneurial zone, if it is one of metropolitan or coastal areas, if it has access to railway structure and zero otherwise. Finally, annual time dummies are included in the model to control for universal cross-sectional shocks.

The robustness of the results is assessed with several methodological approaches. First, the study uses Ordinary Least Squares (OLS) regression, which ignores the longitudinal dimension of the dataset. We then introduce the temporal dimension of the dataset using panel methods with random effects (RE) and fixed effects (FE). Finally, we apply the dynamic panel system estimation (SYS-GMM) to control for the dependent variable's dependence on its past realizations and its potential correlation with time-invariant unobserved heterogeneity. A significant proportion of Croatian cities and municipalities have no tourism activity, which may affect our findings. For this reason, we also re-estimated the model on a reduced dataset consisting only of those localities where tourism activity was recorded in a given year.

**3. Findings**

Results from a sample of all Croatian cities and municipalities reveal negative and statistically significant effects of seasonality and vulnerability on the share of high-growth firms (Table 1). These results are extremely well robust on the choice of different econometric techniques. The magnitude of coefficients is highest in OLS estimations that does not account for panel dimension of the dataset, dynamics of the dependent variable or the unobserved time-invariant heterogeneity. Panel econometric techniques reduce the size of coefficients. Finally, the inclusion of the lagged dependent variable reduces the magnitude of the coefficient for about a half suggesting that part of the effect is absorbed through the relationship between present and past realizations of high growth shares. The magnitude of vulnerability is smaller than that of seasonality. This supports previous findings on the relative importance of individual channels for the transmission of negative tourism effects on local economic outcomes (Mikulić et al., 2021).

How can one interpret these findings? Seasonality of tourism activity is often related to capital underutilization and revenue instability (Chung, 2009), while vulnerability makes destinations exposed to socioeconomic, environmental, health-related, or terrorism-related shocks (Batista e Silva et al., 2018). Such uncertainties and risks of the local economic environment likely reduce the growth opportunities of tourism-driven locations. The assessment of model sensitivity to sample reduction on cities and towns with recorded tourism activity did not alter signs or significance of our main variables (Table 2) but the magnitude of the coefficient somewhat changes. The effect of seasonality remains stronger than that of vulnerability to tourism.

Table 1. Results of estimation – whole sample 2012-2019.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Seasonality | | | | Vulnerability | | | |
| Variables | OLS | RE | FE | SYS-GMM | OLS | RE | FE | SYS-GMM |
| High growth sharet-1 | - | - | - | 0.54\*\*\* (0.073) | - | - | - | 0.55\*\*\* (0.074) |
| **Seasonality of tourism** | **-0.62\*\*\* (0.120)** | **-0.55\*\*\* (0.084)** | **-0.54\*\*\* (0.056)** | **-0.30\*\*\* (0.076)** | **-** | **-** | **-** | **-** |
| **Vulnerability to tourism** | **-** | **-** | **-** | **-** | **-0.15\*\*\* (0.022)** | **-0.10\*\*\* (0.023)** | **-0.09\*\*\* (0.025)** | **-0.06\*\*\* (0.021)** |
| Entry share | -0.03\*\*\* (0.010) | -0.02\*\*\* (0.006) | -0.02\*\*\* (0.006) | -0.01\*  (0.008) | -0.03\*\*\* (0.010) | -0.02\*\*\* (0.006) | -0.02\*\*\* (0.006) | -0.01\*  (0.008) |
| t+1 survival share | -0.04\*\*\*  (0.010) | -0.02\*\*  (0.006) | -0.02\*\*\* (0.006) | -0.02\*\*  (0.008) | -0.04\*\*\* (0.010) | -0.02\*\*\* (0.006) | -0.02\*\*\* (0.006) | -0.02\*\*  (0.008) |
| Export intensity | 0.03\*\*\* (0.005) | 0.02\*\*\* (0.005) | 0.02\*\*\* (0.006) | 0.01\*\*  (0.005) | 0.03\*\*\* (0.005) | 0.02\*\*\* (0.005) | 0.02\*\*\* (0.006) | 0.01\*\*  (0.005) |
| Entrepreneurial zone | 0.94\*\*\* (0.299) | 0.24  (0.330) | -0.04  (0.373) | 0.56\*\*  (0.280) | 0.99\*\*\* (0.298) | 0.26  (0.331) | -0.04  (0.375) | 0.58\*\*  (0.276) |
| Metropolitan area | -0.75  (0.973) | -0.84  (2.07) | - | -0.50\*  (0.303) | -0.88  (0.97) | -0.88  (2.062) | - | -0.52\*\*  (0.260) |
| Coastal area | -2.18\*\*\* (0.223) | -2.22\*\*\* (0.423) | - | -0.81\*\*\* (0.262) | -1.42\*\*\* (0.270) | -1.82\*\*\* (0.457) | - | -0.55\*\*  (0.258) |
| Railway access | 0.28  (0.182) | 0.33  (0.387) | - | 0.41\*  (0.220) | 0.23  (0.182) | 0.30  (0.384) | . | 0.39\*  (0.217) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 3336 | 3336 | 3336 | 2780 | 3336 | 3336 | 3336 | 2780 |
| Groups | - | 556 | 556 | 556 | - | 556 | 556 | 556 |
| Instruments | - | - | - | 22 | - | - | - | 22 |
| AR(1) | - | - | - | -7.50 | - | - | - | -7.51 |
| p-value | - | - | - | 0.000 | . | - | - | 0.000 |
| AR(2) | - | - | - | 1.26 | - | - | - | 1.14 |
| p-value | - | - | - | 0.209 | - | - | - | 0.252 |
| Hansen test | - | - | - | 8.95 | - | - | - | 9.06 |
| p-value | - | - | - | 0.18 | . | . | . | 0.17 |

Table 2. Results of estimation – cities and towns with recorded tourism activity 2012-2019.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Seasonality | | | | Vulnerability | | | |
| Variables | OLS | RE | FE | SYS-GMM | OLS | RE | FE | SYS-GMM |
| High growth sharet-1 | - | - | - | 0.58\*\*\* (0.063) | - | - | - | 0.57\*\*\* (0.063) |
| **Seasonality of tourismt-1** | **-0.67\*\*\* (0.139)** | **-0.60\*\*\* (0.116)** | **-0.60\*\*\* (0.128)** | **-0.52\*\*\* (0.086)** | **-** | **-** | **-** | **-** |
| **Vulnerability to tourismt-1** | **-** | **-** | **-** | **-** | **-0.19\*\*\* (0.024)** | **-0.09\*\*\* (0.025)** | **-0.05\* (0.028)** | **-0.08\*\*\* (0.021)** |
| Entry share | -0.03\*\*  (0.012) | -0.02\*\*\* (0.006) | -0.02\*\*\* (0.006) | -0.004  (0.009) | -0.04\*\*\* (0.012) | -0.02\*\*\* (0.006) | -0.02  (0.006) | -0.01  (0.008) |
| t+1 survival share | -0.01  (0.012) | 0.006  (0.006) | 0.01  (0.006) | 0.008  (0.009) | -0.005  (0.012) | 0.007  (0.006) | 0.008 (0.006) | 0.01  (0.009) |
| Export intensity | 0.03\*\*\* (0.005) | 0.01\*\*\* (0.005) | 0.005  (0.006) | 0.006  (0.005) | 0.03\*\*\* (0.005) | 0.01\*\*\* (0.005) | 0.005 (0.006) | 0.006  (0.005) |
| Entrepreneurial zone | 1.09\*\*\* (0.280) | 0.12  (0.292) | -0.28  (0.329) | 0.53\*\*  (0.212) | 1.16\*\*\* (0.277) | 0.14  (0.293) | -0.30  (0.331) | 0.56\*\*\* (0.210) |
| Metropolitan area | -0.89  (0.785) | -1.05  (1.800) | - | -0.56\*\*  (0.266) | -1.10  (0.779) | -0.99  (1.794) | - | -0.54\*\*\* (0.209) |
| Coastal area | -2.17\*\*\* (0.189) | -2.37\*\*\* (0.384) | - | -0.83\*\*\* (0.206) | -1.31\*\*\* (0.229) | -1.91\*\*\* (0.413) | - | -0.56\*\*\* (0.209) |
| Railway access | 0.44\*\*  (0.196) | 0.37  (0.385) | - | 0.26  (0.177) | 0.31  (0.195) | 0.46  (0.384) | - | 0.32\*  (0.175) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 2075 | 2075 | 2075 | 1744 | 2075 | 2075 | 2075 | 1744 |
| Groups | - | 446 | 446 | 443 | - | 446 | 446 | 443 |
| Instruments | - | - | - | 28 | - | - | - | 28 |
| AR(1) | - | - | - | -4.62 | - | - | - | -4.59 |
| p-value | - | - | - | 0.000 | - | - | - | 0.000 |
| AR(2) | - | - | - | -0.61 | - | - | - | -0.69 |
| p-value | - | - | - | 0.539 | - | - | - | 0.492 |
| Hansen test | - | - | - | 15.34 | - | - | - | 11.89 |
| p-value | - | - | - | 0.223 | - | - | - | 0.455 |

**4. Conclusions**

The findings presented in this research note reveal a negative impact of a destination's vulnerability to tourism and, particularly, the level of tourism seasonality on the emergence of high-growth firms. One could argue that these negative effects act as constraints to tourism-led growth. The strong adverse effects of seasonality on the emergence of high-growth firms may be explained by common traits of seasonal tourism such as capital underutilization, instability of earnings and high sensitivity to external shocks all of which are detrimental to growth. Such form of tourism holds the potential of transforming the destination into a low value-added area with sub optimal economic performance.

Moreover, high levels of tourism seasonality, paired with high levels of vulnerability to tourism (Batista e Silva et al., 2018), is likely a consequence of the fact that investment in accommodation capacities is often one of the few 'secure' investments in attractive touristic environments. In combination with a tourism product that is attractive only during the summer period (sun, sand, & sea), what one achieves is only a rise in seasonal peaks with the local population waiting for every next summer to come, without a strong motive to engage in any other economic activity. In this regard, this research note supports the findings of Kožić (2019), who detected a trend of deteriorating human capital induced by high levels of tourism activity. Also, this note supports findings of Mikulic et al. (2021) on tourism effects on housing affordability.

To conclude, the findings of this note provide a novel perspective on the adverse effects of high levels of tourism activity on one aspect of economic performance. Together with previously reported effects on housing affordability (Mikulić et al., 2021) they suggest that seasonality may hold sizeable part of the answer to question how negative tourism effects spillover to local economy. Future research is needed to explore individual transmission channels of tourism on different local economic outcomes across space and time. There is the need to explore whether and to what extent tourism seasonality and overall vulnerability to tourism influence wage levels, employment and structural change at local level and whether these effects are spatially bounded or do they extend across the space.

**References**

Arbulu, I., Razumova, M., Rey-Maquieira, J. & Sastre, F. (2021). Measuring risks and vulnerability of tourism to the COVID-19 crisis in the context of extreme uncertainty: The case of the Balearic Islands. Tourism Management Perspectives, 39.

Audretsch, D. B., & Belitski, M. (2017). Entrepreneurial ecosystems in cities: Establishing the framework conditions. Journal of Technology Transfer, 42(5), 1030–1051.

Batista e Silva, F., Mar n Herrera, M. A., Rosina, K., Barranco, R. R., Freire, S., & Schiavina, M. (2018). Analysing spatiotemporal patterns of tourism in Europe at highresolution with conventional and big data sources. Tourism Management, 68, 101–115.

Chung, J. Y. (2009). Seasonality in tourism: A review. e-Review of Tourism Research, 7(5), 82–96.

Duro, J.A., Perez-Laborda, A., Turrion-Prats, J. & Fernandez-Fernandez, M. (2021). Covid-19 and tourism vulnerability. Tourism Management Perspectives, 38.

Gotham, K. F. (2005). Tourism gentrification: The case of New Orleans’ Vieux Carre (French Quarter). Urban Studies, 42(7), 1099–1121.

Hechavarria, D., Bullough, A., Brush, C., & Edelman, L. (2019). High‐growth women's entrepreneurship: Fueling social and economic development.

Holzner, M. (2011). Tourism and economic development: The beach disease?. Tourism Management, 32(4), 922-933.

Kožić, I. (2013). The seasonality in tourism in Croatia. Ekonomski vjesnik: Review of Contemporary Entrepreneurship, Business, and Economic Issues, 26(2), 470–480.

Kožić, I. (2019). Can tourism development induce deterioration of human capital?. Annals of Tourism Research, 77, 168-170.

Lee, C., Bergin-Seers, S., Galloway, G., O'Mahony, B., &McMurray, A. (2008). Seasonality in the tourismindustry: Impacts and strategies. Retrieved October, 5, 2021 from the Coastal Tourism Academy web site https://coastaltourismacademy.co.uk/uploads/CRC\_Queensland\_2008\_Seasonality\_in\_the\_tourism\_industry\_(2).pdf.

Lopes, A.S., Sargento, A. & Carreira, P. (2021). Vulnerability to COVID-19 unemployment in the Portuguese tourism and hospitality industry. International Journal of Contemporary Hospitality Management. 33(5), 1850-1869.

Mikulić, J., Vizek, M., Stojčić, N., Payne, J.E., Čeh Časni, A. and Barbić, T. (2021). The effect of tourism activity on housing affordability. Annals of Tourism Research, 90.

Ntounis, N., Parker, C., Skinner, H., Steadman, C. & Warnaby, G. (2021). Tourism and Hospitality industry resilience during the Covid-19 pandemic: Evidence from England. Current Issues in Tourism. Online first.

Omerzel, D.G. & Jurdana, D.S. (2016). The influence of intellectual capital on innovativeness and growth in tourism SMEs: empirical evidence from Slovenia and Croatia. Economic Research – Ekonomska istraživanja. 29(1), 1075-1090.

Papathanassis, A. (2011). The long tail of tourism. In The Long Tail of Tourism (pp. 1-6). Gabler.

Perić, M. & Vitezić, V. (2016). Impact of global economic crisis on firm growth. Small Business Economics. 46(1), 1-12.

Romao, J., Guerreiro, J., & Rodrigues, P. M. (2016). Tourism growth and regional resilience: The 'beach disease'and the consequences of the global crisis of 2007. Tourism Economics, 22(4), 699-714.

Shahzad, S. J. H., Shahbaz, M., Ferrer, R., & Kumar, R. R. (2017). Tourism-led growth hypothesis in the top ten tourist destinations: New evidence using the quantile-on-quantile approach. Tourism Management, 60, 223-232.

Sharma, G. D., Thomas, A., & Paul, J. (2021). Reviving tourism industry post-COVID-19: A resilience-based framework. Tourism management perspectives, 37, 100786.

Srhoj, S., Vitezić, V. and Walde, J. (2021). Do small public grants boost tourism firms’ performance? Tourism Economics, 27 (2), 1-18

Stojcic, N., Anic, I-D. and Svilokos, T. (2021). The entrepreneurial gains from market integration in the new EU member states. Small Business Economics, 57(3), 1601-1620

Tang, C. F., & Tan, E. C. (2013). How stable is the tourism-led growth hypothesis in Malaysia? Evidence from disaggregated tourism markets. Tourism Management, 37, 52-57.

Goswami, A.G., Medvedev, D. and Olafsen, E. (2019). High-growth firms: Facts, fictions and policy options for emerging economies. World Bank Group, Washington DC.

**Appendix**

Tourism seasonality and vulnerability measurement

Following Batista et al. (2018) and Mikulic et al. (2021) we construct measures of tourism seasonality and vulnerability as follows:

Tourism seasonality is measured through coefficient of variation (CV) of each city’s monthly series of the average daily number of overnight tourists in a given year. Tourism vulnerability is constructed as product of tourism seasonality and tourism intensity. Tourism intensity is measured as:

Where *tourists* refer to the average daily number of overnight tourists over the year, *pop* is the total resident population of city or twon and *n* is the total number of cities or towns in the country.

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