An Analysis of the Seasonal Variation in the National Tourism Indicators

A Report Prepared for the

Canadian Tourism Commission

by

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Executive Summary and Implications

There is a very sharp and pronounced seasonal pattern in Canadian tourism expenditures. Over the 1986 to 1997 period, third quarter (summer) tourism expenditures account for 43% of annual tourism expenditures, compared to only 17% in the first and fourth quarters. Seasonality explains 75% of the statistical variation in tourism expenditures and the annual seasonal decline in tourism expenditures from summer to winter is almost three times larger than the cyclical decline in tourism expenditures during the 1991 recession.

While there is a very distinctive seasonal pattern in tourism data, the nature and degree of seasonality varies considerably for different tourism commodities. Tourism expenditures on accommodation, vehicle rentals, and recreation and entertainment have the most severe degree of seasonality, while tourism expenditures on passenger air transport have the least degree of seasonality. All tourism commodities have a seasonal peak in the third quarter except for tourism expenditures on travel agency services, which peak in the first quarter.

There is a much more pronounced seasonal pattern for tourism export demand than for tourism domestic demand. 62% of annual tourism export expenditures occur in the third quarter, with only 3% and 8% of annual tourism expenditures occurring in the first and fourth quarters. Given the rising share of tourism export demand in total tourism demand during the 1990s, the degree of seasonality in tourism expenditures is likely greater in the 1990s than in the 1980s.

There is less seasonality in the supply of tourism commodities, particularly when non-tourism demand is a large share of total demand. Non-tourism demand for food and beverage services, vehicle fuel, and recreation and entertainment smooths out the seasonal pattern in the supply of these commodities (the third quarter accounts for less than 30% of the total annual supply of these particular tourism commodities). Seasonal fluctuations explain only 32% of the statistical variation in the supply of total tourism commodities, compared to 71% of the statistical variation in tourism demand for total tourism commodities. And there is much less seasonality in tourism employment data.

Finally, temperature deviations from the seasonal norm appear to have a positive effect on tourism expenditures in the third quarter of the year. This positive ‘summer’ temperature effect occurs predominantly on the domestic side of tourism demand. One degree above the summer seasonal norm is estimated to increase tourism domestic expenditures by $405 million (a 4% increase). On the export side of tourism demand, passenger air transport is the only major tourism commodity which is affected by Canadian temperature deviations from the summer norm. One degree above the summer seasonal norm is estimated to increase tourism export expenditures on Canadian passenger air transport by $71 million (an 8% increase). Temperature deviations from the seasonal norm do not appear to affect tourism expenditures in the second and fourth quarters of the year, and perhaps have a small negative

effect on tourism expenditures in the first quarter of the year.

Having identified and described the basic seasonality of the various commodities associated with the industries of the tourism sector. This study provides a benchmark against which we can evaluate programs towards the CTC vision of making tourism in Canada a balanced and four-season industry.

The study confirms the wisdom of CTC's decision to give special attention to redressing the highly skewed seasonal pattern of current consumption (i.e. annual seasonal decline is three times greater than the 1991 recession).

Analysis identifies certain markets and commodities where the seasonality effect is more extreme than others (i.e. export demand versus domestic, accommodation, vehicle rentals and recreation and entertainment). Strategic initiatives focussing on these key areas are likely to have the broadest impact on changing the overall seasonal pattern. Special strategic marketing initiatives to build new seasonal products in this area have been initiated by individual destinations (i.e. Whistler's summer golf development program, and fall harvest program and Vancouver's entertainment season winter marketing program). All have demonstrated that a mix of targeted domestic and international marketing campaigns can produce changes in the traditional seasonal pattern of consumption, thus increasing the overall productivity and profitability of the industry.

The report recommends a simple statistic to monitor the changes in seasonality - i.e. peak to trough ratio.

The supply related questions of capacity and employment require further research using more finely drawn indicator variables.

The seasons themselves are not fixed - there is much talk of climate and global warming. Climate theory suggests that equatorial and polar regions will be more severely affected. These results suggest that a long term warming trend could increase domestic tourism in Canada, thus offsetting the increased seasonality distortion arising from an expanded export market in general.

Canadian Tourism Commission Vision

Canada will be the premier four-season destination to connect with nature and to experience diverse cultures and communities.

1. Introduction

To measure progress in achieving the Canadian Tourism Commission's vision "*that Canada will be the premier four-season destination*," the seasonal pattern in Canadian tourism must be identified and quantified.

In 1996 Statistics Canada began to publish quarterly (and annual) National Tourism Indicators (NTIs), which measure key tourism indicators such as total tourism expenditures, tourism expenditures on various tourism commodities (such as passenger air transport, vehicle rentals, hotels, food and beverage services, recreation and entertainment, and travel agency services), domestic and export tourism expenditures, the supply of various tourism commodities, and employment in various tourism industries.

The purpose of this report is to estimate the magnitude of the seasonal component (or seasonal factor) in each of the 113 published NTIs over the 1986 to 1997 period and to discuss the importance of 'seasonality' for different tourism commodities and industries.[1] As R. W. Butler[2] has noted:

> "*Seasonality has long been recognised as one of the most distinctive features of tourism ... In spite of this concern over seasonality and its perceived generally negative effects upon tourism and destination areas, there has been relatively little research devoted to this topic which appears in the published literature. It is clear that, while there is often general agreement about the seasonality 'problem', comparatively little study has been made of its detailed nature.*"

Over twenty years ago, BarOn[3] identified two basic causes of seasonality in tourism, 'natural'

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[1] This report, which analyzes the seasonal variation in the NTIs, complements the 1998 Canadian Tourism Commission (CTC) Research Report Recent Developments in Tourism as Revealed by the National Tourism Indicators (by David Wilton) which describes and discusses statistical trends and business cycles in NTI data over the 1986 to 1996 period.

[2] "Seasonality in tourism: issues and problems," in Tourism: State of the Art, edited by A. V. Seaton et al, Chichester, Wiley, 1994, pp. 332.

[3] R. R. V. BarOn, Seasonality in Tourism, Economist Intelligence Unit, London, 1975.

seasonality and 'institutionalised' seasonality. Natural seasonality is caused by seasonal variations in climate, such as temperature, hours of sunlight, and precipitation. In general, seasonal differences in climate increase as the distance from the equator increases. High latitude countries, such as Canada, have very distinctive seasonal variations in climate which affect many activities and industries. Recreational activities such as swimming, sun-bathing, and camping (and associated tourism expenditures) are obviously affected by seasonal climate changes. Perhaps Shakespeare was thinking about tourism when he wrote, *"Now is the winter of our discontent made glorious summer."*

Institutionalised seasonality in tourism arises from statutory and school holidays. Many individuals choose to visit friends and relatives, or take brief vacations, on statutory holidays, such as Christmas/New Year's, Easter, and Thanksgiving. School holiday periods dictate when families with children can take a vacation. If, for example, schools operated throughout the year with different 'out of school' breaks for different classes (or schools), vacation patterns and tourism expenditures would be much less seasonal. The timing of statutory and school holidays has a major impact on the seasonal pattern of tourism expenditures.

Part 2 of this report provides a graphical overview of the 'seasonality' in tourism demand, supply, and employment. Part 3 of this report uses regression analysis to estimate the magnitude of the seasonal component (seasonal factor) for each of the 113 published NTIs over the 1986 to 1997 period. This part of the project provides statistical answers to a number of questions. Are the seasonal factors for each NTI significantly different from .25 (no seasonality) for each quarter of the year? Is the seasonal factor for winter significantly lower than the seasonal factors for spring and summer? Is the seasonal pattern in one NTI different from the seasonal pattern in another NTI? For example, is the seasonal pattern for a domestic tourism indicator different from the seasonal pattern for the corresponding export tourism indicator? Is the seasonal pattern for hotels different from the seasonal pattern for motels (or passenger airfares)?

Part 4 of the report discusses the importance of seasonality for different tourism commodities and industries. The seasonal component in each NTI is compared to the cyclical and trend components of the NTI. This part of the project answers the following questions. How much of the statistical variation in each NTI is explained (1) by the seasonal component, (2) by the trend component, and (3) by the remaining business cycle and irregular components. Do seasonal fluctuations in each NTI dominate cyclical fluctuations? Is the amplitude of the annual seasonal cycle in tourism larger than the amplitude of the tourism business cycle? The final part of the report explores the determinants of the seasonal cycle. Are the seasonal factors immutable? Do special events, such as the 1988 winter Olympic games in Calgary, alter the seasonal pattern in tourism? Does a mild winter or a cool summer affect the seasonal factors in the NTI data.

2. An Overview of the Seasonal Pattern in Tourism Demand, Supply, and Employment

As noted above, in 1996 Statistics Canada began to publish quarterly National Tourism Indicators (NTIs), with the data back-dated to 1986. Tables 2, 5, 8, 11, and 14 in the National Tourism Indicators, Quarterly Estimates publish *not seasonally adjusted* quarterly data for tourism demand in Canada, tourism domestic demand, tourism exports, the supply of tourism commodities, and employment generated by tourism. Figures 1 through 7 provide graphs of key tourism indicators in Canada over the 1986 to 1997 period.

Figure 1 presents data for total tourism expenditures in Canada. Three key statistical features of tourism data are readily apparent in Figure 1.

The Seasonal Component: The most obvious feature of Figure 1 is the seasonal 'saw-tooth' pattern. A third quarter (summer) peak is followed by a sharp decline in the fourth (autumn) and first (winter) quarters. For example, in 1997 first quarter tourism expenditures of $8,396 million are roughly one-half as large as third quarter tourism expenditures of $16,210 million. The 1997 seasonal peak to trough ratio is 1.93; total tourism expenditures are almost twice as large in the third quarter as in the first quarter.

The Trend Component: Given inflation and economic growth, there is an upward trend in total tourism expenditures. However, the increase in tourism expenditures from twelve years of economic growth and inflation is less than the summer to winter seasonal decline in tourism expenditures. The summer peak value in 1986 is considerably higher than the winter and autumn 'lows' in 1997.

The Business Cycle Component: Finally, there is a business cycle in tourism expenditures. One way to visualize the business cycle component in each NTI is to join up the summer peak points from 1986 to 1997 (to form an upper bound) and to join up the winter trough points from 1986 to 1997 (to form a lower bound). The seasonal band for tourism expenditures has a small business cycle wave over the 1986 to 1997 period. However, compared to the sharp summer-winter seasonal decline each year, the cyclical decline from a business cycle peak in 1990 to a recession low in 1991-92 is barely discernible in Figure 1.[4] The 1990-91 cyclical decline in third quarter (summer) tourism expenditures is only $8 million, less than 1% of the $6,035 million seasonal decline in 1990.[5]

The seasonal 'saw-tooth' pattern is by far and away the dominant statistical feature of total

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[4] The data in Figure 1 are measured in *current* dollars, which includes the effects of inflation. If tourism expenditures were plotted in *constant* dollars, the 1991-92 recession would be more noticeable. Statistics Canada does not publish NTI data in *constant* dollars which is *not seasonally adjusted*.

[5] Measured in *constant* dollars, there was a 9.0% peak-to-trough cyclical decline in tourism expenditures during the 1991-92 recession (see Table 6).

tourism expenditure data in Figure 1. Annual seasonal fluctuations in tourism expenditures are much larger than business cycle fluctuations and the trend increase in tourism expenditures over the 12 year period from 1986 to 1997.

Total tourism expenditures can be desegregated in two different directions --- by commodity and by domestic versus foreign demand. Figures 2 through 4 present graphs for total (domestic plus export) tourism demand for a number of important tourism commodities. As we shall see, the seasonal, business cycle, and trend characteristics of different tourism commodities are quite different.

Figure 2 presents tourism expenditures for two key transportation tourism commodities, passenger air transport and vehicle rentals. While there is a seasonal saw-tooth pattern for tourism expenditures on passenger air transport, the seasonal fluctuations in Figure 2(a) are relatively small. The 1997 seasonal peak to trough ratio for tourism expenditures on passenger air transport is only 1.34 ($2,891 million divided by $2,165 million), much less than the 1.93 seasonal peak to trough ratio for total tourism expenditures. The trend increase in tourism expenditures on passenger air transport over the twelve years from 1986 to 1997 is considerably larger than the annual seasonal fluctuation (the fall and winter trough observations in 1997 are considerably higher than the summer peak observation in 1986). While the business cycle fluctuations are much more obvious in Figure 2(a) than in Figure 1, the annual seasonal decline in tourism expenditures on passenger air transport exceeds the cyclical decline during the 1991-92 recession. As we shall see, even though tourism expenditures on passenger air transport have the lowest degree of seasonality of all tourism commodities, the seasonal component dominates the business cycle component.

The seasonal 'saw-tooth' pattern is the dominant feature of tourism expenditures on vehicle rentals in Figure 2(b). The huge annual fluctuations from a peak summer season to a low autumn-winter season swamp any business cycle swings and long-run trends in tourism expenditures on vehicle rentals. The 1997 seasonal peak to trough ratio is 2.66 ($378 million divided by $142 million) for vehicle rentals.

Figure 3 presents the two key tourism commodities in the accommodation category, hotels and motels. Again, there are very large teeth in the 'saw-tooth' pattern for tourism expenditures on hotels and motels. In both cases, the seasonal component swamps the trend and business cycle components. Twelve years of inflation and economic growth still leave the 1997 winter and autumn trough observations considerably lower than the 1986 peak summer observation for tourism expenditures on hotels and motels. The seasonal swing in tourism expenditures on hotels is much larger than the modest cyclical decline during the 1991-92 recession.[6] In relative terms, the annual seasonal fluctuations in tourism expenditures on motels are larger than the annual seasonal fluctuations in tourism expenditures on hotels. For example, 1997 tourism expenditures on motels ranged from $130 million in the first

[6] There was no decline in tourism expenditures on motels (measured in current dollars) during the 1991 recession.

quarter to $419 million in the third quarter; the 1997 seasonal peak to trough ratio for motels is 3.22. The 1997 seasonal peak to trough ratio for tourism expenditures on hotels is 1.98 ($1,676 million divided by $848 million).

Figure 4 presents tourism expenditures on (a) food and beverage services and (b) travel agency services. Again, the seasonal 'saw-tooth' pattern swamps business cycle and trend movements in tourism expenditures on food and beverage services. The 1997 seasonal peak to trough ratio for tourism expenditures on food and beverages is 2.19 ($2,714 million divided by $1,238 million). Annual seasonal fluctuations are much larger than the very slight business cycle fluctuation in tourism expenditures on food and beverage services. Twelve years of trend growth in tourism expenditures on food and beverage services represents less than one-half of the annual seasonal decline; the seasonal lows in 1997 are considerably lower than the seasonal peak in 1986.

The plot of tourism expenditures on travel agency services in Figure 4(b) reveals several interesting and important differences. First, there is a very strong positive trend in tourism expenditures on travel agency services; the seasonal low points in 1997 are considerably higher than the seasonal peaks during the 1980s. Second, there is very little cyclical fluctuation in tourism expenditures on travel agency services; the 1991 Canadian recession is barely discernible in Figure 4(b). Third, unlike tourism expenditures on all other tourism commodities which peak in the third quarter (summer) and bottom out in the fourth and first quarters of the year, tourism expenditures on travel agency services peak in the first quarter (winter) and bottom out in the third quarter (summer). The seasonal pattern for tourism expenditures on travel agency services is 'out of sync' with the seasonal pattern for all other tourism expenditures.

As shown in Figures 2, 3, and 4, tourism expenditures on different tourism commodities exhibit quite different seasonal characteristics. Tourism expenditures on some tourism commodities (such as hotels, motels, and vehicle rentals) are much more 'seasonal' than tourism expenditures on other commodities (such as passenger air transport). And not all tourism expenditures peak in the summer; tourism expenditures on travel agency services peak in the winter season.

Tourism expenditures can also be desegregated into domestic and export demand. Total tourism domestic expenditures and total tourism export expenditures are presented in Figure 5. Both exhibit a pronounced seasonal 'saw-tooth' pattern, peaking in the third quarter (summer) and bottoming out in the fourth and first quarters. In relative terms, seasonal fluctuations in tourism export demand are twice as large as seasonal fluctuations in tourism domestic demand. For example, in 1997, the seasonal peak to trough ratio for total tourism export demand is 3.44 ($5,629 million divided by $1,635 million), compared to a seasonal peak to trough ratio for total tourism domestic demand of only 1.61 ($10,581 million divided by $6,585 million). Compared to tourism domestic demand, tourism export demand also has a much stronger upward trend (particularly in the 1990s) but no business cycle component. The seasonal, trend, and business cycle components are quite different for tourism domestic demand and for tourism export demand.

Figure 6 presents data for the supply of total tourism commodities. Again, the seasonal 'saw-tooth' pattern is the most obvious feature of the data. However, in relative terms, the seasonal fluctuations for the supply of tourism commodities are not that large. In 1997 the seasonal peak to trough ratio for the supply of tourism commodities is only 1.36 ($26,476 million divided by $19,507 million), compared to a seasonal peak to trough ratio of 1.93 for total tourism demand. Even though non-tourism demand for tourism commodities such as food and beverage services and recreation and entertainment smooths out the seasonal fluctuations in the supply of tourism commodities, the annual seasonal fluctuations in the supply of total tourism commodities are much larger than the slight business cycle decline during the 1991 recession.

Figure 7 presents data for tourism employment in tourism industries during the 1986 to 1997 period. Seasonal fluctuations in tourism employment are relatively small and more irregular. The 1997 seasonal peak to trough ratio for tourism employment is only 1.13 (415,800 divided by 368,000). However, it should be noted that NTI data for tourism employment do not take into account the number of hours worked by each employee; a part-time employee is counted as one person. Thus, this low peak to trough ratio does not reflect any seasonal adjustment in hours worked by employees in the tourism sector. There is a strong upward trend in tourism employment and the cyclical decline in tourism employment during the 1991 recession is quite pronounced. The 25,300 cyclical decline in tourism employment from the third quarter seasonal peak in 1990 to the third quarter seasonal peak in 1991 exceeds the seasonal decline in tourism employment in 1989 and in 1991.

In summary, there is an obvious seasonal 'saw-tooth' pattern in Figures 1 to 7. Tourism is indeed very seasonal. However, the relative size and characteristics of the teeth in the 'saw-tooth' pattern vary from Figure to Figure. There are quite different seasonal patterns for different tourism commodities, for domestic and export demand, for tourism demand and the supply of tourism commodities, and for employment in different tourism industries. The entire tourism sector or industry does not swing together each year. Seasonality hits some parts of the tourism sector much harder than other parts.

3. Measuring the Seasonality in Tourism Data

Statistical regression analysis is used to estimate the magnitude of the seasonal factors (components) for each of the 113 published NTIs over the 1986 to 1997 period.[7] To facilitate comparisons between different NTIs, the estimated seasonal factors are constrained to sum to one. If there is no seasonality in the data, the estimates for the four seasonal factors would all be equal to .250, indicating that there is an equal amount of tourism expenditures (or tourism employment) in each quarter of the year. The magnitude of the seasonal fluctuation in each tourism indicator is revealed by the deviation of the seasonal factor from .250, the 'no seasonality' benchmark case.

Tables 1 to 5 present statistical estimates for the four seasonal factors in the 113 NTIs.[8] The first column in each table records the average quarterly value for each tourism indicator. The last column in Tables 1 to 5 provides a summary measure of the degree of seasonality in each NTI. The four seasonal absolute deviations from .250 (the 'no seasonality' benchmark) are added together. For example, if the four estimated seasonal factors are .100, .250, 500, and .150, the sum of the seasonal absolute deviations (SAD) is equal to .150 + .000 + .250 + .100 = .500. This SAD summary measure has a minimum value of .000 (no seasonality in the data) and a maximum value of 1.500 (all expenditures are in one quarter of the year). The higher the SAD number, the greater the degree of seasonality in the NTI. This SAD number is used to compare the magnitude of the seasonal fluctuations in different tourism commodities and in different tourism industries.

(1) Tourism Demand in Canada

Table 1 presents the seasonal factors and SAD number for the 25 NTIs for tourism demand in Canada. Starting with the bottom line, 42.6% of total tourism expenditures take place in the third quarter, compared to 16.5% in the first quarter, 17.1% in the fourth quarter, and 23.8% in the second quarter. The statistical estimates suggest that there are three different tourism seasons in Canada: a summer high, followed by a six months autumn-winter freeze and a spring thaw.

This pronounced seasonal pattern exists for nearly all tourism commodities. With one exception (travel agency services), tourism expenditures on each commodity peak in the third quarter and bottom out in the fourth and first quarters. In all cases the second quarter has the second highest seasonal

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[7] Each NTI is 'regressed' on four seasonal dummy variables and a time trend; the estimates for the seasonal factors are based on 'detrended' NTI data.

[8] While each of the 452 estimated seasonal factors should lie in the [0,1] interval, the statistical estimate for 12 seasonal factors (less than 3% of the 452 seasonal factors) is a small negative number. Since these negative estimates are not significantly different from zero, these 12 anomalous negative seasonal factors are constrained to have a .000 value. Most of these .000 value seasonal factors are for tourism commodities with relatively small expenditure levels, such as tourism export expenditures on bus transportation, motels, other accommodation, and travel agency services (see Table 3)

factor, but the value of the second quarter seasonal is always closer to the 'low' seasonal factor rather than the 'peak' seasonal factor. All 75 seasonal factors for the first, third, and fourth quarters in Table 1 are significantly different from .25,[9] the 'no seasonality' benchmark case. For each tourism commodity, both the third quarter (summer) seasonal factor and the second quarter (spring) seasonal factor are significantly different from the first quarter (winter) seasonal factor.

While the individual tourism commodities presented in Table 1 all have a similar seasonal 'saw-tooth' pattern (see Figures 1, 2, 3, and 4), there are important differences. As noted above, tourism expenditures on travel agencies services peak in the first quarter (55% of all expenditures), presumably reflecting the sale of air line ticket packages to Canadians flying south in search of warmer temperatures.

The degree of seasonality also varies considerably for tourism expenditures on different commodities. Third quarter seasonal factors for tourism expenditures on tourism commodities other than travel agency services range from .306 to .714, and the SAD numbers range from .123 to .927. Tourism expenditures on other accommodation, such as tourist cabins, camping grounds, trailer parks, and vacation camps, have the highest degree of seasonality, with a the third quarter seasonal factor of .714 and a SAD number of .927. Other tourism expenditures with peak seasonal factors and SAD numbers larger than .500 are recreation and entertainment, motels, and travel agency services (the seasonal peak for travel agency services occurs in the first quarter, not the third quarter). Tourism expenditures on vehicle rentals, hotels, and food and beverage services have above average third quarter seasonal factors (in the .437 to .473 range) and above average SAD numbers (in the .381 to .446 range).

At the other end of the spectrum, tourism expenditures on passenger air transport (the largest tourism expenditure component) have the lowest degree of seasonality, with a third quarter peak seasonal factor of .306 and a SAD number of only .123. Canadian air carriers have been able to smooth out seasonal demand patterns by offering off-season seat sales and by flying Canadians south in the winter season. Tourism expenditures on convention fees also have below average seasonal fluctuations, with a peak third quarter seasonal factor of .321 and a SAD number is .155 (which is less than half the size of the SAD number for total tourism expenditures)

To summarize, tourism expenditures on accommodation (hotels, motels, and other), recreation and entertainment, travel agency services, vehicle rentals, and food and beverage services have much larger seasonal fluctuations than tourism expenditures on passenger air transport, convention fees, and vehicle fuel.

(2) Tourism Domestic Demand in Canada

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[9] Throughout this report 'significantly different' is used in the statistical sense that there is a 95% probability that the estimate of the seasonal factor is different from .25 (alternatively, there is only a 5% probability that the true value of the seasonal factor is .25).

An interesting difference in seasonal patterns emerges when tourism expenditures are desegregated into domestic versus export demand. Table 2 presents a comparable set of seasonal factor estimates for tourism domestic demand, which represents about 3/4 of total tourism demand over the 1986 to 1997 period. Qualitatively, the seasonal pattern for tourism domestic expenditures is very similar to that found for total tourism expenditures.

With the exception of tourism domestic expenditures on travel agency services, tourism domestic expenditures for each commodity peak in the third quarter and bottom out in the fourth and first quarters. 69 of the 75 estimated seasonal factors for the first, third and fourth quarters in Table 2 are significantly different from .25, the 'no seasonality' benchmark.[10] With the exception of tourism domestic expenditures on passenger air transport and convention fees, all of the third quarter (summer) seasonal factors are significantly different from the first quarter (winter) seasonal factors. And 21 of the 25 estimated second quarter (spring) seasonal factors are significantly different from the first quarter (winter) seasonal factor.[11]

The relative ranking of SAD numbers for various tourism commodities in Table 2 is also very similar to the relative ranking in Table 1. In both tables the same five tourism commodities (other accommodation, travel agency services, recreation and entertainment, motels, and meals and alcohol from other industries) have the highest SAD numbers and the same two tourism commodities (passenger air transport and convention fees) have the lowest SAD numbers.

There is, however, an important quantitative difference between the seasonal factors in Tables 1 and Table 2. Seasonal fluctuations in tourism domestic demand are smaller than seasonal fluctuations in total tourism demand. The third quarter peak seasonal factor for tourism domestic expenditures is .379 (bottom line in Table 2) compared to .426 for total tourism expenditures (bottom line in Table 1). The SAD number for tourism domestic expenditures is only .258 compared to a SAD number of .352 for total tourism expenditures. With two exceptions, the SAD number for tourism domestic expenditures on each commodity in Table 2 is lower than the corresponding SAD number for total tourism expenditures in Table 1.[12]

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[10] The exceptions are tourism domestic expenditures on passenger air transport (Q1, Q3, and Q4), convention fees (Q1 and Q3), and other tourism commodities (Q1).

[11] The exceptions are tourism domestic expenditures on passenger air transport, passenger rail transport, motels, and recreation and entertainment.

[12] The two exceptions are for relatively small expenditure items, other accommodation and travel agency services, and the difference between the SAD numbers in Tables 1 and 2 for these two relatively small expenditure items is very small (.927 versus .946, and .645 versus .670).

(3) Tourism Export Demand in Canada

Table 3 presents the estimated seasonal factors for tourism export demand. For every tourism commodity, tourism export demand peaks in the third quarter and bottoms out in the fourth and first quarters. For each tourism commodity, the first, third, and fourth seasonal factors are significantly different from .25. Both the peak third quarter (summer) seasonal factor and the second quarter (spring) seasonal factor are significantly different from the first quarter (winter) seasonal factor in every case.

Seasonal fluctuations for tourism export demand are much larger than that found for tourism domestic demand. Comparing the bottom lines in Tables 1, 2, and 3, a SAD number of .788 for tourism export demand is two or three times larger than the SAD number for tourism domestic demand (.258) and total tourism demand (.352). The peak third quarter seasonal factor of .619 for tourism export demand is considerably larger than the peak third quarter seasonal factor for tourism domestic demand (.379) and total tourism demand (.426). For all tourism commodities, seasonal fluctuations for tourism export demand are larger than that found for tourism domestic demand. All of the SAD numbers in Table 3 are larger than the corresponding SAD numbers in Tables 1 and 2. With one exception (other accommodation), the peak third quarter seasonal factor for tourism export demand is larger than the corresponding third quarter seasonal factor in Tables 1 and 2. Statistical tests reveal that the seasonal pattern of tourism export demand for each commodity is significantly different from the seasonal pattern of tourism domestic demand for each commodity.

The bar charts in Figures 8 and 9 highlight the differences in the seasonal factors for tourism export demand and tourism domestic demand. In all cases, tourism export demand has a higher third quarter seasonal factor than tourism domestic demand. In all cases, tourism export demand has a lower seasonal factor in the first and fourth quarters than tourism domestic demand. The seasonal fluctuations in tourism export demand are consistently much larger than the seasonal fluctuations in tourism domestic demand. Perhaps the two most interesting comparisons are for passenger air transport and travel agency services (in Figure 9). Compared to a minimal seasonal fluctuation in tourism domestic demand for passenger air transport, there is a very pronounced seasonal pattern in tourism export demand for passenger air transport (peaking at .564 in the third quarter). In the case of travel agency services, tourism export demand peaks at .592 in the third quarter while tourism domestic demand peaks at .578 in the first quarter. This is the only case where the seasonal patterns for domestic and export demand are not synchronized.

There are several interesting implications of this much more pronounced seasonal pattern in tourism export demand than in tourism domestic demand. First, given that tourism export demand has been increasing as a share of total tourism demand in Canada (rising from 22.8% in 1987 to 29.0% in 1997), seasonal fluctuations in tourism are likely greater in the 1990s than existed in the 1980s. The tourism industry is becoming more seasonal over time. Second, the export share of total tourism demand varies for different tourism commodities; for example, in 1997 export demand accounted for 60% of tourism expenditures on vehicle rentals, 48% of tourism expenditures on hotels, and 19% of

tourism expenditures on passenger air transport. The export side of tourism demand is largely responsible for the seasonal pattern in total tourism expenditures on hotels, vehicle rentals, and passenger air transport.

(4) The Supply of Tourism Commodities

Table 4 presents the estimated seasonal factors for the supply of tourism commodities. All of the third quarter (summer) seasonal factors are significantly different from .25 and significantly different from the first quarter (winter) seasonal factor. With the exception of the supply of other transportation, all of the first quarter (winter) seasonal factors are significantly different (less) than .25.

The supply of tourism commodities differs from tourism demand for tourism commodities to the extent that people who are not tourists or same-day visitors demand 'tourist' commodities such as restaurant meals and recreation and entertainment. The relative importance of non-tourist demand for tourism commodities can be determined by comparing the mean values of each tourism commodity in the first columns of Tables 1 and 4. For example, tourism demand for accommodation, passenger air transport, and travel agency services accounts for over 90% of the supply of these tourism commodities (and 85% of the supply of vehicle rentals). On the other hand, tourism demand accounts for less than 30% of the supply of food and beverage services, recreation and entertainment, and vehicle fuel. If non-tourism demand for a tourism commodity is relatively large and has a different seasonal pattern from tourism demand, the seasonal factors for the supply of tourism commodities (Table 4) will differ from the seasonal factors for tourism demand (Table 1).

As expected, the seasonal factors and SAD numbers for tourism demand (in Table 1) and supply (in Table 4) are almost identical for tourism commodities where tourism demand accounts for nearly all of total expenditures. For example, the SAD numbers for the demand and supply of passenger air transport are .123 and .114, the SAD numbers for the demand and supply of accommodation are .463 and .450, and the SAD numbers for the demand and supply of vehicle rentals are .446 and .407.

For tourism commodities with substantial non-tourist demand, the seasonal patterns for supply are quite different than the seasonal patterns for tourist demand. For the supply of food and beverage services, the peak third quarter seasonal factor is only .295 (compared to .459 for tourism demand) and the SAD number is only .111 (compared to .418 for tourism demand). Similarly, for the supply of recreation and entertainment, the peak third quarter seasonal factor is only .292 (compared to .513 for tourism demand) and the SAD number is only .112 (compared to .526 for tourism demand). Similar results are found for vehicle fuel, repairs and parts. Non-tourist demand for tourism commodities such as food and beverage services (restaurants and fast-food), recreation and entertainment (health clubs and theatres), and vehicle fuel is much less seasonal in nature and smooths out the seasonal fluctuations in the supply of these tourism commodities. The supply of tourism commodities with little non-tourism demand (such as hotels, passenger air transport, travel agency services, and vehicle rentals) are subject to much larger seasonal fluctuations.

(5) Employment Generated by Tourism

Table 5 presents the estimated seasonal factors for employment generated by tourism. As noted above, NTI data for employment is measured in person-years and does not take into account the number of hours worked by each employee; a part-time employee is counted as one person year of employment. Compared to the results in Tables 1, 2, 3, and 4, the seasonal factors for tourism employment are very different.

There is very little seasonality in tourism employment data.[13] For tourism employment in tourism industries and in all tourism activities (the third last line and the last line in Table 5), the four estimated seasonal factors (.237, .255, .261, and .247) are very similar. All 60 estimated seasonal factors in Table 5 lie in the narrow interval of .212 to .280. The highest SAD number in Table 5 is .080, which is lower than the 98 SAD numbers reported in Tables 1, 2, 3, and 4.

While there is a pronounced seasonal pattern in tourism expenditures, there is little apparent seasonal variation in tourism employment (measure in person years). During the slow autumn-winter seasons, there is excess capacity in the tourism sector and tourism employees are under-utilized.

4. Further Evidence on the Importance of Seasonality in Tourism

Any time-series, such as the NTI for tourism expenditures on hotels, can be broken down into four statistical components: a seasonal component, a trend component, a business cycle component, and irregular or other movements in the data. The linear regression technique used to estimate the seasonal factors reported in Tables 1 to 5 can also be used to determine how much of the statistical variation in each NTI is explained (1) by the seasonal component, (2) by the trend component, and (3) by the remaining business cycle and irregular components of the data.[14]

The first three columns in Tables 6 to 10 present the percent of the statistical variation in each NTI which is explained by the seasonal component, the trend component, and the business cycle and other components. The relative importance of the seasonal component can be determined by comparing these three numbers for each NTI.

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[13] The vertical scale used in Figure 7 exaggerates the seasonal pattern in tourism employment data.

[14] Two regressions are run for each NTI. First, each NTI is regressed on four seasonal dummy variables; the R^2 from this regression indicates the percent of the variation in the NTI explained by the seasonal component. Second, a time trend is added to the regression; the increase in the R^2 indicates the percent of the variation in the NTI explained by the trend. The percent of the variation in the NTI explained by the business cycle and other irregular components is determined residually (the three numbers add up to 100%).

The final two columns in Tables 6 to 10 present the annual seasonal decline and the business cyclical decline in each NTI. The annual seasonal decline is measured by the percentage difference between the largest and smallest seasonal factor (as presented in Tables 1 to 5). For most NTIs, the annual seasonal decline is the percentage decrease from the peak third quarter seasonal factor to the first quarter seasonal factor --- the summer-winter effect. The cyclical decline for each NTI is measured by the percentage decrease from the 1989-90 business cycle peak to the bottom of the 1991-92 recession, using seasonally adjusted, *constant* dollar NTI data (data corrected for the effects of inflation).[15] By comparing the numbers in the final two columns of Tables 6 to 10 we can determine whether the annual seasonal fluctuation in an NTI dominates the cyclical fluctuation. Is the amplitude of the seasonal cycle in tourism larger than the amplitude of the business cycle in tourism?

Table 6 presents statistical results for total tourism demand in Canada. The bottom line indicates that the seasonal component accounts for 75% of the statistical variation in total tourism expenditures. The 61.3% seasonal decline in tourism expenditures each year is almost seven times larger than the 9.0% cyclical decline during the 1991 recession.

Seasonal fluctuations account for most of the statistical variation in tourism demand for nearly all of the commodities listed in Table 6. With the exception of three tourism commodities (passenger air transport, travel agency services and convention fees), seasonal fluctuations account for at least 66% of the statistical variation in tourism demand for specific tourism commodities.

For every tourism commodity listed in Table 6, the annual seasonal decline is larger than the cyclical decline during the 1991 recession. For tourism expenditures on hotels, motels, other accommodation, travel agency services, and vehicle rentals, the annual seasonal decline is 8 to 14 times larger than the cyclical decline during the 1991 recession. Tourism expenditures on passenger air transport, the least seasonal of all tourism commodities, have an annual seasonal decline (28.4%) which is larger than the cyclical decline (23.0%) during the 1991 recession.

Table 7 presents a similar set of statistical results for tourism domestic demand. The bottom line indicates that the seasonal component accounts for 72% of the statistical variation in tourism domestic expenditures. The 49.1% seasonal decline in tourism domestic expenditures each year is almost six times larger than the 8.6% cyclical decline during the 1991 recession.

Again, seasonal fluctuations account for most of the statistical variation in tourism domestic demand for nearly all of the commodities listed in Table 7. With the exception of four tourism commodities (passenger air transport, passenger rail transport, travel agency services and convention fees), seasonal fluctuations account for at least 60% of the statistical variation in tourism domestic

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[15] The NTIs plotted in Figures 1 through 6 are expressed in *current* dollars, not *constant* dollars.

demand. The annual seasonal decline is larger than the business cycle decline for tourism domestic demand on all tourism commodities except air and bus transport. Again, the annual seasonal decline in tourism domestic demand for accommodation is about 10 times larger than the cyclical decline during the recession in the early 1990s. The annual seasonal decline in tourism domestic demand for food and beverage services, vehicle rentals, and recreation and entertainment is about 3 times larger than the cyclical decline.

The statistical results presented in Table 8 reveal a much stronger seasonal pattern for tourism exports. The bottom line indicates that the seasonal component accounts for 76% of the statistical variation in tourism export expenditures. The 95.6% seasonal decline in tourism exports each year is seven times larger than the 13.6% cyclical decline during the 1991 recession. For every tourism commodity listed in Table 8, seasonal fluctuations account for at least 55% of the statistical variation in tourism export demand and the annual seasonal decline is much larger than the cyclical decline. The lowest seasonal decline reported in Table 8 is 87.6% for tourism export demand for hotels, a seasonal decline which is over 7 times larger than the cyclical decline.

Turning to the supply of tourism commodities, the bottom line of Table 9 indicates that the trend component accounts for 65% of the statistical variation in the supply of total tourism commodities, while the seasonal component accounts for only 32% of the statistical variation in the supply of total tourism commodities. The less important role of seasonal fluctuations in the supply of total tourism commodities is consistent with the relatively low SAD number for the supply of total tourism commodities reported in Table 4. However, the 30.9% annual seasonal decline in the supply of total tourism commodities is almost 3 times larger than the cyclical decline during the 1991 recession. While there is less seasonality in the supply of total tourism commodities than in tourism expenditures, seasonal swings in supply are still much more important than business cycle swings in supply. As discussed in the previous section, there is much greater variation in the seasonal patterns for the supply of tourism commodities (see Table 4). Non-tourism demand for some tourism commodities smooths out the seasonal pattern in the supply of tourism commodities.

For over one-half of the tourism commodities listed in Table 9, the trend component explains at least 64% of the statistical variation in the supply of tourism commodities. The seasonal component explains only 23% of the statistical variation in the supply of passenger air transport, 22% of the supply of vehicle fuel, 22% and 12% of the supply of meals and alcohol from food and beverage establishments, and 11% of the supply of recreation and entertainment. The seasonal component tends to be much more important when tourism demand accounts for most of the expenditures on a particular tourism commodity.[16] The seasonal component explains over 69% of the statistical variation in the supply of hotels, motels, other accommodation, food and beverage services from accommodation establishments, and vehicle rentals.

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[16] The exception to this statement is passenger air transport expenditures, which have minimal seasonal variation (see Table 1).

For every tourism commodity reported in Table 9, the annual seasonal decline in supply is at least as large as the cyclical decline. For tourism commodities where the seasonal component explains most of the statistical variation in supply, the annual seasonal declines are much larger than the cyclical declines. For example, the annual seasonal declines in the supply of hotels, motels, other accommodation, and vehicle rentals are at least 7 times larger than the cyclical declines during the 1991 recession. For most other tourism commodities, the annual seasonal decline in supply is approximately twice as large as the cyclical decline.[17]

Table 10 presents statistical results for tourism employment (measured in person-years). As indicated by the bottom line, the seasonal component explains 35% of the statistical variation in tourism employment in total tourism activities, which is less than the 38% of the statistical variation explained by the trend component. Even though there is little variation in the seasonal factors for employment in all tourism activities (a SAD number of .031 in Table 5), the 9.2% annual seasonal decline in employment in tourism activities is larger than the 7.5% cyclical decline during the 1991 recession.

Statistical analysis reveals minimal seasonal effects on employment in some tourism industries. In the air transportation industry, the vehicle rental industry and travel agencies, seasonal fluctuations explain less than 7% of the statistical variation in tourism employment. For each of these three important tourism industries, the cyclical decline in employment during the 1991 recession is greater than the annual seasonal decline (for example, the annual seasonal decline of 2.8% in tourism employment in the air transportation industry is much less than the cyclical decline of 10.0%).

For other tourism industries there is a modest seasonal effect on employment. In the food and beverage industry, seasonal fluctuations explain 18% of the statistical variation in tourism employment and the 7.4% annual seasonal decline in tourism employment in the food and beverage industry is slightly lower than the 9.4% cyclical decline during the 1991 recession. In the accommodation industry, seasonal fluctuations explain 47% of the statistical variation in tourism employment and the 14.8% annual seasonal decline in tourism employment in the accommodation industry exceeds the 12.7% cyclical decline during the 1991 recession. Finally, in the recreation and entertainment industry, seasonal fluctuations explain 62% of the statistical variation in tourism employment, and the 17.9% annual seasonal decline in tourism employment in the recreation and entertainment industry is only slightly lower than the 19.9% cyclical decline during the 1991 recession.

5. Are the Seasonal Factors Immutable?

Tables 1 through 5 present estimates of 'average' seasonal factors for 113 tourism indicators over the 1986 to 1997 period. For example, the estimated seasonal factors for tourism expenditures on

[17] The most important exception to this statement is the supply of passenger air transport where the seasonal decline of 26.8% is only slightly greater than the cyclical decline of 23.3%.

hotels are .150, .253, .437, and .180 (see Table 1). Are these four seasonal factors for hotel tourism demand always the same each year? Could these four seasonal numbers change under a different set of circumstances? If so, what determines the magnitude of the seasonal factors for a particular NTI each year? Do special events, such as an Olympiad, affect the value of the seasonal factor in a particular year? Do temperature deviations from seasonal norms cause deviations in tourism seasonal factors from their average values? Does a hot summer raise the peak summer seasonal factor even higher? Does an unusually mild winter result in a lower (or higher) winter seasonal factor?

To answer these questions, additional explanatory variables are added to the statistical regression used to estimate the seasonal factors for each NTI. To test for the effect of special events, a dummy variable for the 1988 Calgary Winter Olympics is included in the regression.[18] A significant positive coefficient on this variable would indicate that the first quarter seasonal factor is higher in 1988 than in other years (presumably attributable to the Calgary Olympics).

For each season of the year, the Climate Trends and Variations Bulletin for Canada reports the deviation of the average Canadian temperature from the seasonal norm. This seasonal temperature deviation variable is used to test for an abnormal weather effect on the seasonal factors for each NTI.[19] A significant positive coefficient for a seasonal temperature deviation variable indicates that temperatures above the seasonal norm increase the seasonal factor. The size of the coefficient on the temperature deviation variable indicates the amount of additional tourism expenditures (or employment) that is attributable to a temperature that is one degree above the seasonal norm. If the seasonal temperature variables have significant statistical effects, the tourism seasonal factors will vary from year to year, depending on temperature deviations from seasonal norms.

Statistical Results

There is very little statistical evidence that the Calgary Olympics had a significant positive effect on tourism expenditures (either export or domestic tourism demand) in the first quarter of 1988. The Calgary Olympic variable is significantly greater than zero (at the 5% level of significance) in only 3 of the 113 NTI regressions.[20] One explanation for these weak statistical results is that NTIs measure

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[18] This dummy variable has a value of one in the first quarter of 1988 and a zero value in all other quarters.

[19] The above/below average temperature variable is multiplied by each of the four seasonal dummy variables and these four seasonal temperature variables are included in the statistical regression used to estimate the seasonal factors for each of the 113 NTIs. Unlike first quarter NTI data which begin on January 1, winter seasonal weather data begin on December 21. Quarterly seasonal weather data lead quarterly NTI data by about 1/3 of a month. Since it takes time for people to adjust their tourism plans to an unexpected change in the weather, quarterly NTI data should be regressed on weather data that begin prior to the start of the NTI quarter.

[20] The three significant positive effects are for the following NTIs: the supply of other tourism commodities, the supply of recreation and entertainment, and tourism employment in the accommodation industry.

tourism for all of Canada. Ideally one would like to test for a significant Calgary Olympic effect on tourism expenditures in Alberta.

The statistical evidence for the effects of seasonal temperature deviations on seasonal factors for the NTIs is mixed. For two seasons (spring and autumn), virtually all of the estimated coefficients for the temperature deviation variables are not significantly different from zero. For example, the fourth quarter temperature deviation variable is significantly different from zero in only 1 of the 113 NTIs (employment in travel agencies). Since different provinces can experience quite different temperature deviations in the same quarter of the year, the lack of provincial tourism indicators undoubtedly makes it difficult to detect the effect of temperature deviations from seasonal norms on seasonal factors.[21]

For the first quarter of the year, temperature deviations from the seasonal norm have a statistically significant effect on the seasonal factor for 14 of the 113 NTIs. In 12 of these 14 cases, the estimated coefficient is negative.[22] Temperatures above the seasonal winter norm have a significant negative effect on the following NTIs:

- total tourism expenditures on travel agency services,
- tourism domestic expenditures on travel agency services, interurban bus transportation, other transportation, total other (non-tourism) commodities, and total expenditures,
- the supply of other transportation commodities and travel agency services,
- tourism employment in transportation, taxicabs, other transportation, and recreation and entertainment.

Below normal winter temperatures appear to have a positive effect on domestic expenditures on travel agency services (more Canadians booking winter vacations in a warmer climate) and on employment in taxicabs, other transportation, recreation and entertainment. However, all of the estimated coefficients for the winter temperature deviation variable are relatively small. For example, one degree above the seasonal norm has an estimated $116 million negative effect on tourism domestic expenditures in the first quarter ($116 million is 1.5% of tourism domestic expenditures in the first quarter of 1997).

The strongest statistical results are for the third quarter of the year. Temperature deviations from

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[21] A second weather variable measuring above/below average seasonal precipitation was significant for less than 2% of the NTI seasonal factors (and is not included in this report).

[22] The two cases with a significant positive temperature effect on the winter seasonal factor are tourism export expenditures on alcohol from food and beverage services and tourism export expenditures on meals and alcohol from other industries.

the seasonal norm have a significant effect on the summer seasonal factors for over one-half of the 113 NTIs. Demand and supply NTIs which have a statistically significant coefficient for the temperature deviation variable in the third quarter of the year are presented in Table 11. All of the significant temperature coefficients in Table 11 are positive. A *"glorious summer"* (to borrow Shakespeare's phrase) with temperatures above the seasonal norm has a significant positive effect on the demand and supply of tourism commodities.

When total tourism demand is desegregated into domestic and export demand, the positive 'summer' temperature effect on tourism expenditures is shown to arise primarily on the domestic side of tourism demand. With one major exception, tourism export demand in the third quarter is not significantly affected by temperature deviations from the seasonal norm. However, the one exception is important. Tourism export demand for passenger air transport in the third quarter is significantly affected by temperature deviations in Canada. One degree above the summer seasonal norm results in an additional $71 million of export demand for Canadian passenger air transport ($71 million is over 8% of tourism export expenditures on passenger air transport in the third quarter of 1997).

Turning to domestic demand, almost all of the NTIs are significantly affected by summer temperature deviations from the seasonal norm. One degree above the summer seasonal norm results in an additional $405 million in tourism domestic expenditures (which is 3.8% of tourism domestic expenditures in the third quarter of 1997), consisting of $110 million transportation expenditures, $115 million accommodation expenditures, $63 million food and beverage expenditures, $67 million other tourism commodities (mostly recreation and entertainment), and $51 million other (non-tourism) commodities. Rather interestingly, the only important tourism commodity where tourism domestic demand is not significantly affected by summer temperature deviations is passenger air transport. Above average summer temperatures result in Canadians making greater use of their cars for summer vacations, and not increasing their purchases of passenger air fares.

One degree above the summer seasonal norm has a much larger effect on the supply of tourism commodities ($955 million) than on tourism demand for tourism commodities ($563 million). As discussed in previous sections, non-tourism demand for some tourism commodities is a large component of supply. The estimated coefficients presented in the first and fourth columns of Table 11 suggest that non-tourism demand for restaurant meals and vehicle repairs and parts in the third quarter is also very sensitive to temperature deviations from the summer norm.

Finally, tourism employment in the total tourism industry during the third quarter of the year is significantly affected by temperature deviations from the summer seasonal norm.[23] One degree above the summer seasonal norm results in an additional 13,600 employees in total tourism industries, with over one-half of this additional employment occurring in the accommodation industry. Other tourism

[23] Seven of the fifteen NTIs for tourism employment are significantly affected by temperature deviations from the seasonal norm in the third quarter.

employment NTIs with a significant positive temperature deviation effect in the third quarter are other tourism commodities, recreation and entertainment, travel agencies, other industries, and total tourism activities.[24]

Summary, Conclusions and Implications

There is a very sharp and pronounced seasonal pattern in Canadian tourism expenditures. Over the 1986 to 1997 period, third quarter (summer) tourism expenditures account for 43% of annual tourism expenditures, compared to only 17% in the first and fourth quarters. If Benjamin Franklin were a Canadian he undoubtedly would have said "nothing can be said to be certain, except death, taxes, and winter." Unfortunately, the Canadian winter appears to last six months; the seasonal factor for the fourth quarter is not significantly different from the seasonal factor for the first quarter. Seasonality explains 75% of the statistical variation in tourism expenditures and the annual seasonal decline in tourism expenditures from summer to winter is almost three times larger than the cyclical decline in tourism expenditures during the 1991 recession.

While there is a very distinctive seasonal pattern in the NTIs, the nature and degree of seasonality varies considerably between NTIs. Tourism expenditures on (and the supply of) accommodation have the most severe seasonal pattern. Third quarter tourism expenditures account for 44% of annual hotel expenditures, 51% of annual motel expenditures, and 71% of other accommodation expenditures. Only 14% of annual tourism expenditures on accommodation occur in the first quarter and in the fourth quarter.

Vehicle rentals have the highest degree of seasonality in the transportation category of tourism expenditures. Third quarter tourism expenditures account for 47% of annual vehicle rental expenditures, compared to 13% in the first quarter and 16% in the fourth quarter. There is also a high degree of seasonality in tourism expenditures on recreation and entertainment; 51% of annual tourism expenditures occur in the third quarter, compared to only 13% in the fourth quarter and 14% in the first quarter. While tourism expenditures on travel agency services have a peak seasonal factor of 55%, the seasonal peak is in the first quarter (the winter season).

At the other end of the spectrum, tourism expenditures on passenger air transport have the least degree of seasonality. The peak third quarter seasonal factor for passenger air transport is only .31, compared to a .22 seasonal factor in both the first and fourth quarters.

There is also a much more pronounced seasonal pattern for tourism export demand than for tourism domestic demand. The third quarter seasonal factor for tourism export expenditures is .62,

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[24] The temperature deviation variable had no significant effect on summer employment in the entire transportation sector and in the food and beverage services industry.

compared to a first quarter seasonal factor of .03 and a fourth quarter seasonal factor of .08. For domestic tourism expenditures, the third quarter seasonal factor is only .38, compared to a first quarter seasonal of .20 and a fourth quarter seasonal of 0.19. For all commodities except convention fees, tourism export demand has a third quarter seasonal factor greater than .55. Tourism export demand is much more seasonal than tourism domestic demand. Since export demand for tourism commodities is a rising share of total tourism demand, the degree of seasonality in total tourism expenditures and the tourism industry is likely greater in the 1990s than in the 1980s.

Given a 'less seasonal' non-tourism demand for some tourism commodities (such as food and beverage services, vehicle fuel, and recreation and entertainment), there is a much lower degree of seasonality in the supply of tourism commodities than in tourism demand for tourism commodities. The peak third quarter seasonal factor for the supply of total tourism commodities is only .30, compared to .41 for tourism demand for total tourism commodities. Seasonal fluctuations explain only 32% of the statistical variation in the supply of total tourism commodities, compared to 71% of the statistical variation in tourism demand for total tourism commodities. Non-tourism demand for food and beverage services, vehicle fuel, and recreation and entertainment minimizes the amount of seasonality in the supply of these commodities (the peak third quarter seasonal factor is less than .30 for the supply of these tourism commodities).

While there are wide seasonal fluctuations in tourism expenditures and in the supply of tourism commodities, seasonal fluctuations in tourism employment (measured in person-years) are relatively small. All of the seasonal factors for employment in different tourism industries are between .21 and .28.

There is some statistical evidence to suggest that temperature deviations from the seasonal norm affect the seasonal factor in the third quarter of the year. For over one-half of the 113 NTIs, average Canadian temperatures above the seasonal norm result in a significant increase in the summer seasonal factor. This positive 'summer' temperature effect occurs predominantly on the domestic side of tourism demand. One degree above the summer seasonal norm results in an additional $405 million in domestic tourism expenditures, consisting of $110 million transportation expenditures, $115 million accommodation expenditures, $63 million food and beverage expenditures, $67 million other tourism commodities (mostly recreation and entertainment), and $51 million other (non-tourism) commodities. The only important tourism commodity where domestic demand in not significantly affected by summer temperature deviations is passenger air transport. On the export side of tourism demand, passenger air transport is the only major tourism commodity which is affected by Canadian temperature deviations from the summer norm. One degree above the summer seasonal norm results in an additional $71 million of tourism export demand for Canadian passenger air transport. While there is a significant positive temperature effect on the summer seasonal factor for many NTIs, temperature deviations from the seasonal norm do not appear to affect tourism expenditures in the second and fourth quarters of the year, and perhaps have a small negative effect on tourism expenditures in the first quarter of the year.

Finally, this report has used a number of statistics, such as estimates of the four seasonal factors,

SAD (the sum of seasonal absolute deviations) and R^2, to measure the extent of seasonality in Canadian tourism. Perhaps the simplest seasonal indicator to calculate and communicate is the ratio of the peak seasonal value to the lowest seasonal value. To measure progress in achieving the Canadian Tourism Commission's vision that "*Canada will be the premier four-season destination*," the ratio of the peak (summer) season to the trough (winter) season could be computed each year for key National Tourism Indicators. For total tourism expenditures, the 1997 benchmark seasonal peak to trough ratio is 1.93 (i.e., $16,210 million in the third quarter divided by $8,396 million in the first quarter).

Having identified and described the basic seasonality of the various commodities associated with the industries of the tourism sector. This study provides a benchmark against which we can evaluate programs towards the CTC vision of making tourism in Canada a balanced and four-season industry.

The study confirms the wisdom of CTC's decision to give special attention to redressing the highly skewed seasonal pattern of current consumption (i.e. annual seasonal decline is three times greater than the 1991 recession).

Analysis identifies certain markets and commodities where the seasonality effect is more extreme than others (i.e. export demand versus domestic, accommodation, vehicle rentals and recreation and entertainment). Strategic initiatives focussing on these key areas are likely to have the broadest impact on changing the overall seasonal pattern. Special strategic marketing initiatives to build new seasonal products in this area have been initiated by individual destinations (i.e. Whistler's summer golf development program, and fall harvest program and Vancouver's entertainment season winter marketing program). All have demonstrated that a mix of targeted domestic and international marketing campaigns can produce changes in the traditional seasonal pattern of consumption, thus increasing the overall productivity and profitability of the industry.

The report recommended a simple statistic to monitor the changes in seasonality - i.e. peak to trough ratio.

The supply related questions of capacity and employment require further research using more finely drawn indicator variables.

The seasons themselves are not fixed - there is much talk of climate and global warming. Climate theory suggests that equatorial and polar regions will be more severely affected. These results suggest that a long term warming trend could increase domestic tourism in Canada, thus offsetting the increased seasonality distortion arising from an expanded export market in general.

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D. A. Wilton, Recent Developments in Tourism as Revealed by the National Tourism Indicators, Canadian Tourism Commission Research Report, Ottawa, 1998.

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Figure 1

Total Tourism Expenditures in Canada

(Not seasonally adjusted, millions of dollars)

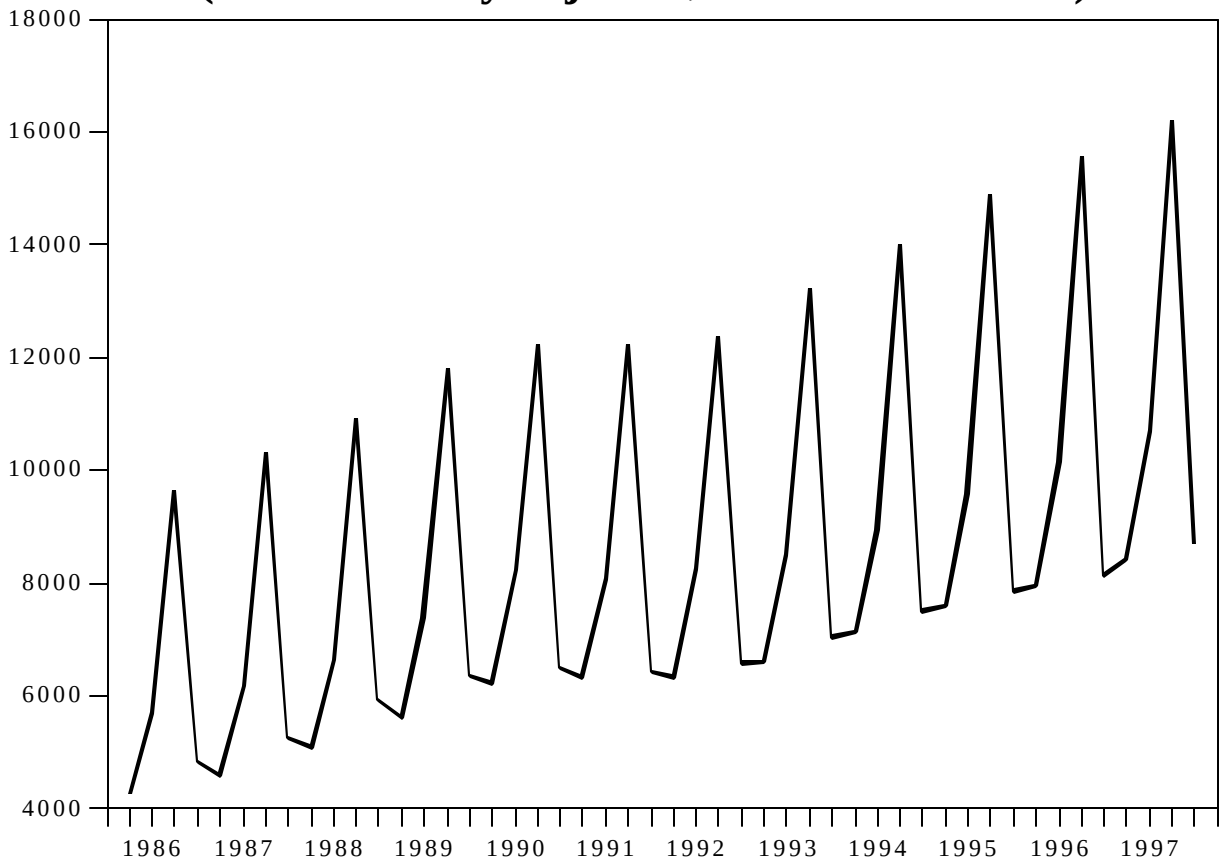


Figure 2

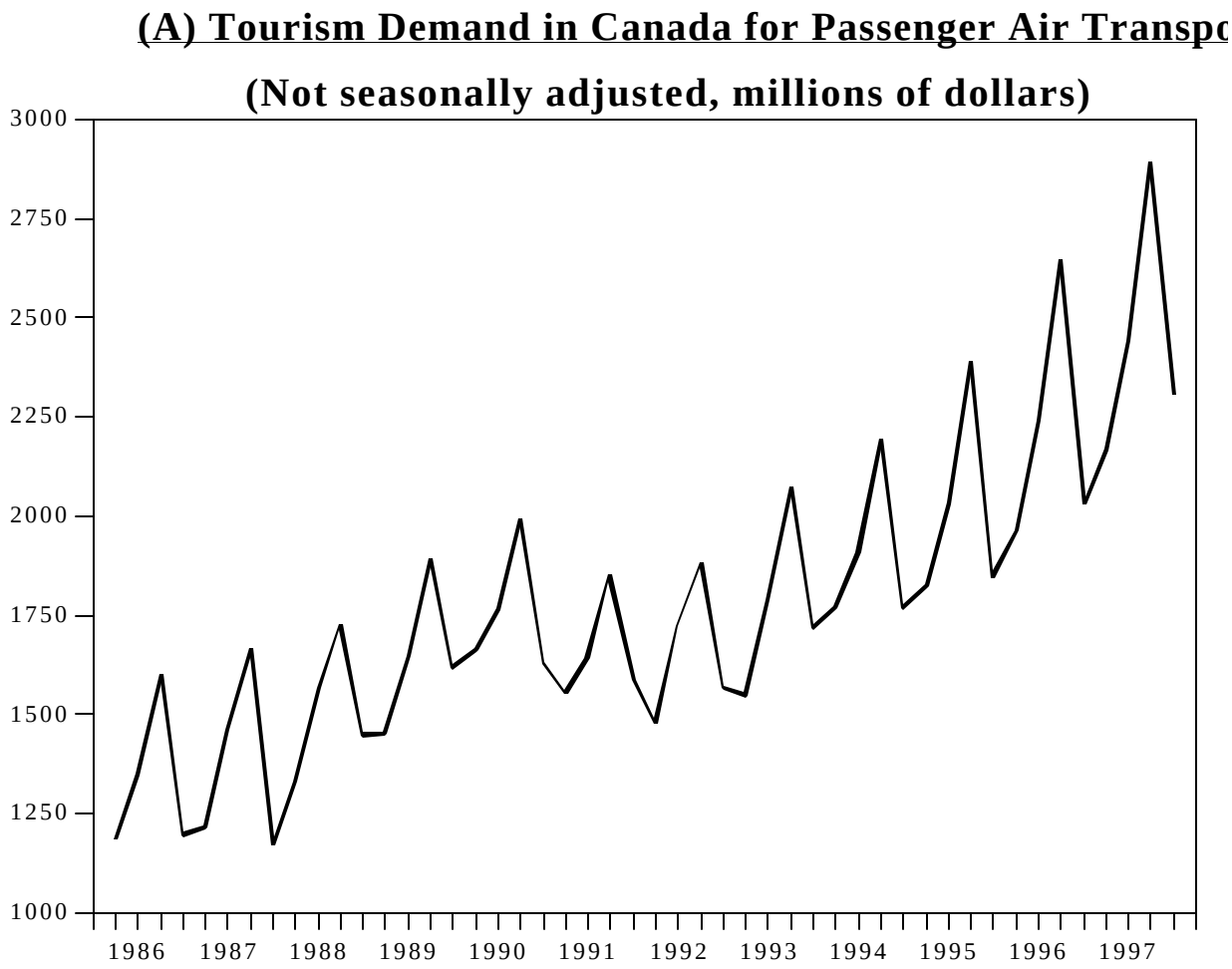

(A) Tourism Demand in Canada for Passenger Air Transpo
(Not seasonally adjusted, millions of dollars)
3000
2750
2500
2250
2000
1750
1500
1250
1000
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997

Figure 2

(B) Tourism Demand in Canada for Vehicle Rentals

(Not seasonally adjusted, millions of dollars)

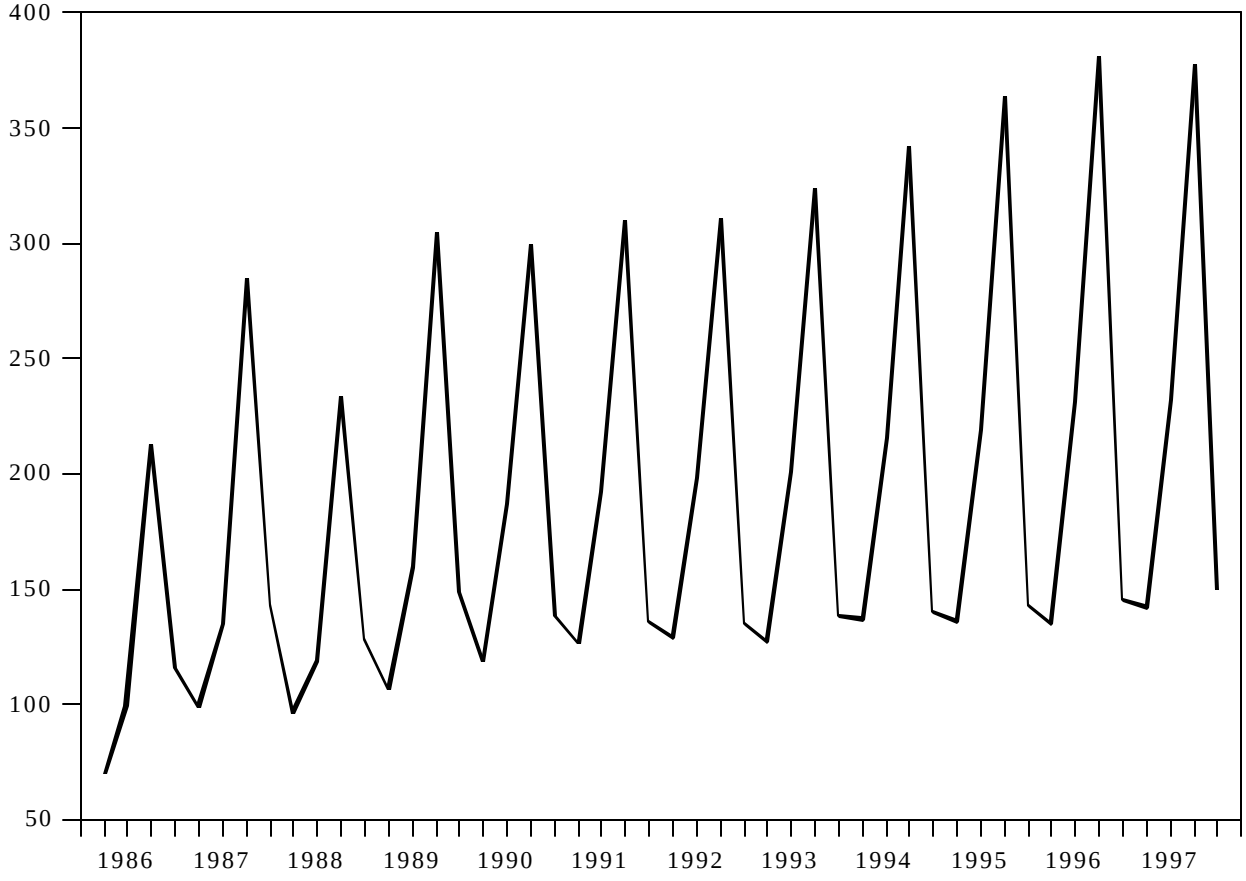


Figure 3

(A) Tourism Demand in Canada for Hotels

(Not seasonally adjusted, millions of dollars)

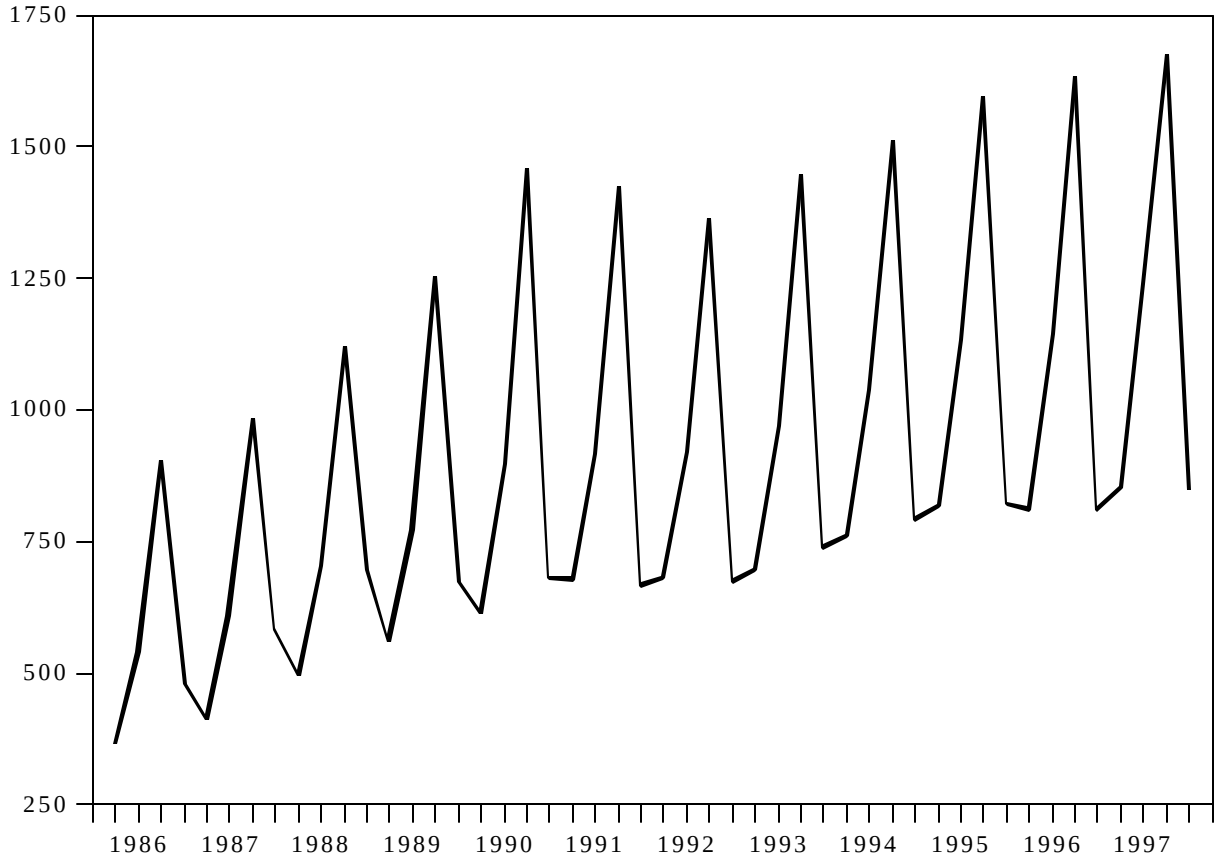


Figure 3

(B) Tourism Demand in Canada for Motels

(Not seasonally adjusted, millions of dollars)

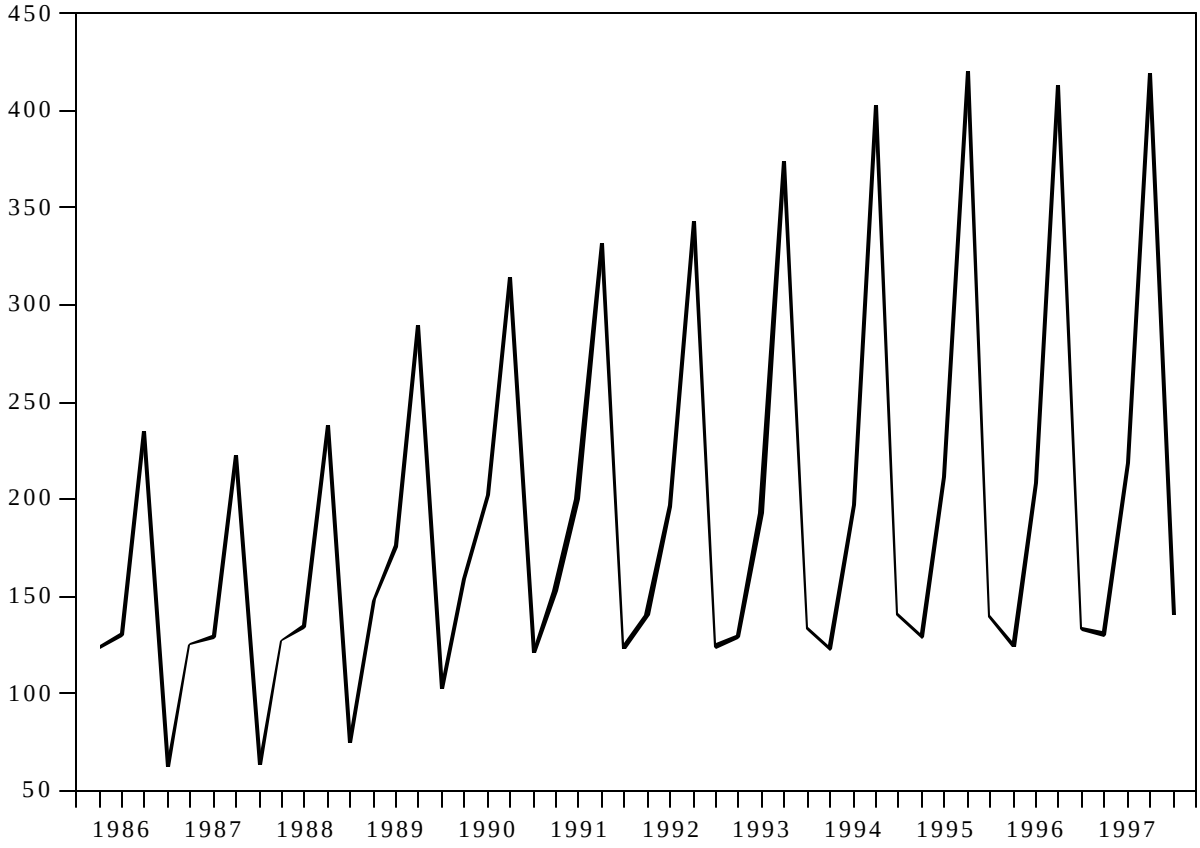


Figure 4

(A) Tourism Demand in Canada for Food & Beverage Servi

(Not seasonally adjusted, millions of dollars)

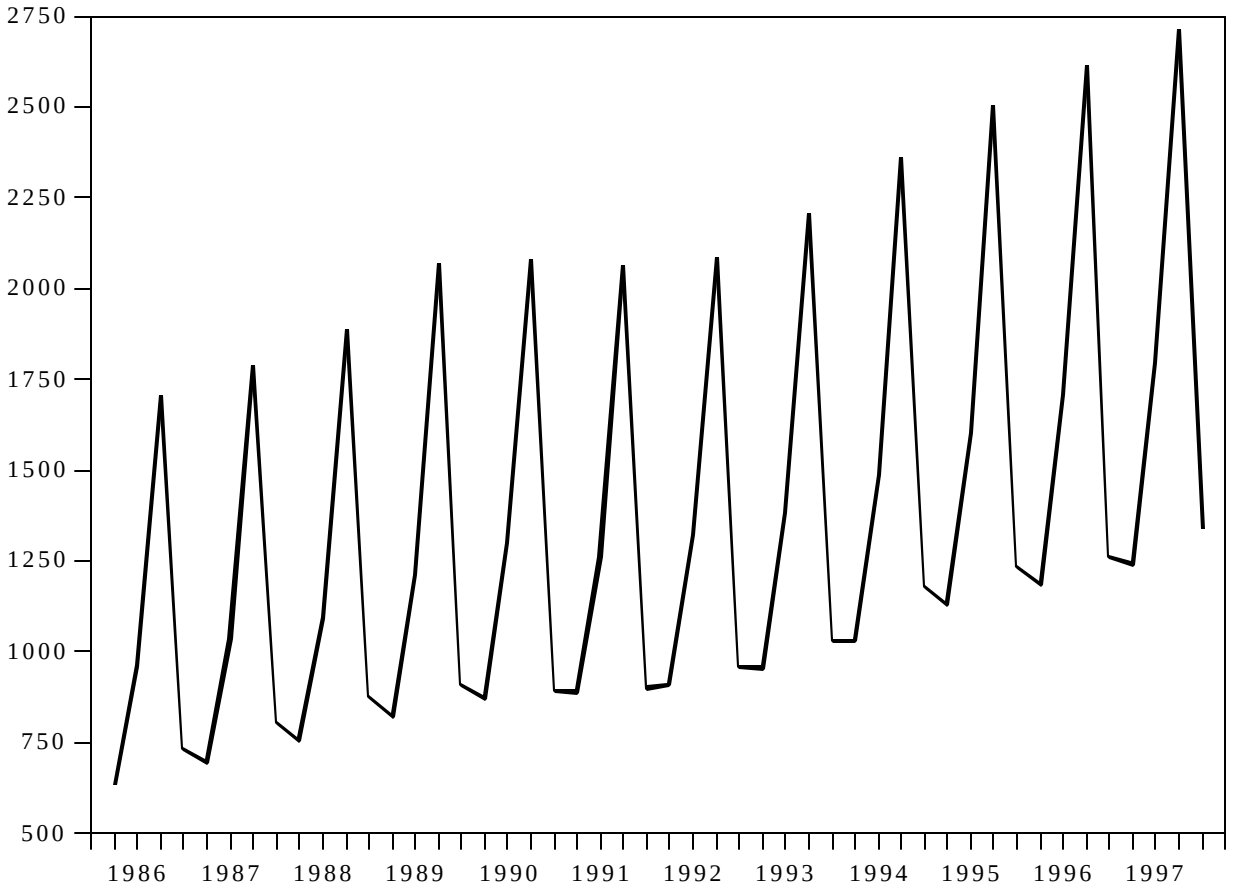


Figure 4

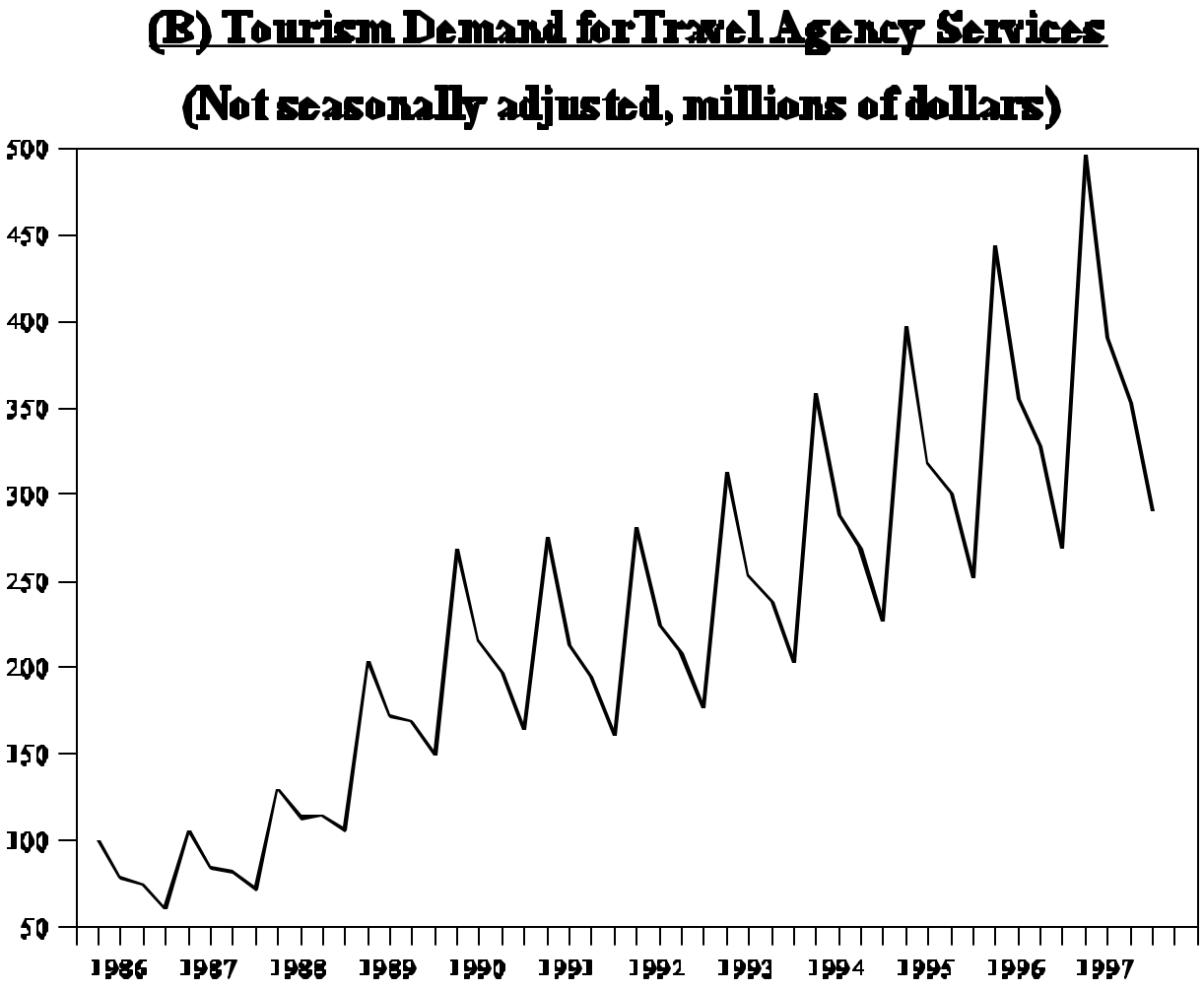

(B) Tourism Demand for Travel Agency Services
(Not seasonally adjusted, millions of dollars)
500
450
400
350
300
250
200
150
100
50
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997

Figure 5

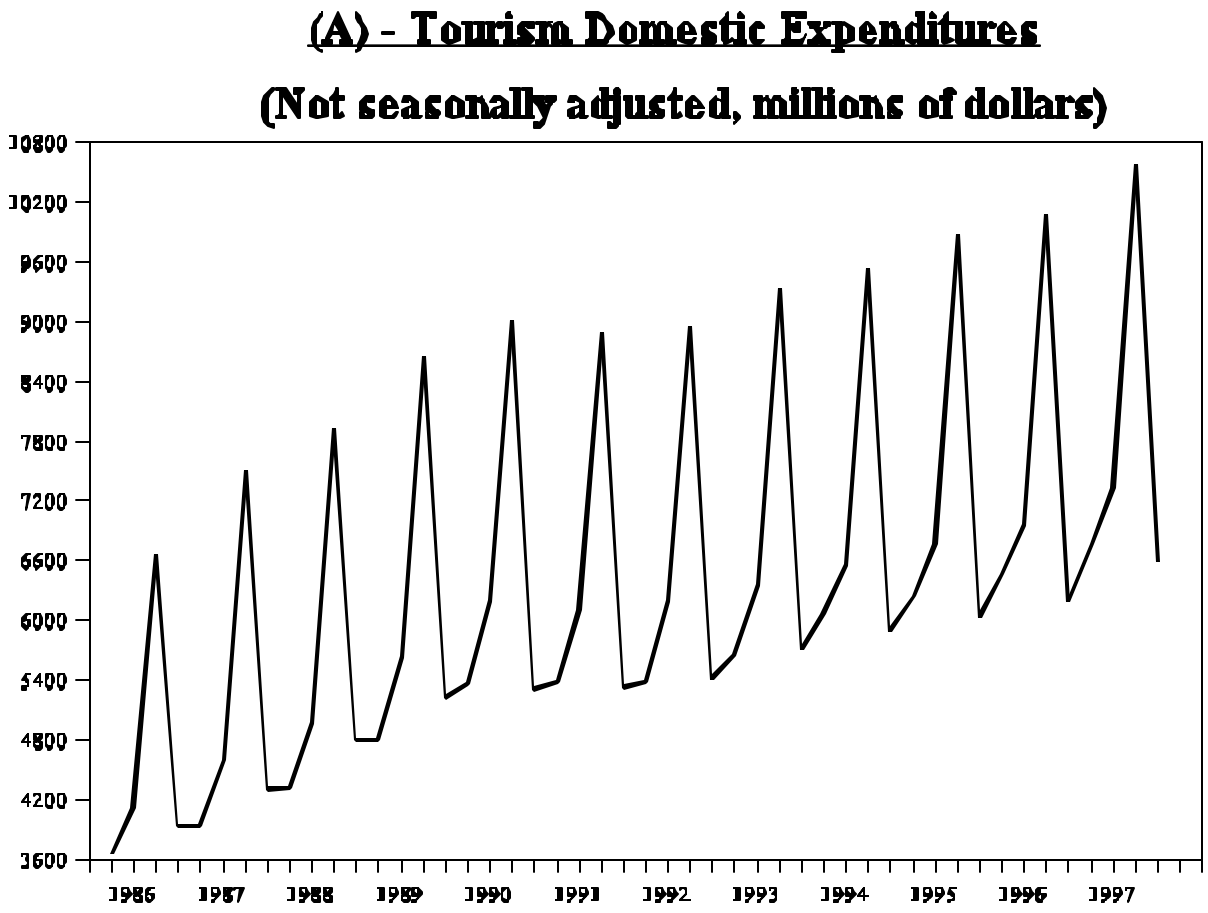

(A) - Tourism Domestic Expenditures
(Not seasonally adjusted, millions of dollars)
10800
10200
9600
9000
8400
7800
7200
6600
6000
5400
4800
4200
3600
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997

Figure 5

(B) - Tourism Export Expenditures

(Not seasonally adjusted, millions of dollars)

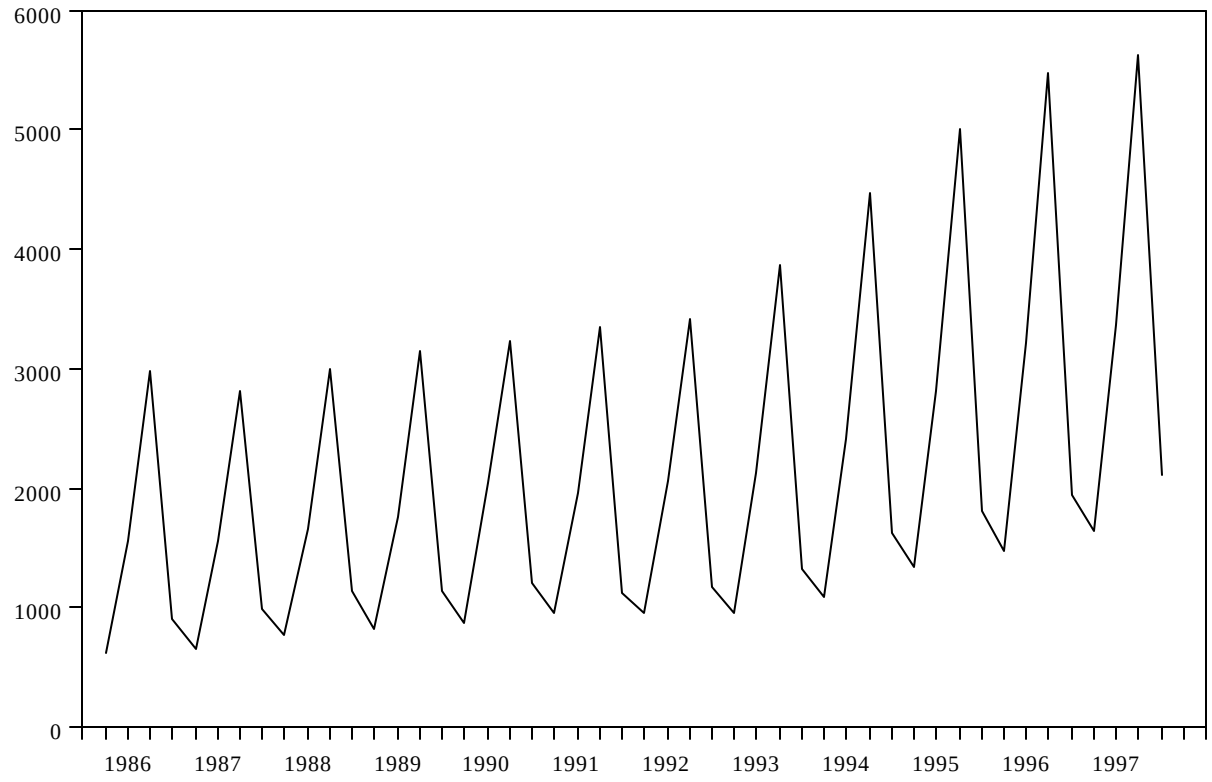


Figure 6

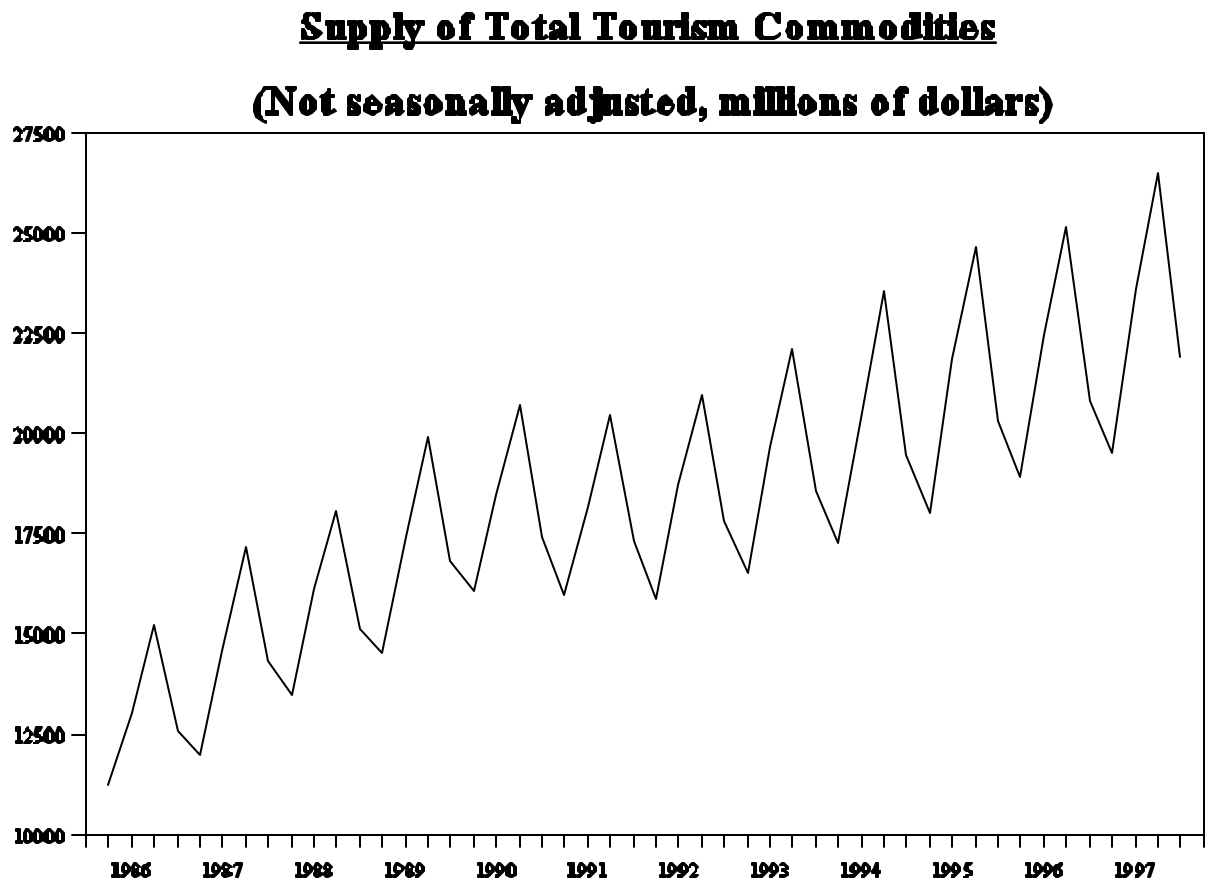

Supply of Total Tourism Commodities
(Not seasonally adjusted, millions of dollars)
27500
25000
22500
20000
17500
15000
12500
10000
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997

Figure 7

Tourism Employment in Tourism Industries
(not seasonally adjusted, thousands)

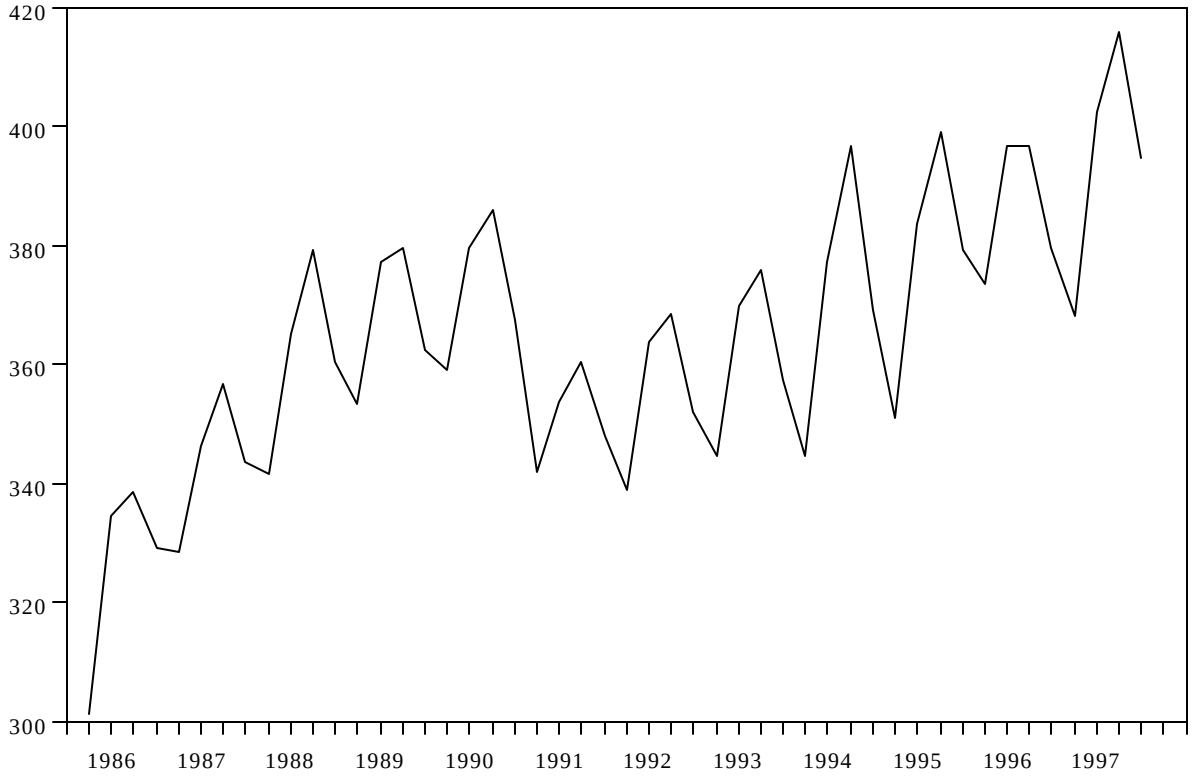


Figure 8: Domestic and Export Seasonal factors For The Major Components of Tourism

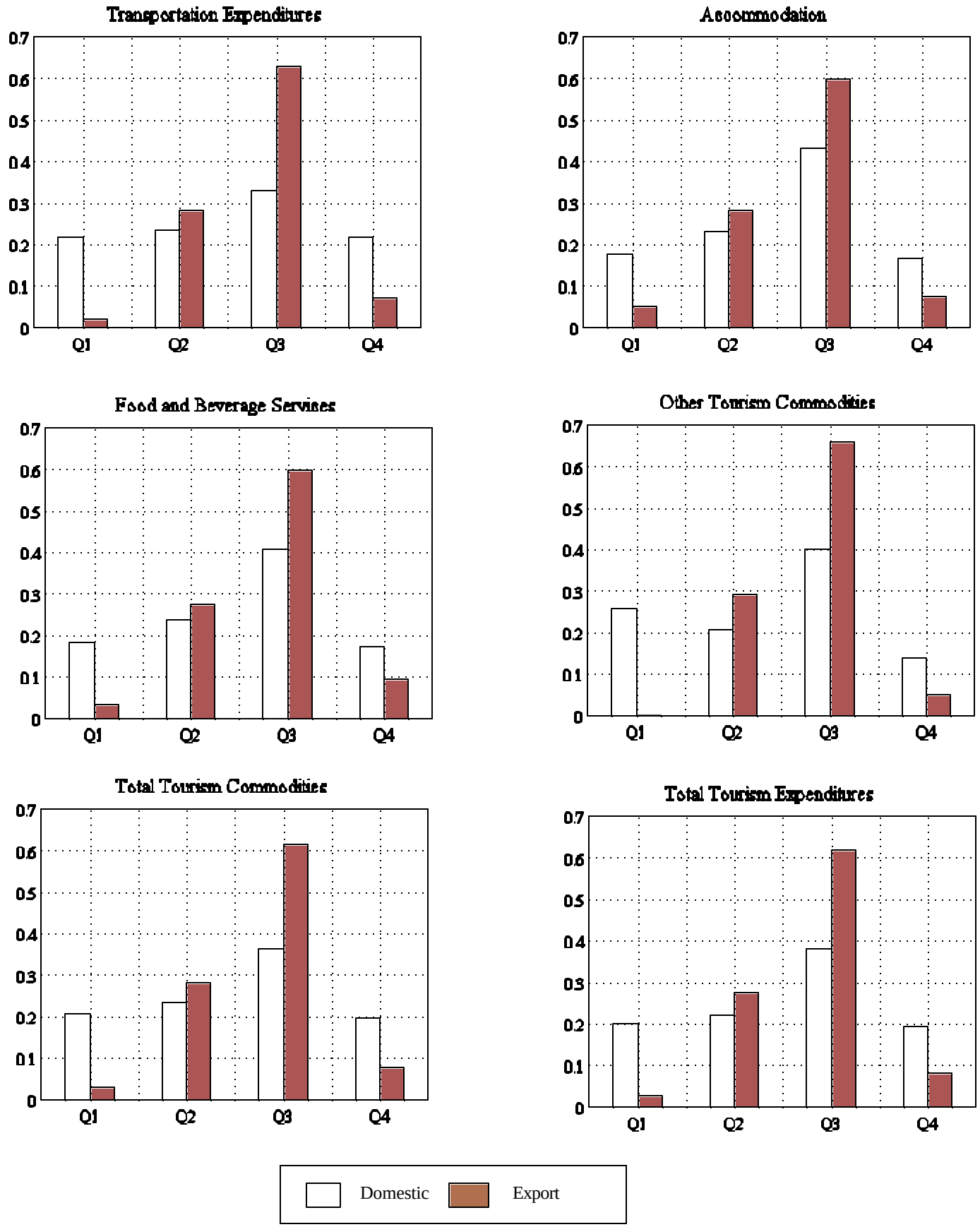
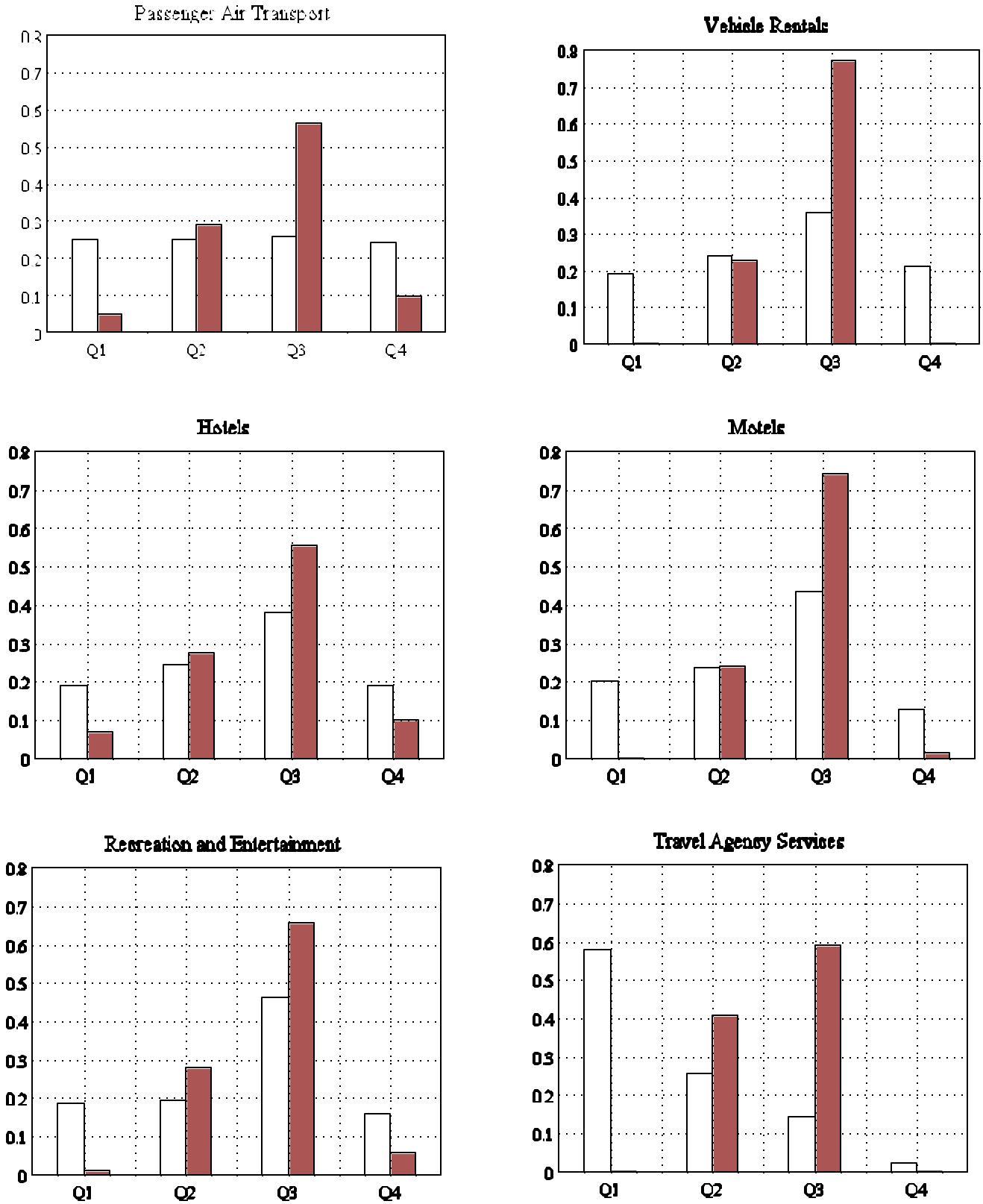


Figure 9: Domestic and Export Seasonal Factors for selected Tourism Commodities




Domestic
Export

Table 1

Seasonal Factors for Tourism Demand in Canada

	Mean Quarterly Value (Millions $)	Seasonal Factors				Sum of Seasonal Absolute Deviations
		Q1 Winter	Q2 Spring	Q3 Summer	Q4 Autumn	
Transportation	3439	.193	.241	.365	.201	.230
Passenger air transport	1779	.220	.256	.306	.219	.123
Passenger rail transport	46	.186	.238	.371	.205	.242
Interurban bus transport	120	.184	.255	.366	.195	.241
Vehicle rental	188	.130	.242	.473	.155	.446
Vehicle repairs and parts	418	.172	.215	.426	.187	.353
Vehicle fuel	761	.172	.221	.420	.187	.341
Other transportation	128	.157	.242	.431	.170	.361
Accommodation	1233	.136	.246	.481	.137	.463
Hotels	905	.150	.253	.437	.180	.381
Motels	191	.153	.237	.508	.102	.517
Other Accommodation	136	.027	.214	.714	.046	.927
Food and beverage services	1363	.142	.247	.459	.152	.418
Meals, from accommodation	198	.124	.255	.494	.127	.499
Meals, from food/beverages	818	.146	.247	.451	.156	.401
Alcohol, from accommodation	117	.153	.247	.435	.165	.370
Alcohol, from food/beverages	186	.139	.244	.462	.155	.425
Meals and alcohol from other	44	.145	.221	.501	.133	.504
Other tourism commodities	751	.197	.225	.460	.118	.420
Recreation and entertainment	508	.138	.216	.513	.133	.526
Travel agency services	224	.550	.273	.177	.000	.645
Convention fees	20	.174	.257	.321	.248	.155
Total Tourism Commodities	6787	.173	.242	.413	.172	.325
Total other commodities	1730	.137	.225	.477	.161	.454
Tourism Expenditures	8517	.165	.238	.426	.171	.352

Table 2

Seasonal Factors for Tourism Domestic Demand in Canada

	Mean Quarterly Value (Millions $)	Seasonal Factors				Sum of Seasonal Absolute Deviations
		Q1 Winter	Q2 Spring	Q3 Summer	Q4 Autumn	
Transportation	2884	.217	.235	.329	.218	.157
Passenger air transport	1457	.251	.249	.257	.243	.018
Passenger rail transport	34	.217	.243	.316	.224	.132
Interurban bus transport	96	.215	.244	.322	.219	.143
Vehicle rental	108	.193	.240	.357	.210	.214
Vehicle repairs and parts	405	.175	.214	.421	.190	.342
Vehicle fuel	688	.184	.218	.403	.195	.306
Other transportation	96	.188	.233	.378	.201	.255
Accommodation	774	.174	.231	.430	.165	.360
Hotels	551	.188	.243	.381	.188	.262
Motels	136	.200	.236	.436	.128	.373
Other Accommodation	87	.045	.151	.723	.081	.946
Food and beverage services	882	.184	.237	.407	.172	.314
Meals, from accommodation	126	.181	.232	.412	.175	.323
Meals, from food/beverages	530	.182	.241	.405	.172	.309
Alcohol, from accommodation	74	.196	.234	.381	.189	.262
Alcohol, from food/beverages	123	.179	.238	.420	.163	.340
Meals and alcohol from other	29	.182	.241	.405	.138	.446
Other tourism commodities	561	.256	.205	.400	.139	.313
Recreation and entertainment	332	.184	.194	.462	.160	.424
Travel agency services	217	.578	.257	.144	.021	.670
Convention fees	12	.261	.195	.259	.285	.110
Total Tourism Commodities	5101	.206	.233	.364	.197	.228

Total other commodities	1302	.167	.218	.437	.178	.373
Tourism Expenditures	6403	.199	.220	.379	.193	.258

Table 3

Seasonal Factors for Tourism Exports - Canada

	Mean Quarterly Value (Millions $)	**Seasonal Factors**				**Sum of Seasonal Absolute Deviations**
		Q1 Winter	**Q2 Spring**	**Q3 Summer**	**Q4 Autumn**	
Transportation	555	.020	.282	.628	.070	.820
Passenger air transport	322	.050	.290	.564	.096	.709
Passenger rail transport	12	.017	.212	.668	.103	.835
Interurban bus transport	24	.000	.323	.677	.000	1.000
Vehicle rental	80	.000	.229	.771	.000	1.042
Vehicle repairs and parts	13	.042	.257	.608	.093	.729
Vehicle fuel	73	.041	.260	.604	.095	.728
Other transportation	32	.004	.287	.691	.018	.955
Accommodation	459	.049	.280	.598	.073	.756
Hotels	354	.069	.275	.556	.100	.662
Motels	55	.000	.241	.744	.014	.989
Other Accommodation	50	.000	.333	.667	.000	1.000
Food and beverage services	482	.032	.275	.598	.095	.745
Meals, from accommodation	72	.000	.305	.677	.018	.964
Meals, from food/beverages	289	.045	.266	.576	.113	.684
Alcohol, from accommodation	43	.037	.284	.584	.095	.736
Alcohol, from food/beverages	63	.025	.264	.583	.128	.695
Meals and alcohol from other	16	.043	.259	.581	.117	.680
Other tourism commodities	191	.000	.291	.658	.050	.899
Recreation and entertainment	176	.008	.278	.657	.057	.869
Travel agency services	7	.000	.408	.591	.000	.999
Convention fees	8	.013	.372	.435	.180	.614

Total Tourism Commodities	1686	.030	.280	.614	.076	.789
Total other commodities	428	.017	.255	.637	.091	.783
Tourism Expenditures	2114	.027	.275	.619	.079	.788

Table 4

Seasonal Factors for Supply of Tourism Commodities

	Mean Quarterly Value (Millions $)	**Seasonal Factors**				**Sum of Seasonal Absolute Deviations**
		Q1 Winter	**Q2 Spring**	**Q3 Summer**	**Q4 Autumn**	
Transportation	8433	.214	.259	.284	.243	.085
Passenger air transport	1914	.222	.255	.302	.221	.114
Passenger rail transport	51	.188	.238	.363	.211	.226
Interurban bus transport	136	.189	.254	.357	.200	.223
Vehicle rental	222	.139	.240	.453	.168	.407
Vehicle repairs and parts	2404	.203	.277	.261	.259	.093
Vehicle fuel	3255	.221	.251	.276	.252	.057
Other transportation	451	.245	.253	.267	.235	.041
Accommodation	1339	.138	.246	.475	.141	.450
Hotels	976	.151	.253	.433	.163	.373
Motels	201	.154	.238	.502	.106	.505
Other Accommodation	161	.044	.219	.671	.066	.841
Food and beverage services	6304	.206	.260	.295	.239	.111
Meals, from accommodation	511	.169	.254	.372	.205	.251
Meals, from food/beverages	4049	.213	.263	.284	.240	.093
Alcohol, from accommodation	482	.194	.252	.318	.236	.139
Alcohol, from food/beverages	1034	.207	.258	.278	.257	.086
Meals and alcohol from other	228	.204	.259	.297	.228	.135

Other tourism commodities	2275	.230	.259	.292	.219	.103
Recreation and entertainment	2026	.215	.259	.292	.219	.112
Travel agency services	228	.548	.272	.180	.000	.640
Convention fees	22	.180	.255	.316	.249	.141
Total Tourism Commodities	1836	.208	.259	.301	.232	.120

Table 5

Seasonal Factors for Employment Generated by Tourism

	Mean Quarterly Value (Thousands)	**Seasonal Factors**				**Sum of Seasonal Absolute Deviations**
		Q1 Winter	**Q2 Spring**	**Q3 Summer**	**Q4 Autumn**	
Transportation	79.5	.247	.255	.243	.255	.019
Air transportation	35.6	.245	.251	.252	.252	.010
Railway transportation	5.6	.242	.251	.256	.251	.015
Water transportation	2.5	.212	.256	.280	.252	.076
Bus transportation	11.6	.261	.263	.214	.262	.071
Taxicabs	13.2	.258	.259	.224	.259	.053
Vehicle rental/leasing	11.0	.230	.256	.262	.252	.040
Accommodation	127.3	.231	.254	.271	.244	.050
Food and beverage services	127.5	.239	.255	.258	.248	.025
Other tourism industries	30.1	.233	.259	.274	.234	.066
Recreation and entertainment	22.8	.229	.261	.279	.231	.080
Travel agencies	7.3	.250	.250	.250	.250	.000

Total Tourism Industries	364.4	.237	.255	.261	.247	.032
Other industries	103.6	.238	.255	.260	.247	.030
Tourism Activities	468.0	.237	.255	.261	.247	.031

Table 6

Summary Statistics for Tourism Demand in Canada

	Percent of Variation Explained by			Seasonal	Cyclical
	Seasonality	Trend	Cyclical/Other	Decline	Decline
Transportation	64	33	3	47.1%	13.3%
Passenger air transport	24	66	10	28.4	23.0
Passenger rail transport	73	0	27	49.9	-
Interurban bus transport	73	17	10	49.7	29.1
Vehicle rental	83	11	6	72.5	9.1
Vehicle repairs and parts	78	18	4	59.6	12.7
Vehicle fuel	86	11	3	59.1	16.6
Other transportation	82	15		63.6	19.6
Accommodation	80	16	4	71.7	4.4
Hotels	70	25	5	65.7	7.1
Motels	81	10	9	79.9	7.0
Other Accommodation	95	3	2	96.2	7.4
Food and beverage services	81	17	2	69.1	14.9
Meals, from accommodation	92	6	2	74.9	17.6
Meals, from food/beverages	77	22	1	67.6	14.8
Alcohol, from accommodation	96	2	2	64.8	21.6
Alcohol, from food/beverages	66	32	2	69.9	16.2
Meals and alcohol from other	76	19	5	73.5	19.4
Other tourism commodities	49	44	7	74.4	18.4
Recreation and entertainment	75	17	8	74.1	24.1
Travel agency services	13	82	5	100.0	7.0
Convention fees	29	63	8	17.1	11.8
Total Tourism Commodities	71	26	3	58.4	10.7
Total other commodities	85	14	1	71.3	7.8
Tourism Expenditures	75	23	2	61.3	9.0

Table 7

Summary Statistics for Tourism Domestic Demand in Canada

	Percent of Variation Explained by			Seasonal Decline	Cyclical Decline
	Seasonality	Trend	Cyclical/Other		
Transportation	54	42	4	34.1%	13.6%
Passenger air transport	1	86	13	5.5	22.7
Passenger rail transport	36	8	56	31.3	-
Interurban bus transport	60	4	36	33.2	34.4
Vehicle rental	69	2	29	45.9	16.7
Vehicle repairs and parts	77	18	5	58.4	13.0
Vehicle fuel	85	11	4	54.4	17.3
Other transportation	83	12	5	50.3	20.4
Accommodation	77	13	10	61.6	6.3
Hotels	61	22	17	50.7	9.5
Motels	75	9	16	70.7	7.7
Other Accommodation	95	2	3	93.8	9.6
Food and beverage services	85	13	2	57.7	18.6
Meals, from accommodation	93	5	2	57.5	21.1
Meals, from food/beverages	80	17	3	57.5	18.3
Alcohol, from accommodation	97	1	2	50.4	25.4
Alcohol, from food/beverages	69	28	3	61.2	20.0
Meals and alcohol from other	81	13	6	65.9	20.0
Other tourism commodities	37	54	9	65.3	19.8
Recreation and entertainment	75	12	13	65.4	28.8
Travel agency services	14	80	6	96.4	7.1
Convention fees	14	53	33	31.6	27.3
Total Tourism Commodities	66	31	3	45.9	10.4
Total other commodities	85	13	2	61.8	2.4
Tourism Expenditures	72	26	2	49.1	8.6

Table 8

Summary Statistics for Tourism Exports

	Percent of Variation Explained by			Seasonal	Cyclical
	Seasonality	Trend	Cyclical/Other	Decline	Decline
Transportation	75	16	9	96.8%	17.1%
Passenger air transport	76	14	10	91.1	20.3
Passenger rail transport	83	10	7	97.5	-
Interurban bus transport	55	33	12	100.0	13.3
Vehicle rental	57	30	13	100.0	8.3
Vehicle repairs and parts	91	5	4	93.1	10.0
Vehicle fuel	91	5	4	93.2	14.0
Other transportation	71	18	11	99.4	20.0
Accommodation	74	19	7	91.8	10.4
Hotels	68	24	8	87.6	11.7
Motels	82	11	7	100.0	7.1
Other Accommodation	90	5	5	100.0	9.8
Food and beverage services	73	21	6	94.7	13.6
Meals, from accommodation	89	6	5	100.0	11.5
Meals, from food/beverages	67	26	7	92.2	13.9
Alcohol, from accommodation	85	10	5	93.7	16.1
Alcohol, from food/beverages	61	33	6	95.7	11.4
Meals and alcohol from other	64	29	7	92.6	18.2
Other tourism commodities	71	22	7	100.0	13.5
Recreation and entertainment	72	22	6	98.8	13.2
Travel agency services	62	24	14	100.0	20.0
Convention fees	63	26	11	97.0	28.6
Total Tourism Commodities	74	19	7	95.1	13.9
Total other commodities	81	14	5	97.3	12.2

Tourism Expenditures	76	18	6	95.6	13.6

Table 9

Summary Statistics for Supply of Tourism Commodities

	Percent of Variation Explained by			**Seasonal**	**Cyclical**
	Seasonality	**Trend**	**Cyclical/Other**	**Decline**	**Decline**
Transportation	28	66	6	24.7%	11.3%
Passenger air transport	23	67	10	26.8	23.3
Passenger rail transport	69	1	30	48.2	-
Interurban bus transport	74	15	11	47.1	30.1
Vehicle rental	85	9	6	69.3	9.6
Vehicle repairs and parts	35	48	17	26.7	16.1
Vehicle fuel	22	70	8	19.9	6.8
Other transportation	5	89	6	12.0	12.0
Accommodation	79	17	4	71.0	4.5
Hotels	69	26	5	65.1	6.7
Motels	80	11	9	78.9	5.5
Other Accommodation	94	4	2	93.5	5.6
Food and beverage services	32	64	4	30.2	16.4
Meals, from accommodation	87	9	4	31.7	21.4
Meals, from food/beverages	22	73	5	25.0	15.5
Alcohol, from accommodation	94	0	6	39.0	25.2
Alcohol, from food/beverages	12	83	5	25.5	16.5
Meals and alcohol from other	28	64	8	31.3	16.8
Other tourism commodities	7	89	4	25.0	11.0
Recreation and entertainment	11	84	5	26.4	11.6
Travel agency services	13	82	5	100.0	7.4
Convention fees	25	68	7	43.0	10.5

Total Tourism Commodities	32	65	3	30.9	11.5

Table 10

Summary Statistics for Employment Generated by Tourism

	Percent of Variation Explained by			**Seasonal**	**Cyclical**
	Seasonality	**Trend**	**Cyclical/Other**	**Decline**	**Decline**
Transportation	13	58	29	4.7%	5.5%
Air transportation	3	60	37	2.8	10.0
Railway transportation	2	95	3	5.5	14.3
Water transportation	57	20	23	24.3	14.8
Bus transportation	32	59	9	18.6	10.9
Taxicabs	35	40	25	13.5	17.2
Vehicle rental/leasing	6	79	15	12.2	15.6
Accommodation	47	25	28	14.8	12.7
Food and beverage services	18	60	22	7.4	9.4
Other tourism industries	65	0	35	15.0	17.2
Recreation and entertainment	62	14	24	17.9	19.9
Travel agencies	0	79	21	0	22.8
Total Tourism Commodities	31	46	23	9.2	7.5

Other industries	45	10	45	8.5	7.7
Tourism Activities	35	38	27	9.2	7.5

Table 11

The Effects of Temperature Deviations from the Seasonal Norm on the Third Quarter Seasonal Factor (Millions of dollars)

	Total Tourism Demand	Tourism Domestic Demand	Tourism Export Demand	Supply Tourism Commodities
Transportation	215	110	105	436
Passenger air transport	-	-	71	-
Passenger rail transport	-	-	2	-
Interurban bus transport	-	-	-	-
Vehicle rental	21	-	-	-
Vehicle repairs and parts	57	56	-	217
Vehicle fuel	54	49	-	-
Other transportation	9	-	-	-
Accommodation	157	115	-	169
Hotels	105	72	-	112
Motels	27	22	-	28
Other Accommodation	25	21	-	29
Food and beverage services	104	63	-	255
Meals, from accommodation	15	11	-	30
Meals, from food/beverages	63	36	-	173
Alcohol, from accommodation	-	-	-	-
Alcohol, from food/beverages	16	10	-	-
Meals and alcohol from other	6	4	-	15
Other tourism commodities	86	67	-	-
Recreation and entertainment	79	62	-	-
Travel agency services	-	-	-	-
Convention fees	2	-	-	1
Total Tourism Commodities	563	354	-	955
Total other commodities	94	51	-	n.a.
Tourism Expenditures	657	405	-	n.a.