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Limits to Growth: Tourism and Regional Labor Migration

BY

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Limits to Growth: Tourism and Regional Labor Migration

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Abstract

The paper provides a methodology for considering the carrying capacity and limits to growth of a labor-constrained mature tourism destination. A computable general equilibrium model is used to examine the impacts of visitor expenditure growth and labor migration on Hawai'i's economy. Impacts on regional income, welfare, prices, sector-level output, and gross state product are considered under alternative migration scenarios. Labor market constraints impose limits to growth in real visitor expenditures. Labor market growth with constrained visitor demand generates falling per capita household welfare.

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1. INTRODUCTION

Small tourist destinations can experience wide economic fluctuations in response to changes in visitor expenditures. Visitor-led demand shocks influence prices and factor market demand in ways that induce migration as people enter and exit in response to regional economic opportunities. The impact on prices, output, standards of living, and the visitor experience depend on the interaction of these factors.

Since Hawai‘i statehood, visitor spending and the gross state product (GSP) have generally moved together and are positively correlated with household incomes in California, Japan, and Korea. The Hawai‘i economy and residential population expanded significantly with growth in the economies of Asia during the 1980s and 2000s. The 1990s witnessed an unprecedented economic downturn and out-migration, often referred to as the ‘lost decade.’ Hawai‘i tourism responded quite rapidly to external demand shocks such as the events surrounding the Japanese asset market collapse in 1990, the Asia financial crisis of 1997, and the 1995-2001 dot-com rise and fall of the U.S. technology sector. Hawai‘i experienced steady economic growth and an expansion of the labor force from 2000 until the recent global financial crisis. With a resident population of 1.3 million, nearly 7.5 million visitors came to Hawai‘i in 2007. While the Hawai‘i real estate market was relatively isolated from the sub-prime mortgage crisis that hit the U.S. mainland, the economy suffered a delayed response to the present financial crisis. By 2008, visitor arrivals plummeted to 6.7 million and continued to slide. From a base of 2007, Hawai‘i experienced a cumulative drop of 14.4 percent in visitor arrivals triggering a severe economic slowdown resulting in a 4.5 percent drop in employment by 2009.

Optimal levels of tourism, and associated population growth, generate substantial policy discussion Hawai‘i and other visitor destinations. Visitors generate jobs and contribute positively to economic growth and development in Hawai‘i. At the same time, tourism and in-migration creates congestion and imposes stress on Hawai‘i’s limited infrastructure and environmental resources. Many current residents lobby to constrain population growth to preserve living standards while employers advocate for an expansion of the labor force.

Local policymakers cannot legally restrict tourism or inter-state migration and have no jurisdiction over immigration policy. Yet population growth is actively managed through land-use, permitting, and availability of public infrastructure. For example, Hawai‘i zoning laws severely restrict new hotel construction. Regulations have been preserved on the grounds that they support sustainable economic development and respect the human carrying capacity of the Hawaiian Islands.

The volcanic Hawaiian island chain is spread over 2,400 km in the Pacific Ocean. As is typical of island economies, the mountainous terrains and water availability limit inhabitable areas to the coasts of eight main islands. Population density varies across the islands with 567 per km^2 on Oahu, 62 per km^2 on Maui, and 11 per km^2 on Molokai. Archeological evidence dates the first inhabitants at 300 BCE. Following the 1778 arrival of James Cook, missionaries and whalers migrated to the islands. Chinese, Japanese, and Korean immigrants arrived from 1885 to the early1900s as contract laborers for sugar cane and pineapple plantations. Today, the key economic drivers in the State are tourism and military services.

Whether growth in visitor demand will improve resident standards of living depends significantly on regional labor mobility conditions. A visitor demand shock puts pressure on labor markets and prices, particularly within a confined regional economy. The ultimate economic impact of increased visitor spending will depend on the rate of entry (or exit) of new workers. Not addressed in this paper is the impact of technological progress or capital accumulation on living standards.

Several studies have demonstrated that intraregional migration is positively related to external demand shocks. Chan, Dung, Ghosh, and Whalley (2005) develop a CGE model of Vietnam. In their model, unemployment is treated as a pool of workers who will enter (or exit) the market until wages are in equilibrium at benchmark levels. Trade liberalization increases overall welfare but redistributes income and unemployment in a manner that hurts poor households in real terms. For the regional economy of Jersey, Learmonth, McGregor, Swales, Turner and Yin (2007) consider the environmental and economic impacts of alternative population assumptions. The study finds that small in-migration lowers average household income while increasing congestion and pollution. Gelan (2002) develops a computable general equilibrium (CGE) model that considers rural labor migration into urban Ethiopia and finds that trade liberalization will contract urban economic growth when urban real wages are fixed but will lead to rural and urban growth when wages are flexible.

The CGE model of Cutler and Davies (2007) considers sector-specific regional factor mobility in a city where policymakers can target sectors for expansion. The analysis demonstrates that expanding high-wage sectors increases output and tax revenues while low-wage retail growth generates higher household income per acre. Hoffman, Robinson

and Subramanian (1996) develop a CGE model of California and find that defense spending cuts generate a drop in gross state product ranging from a factor of one to five, depending on the degree of interstate labor mobility.

As a mature tourism destination, there are several econometric studies of Hawai‘i’s visitor economy. Bonham, Gangnes and Zhou (2009) estimate a vector error correction model of Hawai‘i tourism where both demand and supply side variables are incorporated. They identify reasonable long run relationships for visitor demand, hotel room price, and production. The paper by Fujii, Khaled and Mak (2000, 1985) estimates Hawai‘i visitor expenditures using time series data and find that food, lodging, clothing and transport demand elasticities are not statistically different than one, which is consistent with Cobb-Douglas preferences. These analyses serve to inform the parameter and functional form selection for an applied general equilibrium model.

In the present study a computable general equilibrium model is developed to identify the key economic tradeoffs involved with allowing labor market expansion through population in-migration. The analysis demonstrates how sensitive a regional economy is to fluctuations in visitor expenditures and the mobility of labor. The model is calibrated to 1997 data for Hawaii, including a detailed social accounting matrix comprised of 131 sectors, three factors, households, investors, and four government categories. Tourism represents a significant share of regional exports. Calibrated sensitivity analysis quantifies the economic impacts of alternative visitor spending scenarios. Household income, wages, commodity prices and output respond endogenously to changes in visitor expenditures. The model is used to show how regional welfare, price levels, and production respond to alternative labor market rigidity scenarios.

The paper is organized as follows. Section 2 provides a detailed discussion of the Hawaii data set and the CGE model. Section 3 analyses three alternative numerical growth scenarios. Concluding remarks are drawn in section 4.

2. DATA AND METHODOLOGY

In order to assess the effects of the alternative tourism and labor force growth scenarios, a numerical applied general equilibrium model of Hawaii is developed. A Social Accounting Matrix is assembled which describes the flow of goods, services, and factors through each economy in a baseline year. For each production sector, the purchases of intermediate inputs and primary factors (labor and capital) are provided. Demand in each sector is a combination of intermediate demand and final expenditures by households, government, exporters, and investors. The baseline conditions are derived from a 1997 Input-Output table comprised of 131 industrial sectors, three factor markets, and 11 agents of final demand (DBEDT 2002). The Social Accounting Matrix is supplemented with additional data on visitor expenditures, population, and infrastructure.

Insert Table 1: Structure of Output and Production in Hawai‘i

An aggregated summary of output and production is presented in Table 1. Hawai‘i is a service-based economy. Key services, many of which are visitor related, supply significant output shares including real estate (15.4 %), trade (10.4%), hotels (5.9%), restaurants (3.9%), and air transportation (3.5%). Other services, including health, business and professional services, account for an additional 25.8 percent of production and

29.8 percent of employment. The government sector employs 22 percent of Hawai‘i’s civilian workforce and generates 33.2 percent of labor income.

Insert Table 2: Household and Visitor Expenditures in Hawai‘i

Table 2 presents expenditure patterns by households and visitors. Of total final demand output of $73 billion, imports account for 19.5%. Imports include foreign goods and services as well as imports from the U.S. mainland. It is important to note that the Hawai‘i market is geographically isolated from the U.S. and Asia. Thus it is possible to distinguish locally produced goods and services from imports to the Islands.

As shown in Table 2, the 1.2 million households in Hawai‘i consumed approximately $25 billion in 1997. ‘Other services’ and real estate comprise more than half of total consumption. One fifth of household expenditures are on imported products. Visitor expenditures in Hawai‘i are a significant part of total sales at $10.9 billion in 1997, Table 2. Hawai‘i visitors spend largely on hotels (29.7%), air transportation (14.2%), retail (11.7%), and restaurants (10.3%). Imports (including U.S. mainland and international imports) make up about 13 percent of total visitor expenditures. It is important to note that real per capita personal income has grown less than 1 percent since the 1970s. This gives indication that technological progress has lagged in Hawai‘i. relative to the U.S. mainland.

Hawaii is modeled as a small and very open economy, in which visitor expenditures generate a significant share of foreign exchange. The approach is similar to that of Konan and Maskus (2006, 2000) and Konan and Kim (2004). Visitors demand a bundle of goods, such as hotel and restaurant services, most of which are not importable. Goods are produced under perfect competition and constant returns to scale using intermediate

commodities, imports, labor, and capital. Final demand is generated by households, visitors, various government entities, and exports. Within this context, prices are calibrated to clear markets.

Consumer behavior

There are two types of consumers in the economy, residents (r) and visitors (v). The economy produces n commodities and imports a single composite commodity m. The Cobb-Douglas utility function for the type-h consumer is given by

$$U_h = \prod_i C_{hi}^{b_{hi}} \qquad \sum_i b_{hi} = 1 \tag{1}$$

where C_{hi} is consumption and b_{hi} the income expenditure share of i= 1,..,n,m by consumer $h = r,v$. An import matrix has not been constructed for Hawaii and information on imports by commodity is not available at this time. We thus assume that consumer h consumes imports C_{hm} in fixed proportion to income b_{hm}, as is consistent with Cobb-Douglas preferences. Hawai‘i visitor econometric estimates of Fujii, Khaled and Mak (2000) provide an empirical basis for the selection of Cobb-Douglas constant expenditure share utility functions.

A single representative resident maximizes utility (U_r) subject to the following budget constraint:

$$\sum_i p_i C_{ri} = p_L L + P_R R + P_K K + \overline{p}_{fx} BP - T_r \tag{2}$$

where prices p_i represent the market prices for imports and commodities i = 1,..n, m respectively. The resident derives income from factors of production including labor (L), proprietor income (R), and capital (K), where p_L, p_R, p_K are the market price of the respective factors. The resident pays a lump-sum tax (T_r) to the state and local

government. The resident also receives foreign exchange ($\overline{p}_{fx}B$) from a balance of payment deficit, described below in equation (12).

A representative visitor with exogenous income (I_v) maximizes utility (U_v) subject to the budget constraint

$$\sum_i p_i C_{vi} = I_v (1 + \gamma_V) \tag{3}$$

where γ_V serves as an exogenous visitor expenditure shock parameter.

Production and sales of goods and services

Final output (Y_j) in sector j = 1,.., n is produced according to a nested production function comprised of intermediate inputs (Z_{ij}) of commodity *i,* composite imports (M_j), and value added (V_j) as shown in Figure 1. The first level is a Leontief production function

$$Y_j = \min[Z_{1j}/\alpha_{1j},...Z_{nj}/\alpha_{nj}, M_j/\alpha_{mj}, V_j/\alpha_{vj}] \tag{6}$$

where a_{ij}, a_{mj}, a_{vj} are unit input coefficients for intermediates, imports, and value added respectively. See Bonham et al (2009) for empirical justification.

A sub-production function describes the substitutability between labor (L_j), capital (K_j), and proprietor income (R_j) in producing real value added (V_j) in each sector j, where σ_j is the constant elasticity of substitution (CES) among value added variables.

$$V_j = [\alpha_{Lj} L_j^{(\sigma_j - 1)/\sigma_j} + \alpha_{Kj} K_j^{(\sigma_j - 1)/\sigma_j} + \alpha_{Rj} R_j^{(\sigma_j - 1)/\sigma_j}]^{\sigma_j/(\sigma_j - 1)} \tag{7}$$

Commodity Y_j is differentiated for sale on domestic and international markets, as given by a constant elasticity of transformation (CET) function between domestic (D_j) sales and exports (X_j).

$$Y_j = [\beta_{Dj} D_j^{(\varepsilon_j - 1)/\varepsilon_j} + \beta_{Xj} X_j^{(\varepsilon_j - 1)/\varepsilon_j}]^{\varepsilon_j/(\varepsilon_j - 1)} \tag{8}$$

In this function, ε_j is the elasticity of transformation and β_{Dj}, β_{Xj} are parameter shares.

Government revenue and expenditures

Three government agencies procure goods and services in the economy: the state and local government (denoted *SL*), the federal military government (denoted *FM*), and the federal civilian government (denoted *FC*). Each government type purchases fixed levels of domestic commodities ($\overline{G}_{gi}$) and imports ($\overline{G}_{gm}$) to assure a constant level of public provision is maintained, where $g = SL, FM, FC$.

The state and local government depends entirely on the economy for the tax base.

$$\sum_i p_i \overline{G}_{SLi} = \sum_i p_i Y_i \boldsymbol{\tau}_i + T_r \qquad (4)$$

A primary source of revenue is the State's goods and services tax ($\boldsymbol{\tau}_i$) on the sales (Y_i) of commodity *i*. The state and local government also impose a variety of taxes, such as property and income taxes, on residents. In this model, this resident tax (T_r) adjusts endogenously to maintain constant government expenditures and a balanced budget.

The budgets of the federal government agencies are assumed to be completely independent of state economic conditions. In the case of Hawaii, this is a reasonable characterization. Owing to Hawaii's unique strategic assets, such as Pearl Harbor, federal military expenditures are determined largely by international political conditions. As a relatively small state, federal civilian expenditures are not well-correlated with federal taxes paid by Hawaii residents. In the model, federal inflows are assumed to adjust endogenously to assure that federal government objectives are maintained. Thus, the federal public sector budget constraints are given by the following equations

$$\sum_i p_i \overline{G}_{FMi} = I_{FM}$$

$$\sum_i p_i \overline{G}_{FCi} = I_{FC} \tag{5}$$

where the sum on the left-hand side represents the cost of public expenditures and I_{FM}, I_{FC} represents endogenous federal revenue inflows for military and civilian agencies, respectively.

Market clearing conditions

Constant returns to scale and perfect competition ensure that the producer price (p_j) equals the marginal cost of output in each sector j. In addition, the State and Local Government collects a general excise tax (τ_j) on sales. This in turn implies that the value of total output equals producer costs, where p_L, p_K, p_R, equal the market price of labor, capital, and proprietor income respectively.

$$p_j Y_j (1 + \tau_j) = \sum_{l=1,..,n} p_l Z_{lj} + P_L L_j + p_k K_j + p_R R_j + p_m M_{Yj} \tag{9}$$

The model accommodates alternative labor force assumptions characterized by the following market clearing condition.

$$\overline{L}_0 \ (1 + \gamma_L) = \sum_j L_j. \tag{10}$$

One scenario holds the labor force (L) is fixed ($\gamma_L = 0$), and thus the labor supply is perfectly price inelastic. A second alternative is that the labor force grows at a rate, γ_L, which is related to exogenous demographic factors. A third alternative is that the labor force is perfectly price elastic, and that workers enter up to a point where the real price of labor remains constant. Alternative three is similar to the 'unemployment' scenario of Chan, et al (2005) and the urban migration model of Gelan (2002).

Other factors of production are assumed to be fully mobile across sectors, but fixed in total supply, with endowments of $\overline{K}$, $\overline{R}$. Given the competitive nature of the model, all

factors will be fully employed in equilibrium. The parameter γ_L gives the rate at which the labor supply increases. The following market clearing conditions hold in the factors markets

$$\overline{K} = \sum_j K_j, \quad \overline{R} = \sum_j R_j \tag{11}$$

Sector j output, which supplied to the domestic market (D_j), is demanded by consumers $h \in \{r,v\}$, government agencies $g \in \{SL,FC,FM\}$, and industries $j = 1,..,n$.

$$D_j = \sum_h C_{hj} + \sum_g G_{gj} + \sum_l Z_{li} \tag{12}$$

An endogenous balance of external payments (BP) is maintained under the assumption of a fixed (dollar) exchange rate ($\overline{p}_{fx}$), where $\overline{p}_{fx}$ is the price of foreign exchange, the exchange rate. In other words, Hawai‘i money markets are assumed to be sufficiently small so that the dollar exchange rate vis a vis foreign currencies is exogenous. The quantity of imports (M) is thus constrained by the inflow of dollars obtained from visitor expenditures (I_v), federal government expenditures (I_{FM}, I_{FC}), and Hawaii exports (X_j). Note that Hawai‘i imports and exports include international trade and trade with the U.S. mainland. It is assumed that the economy is a small price taker on world markets and thus import and export prices are perfectly inelastic.

$$\overline{p}_{fx} BP = \overline{p}_m M - I_v - I_{FM} - I_{FC} - \sum_j \overline{p}_{xj} X_j \tag{13}$$

The computable general equilibrium model thus represents a classic Walrasian system. In this particular system, there are 40 commodities markets and three factors markets. Given the convexity of the production and expenditure sets, there exists a unique vector of equilibrium prices at which markets clear (supply is equal to demand). Changes

in parameters of the system induce an optimal response on the part of producers and consumers resulting in a new vector of market-clearing equilibrium prices.

3. SIMULATING THE IMPACT OF ALTERNATIVE GROWTH SCENARIOS

This section considers numerical simulations that are designed to illustrate the interactions between growth in the visitor industry, labor force growth, and the level and distribution of income. It is important to note that the experiments are counterfactual, and don't represent actual experiences in Hawaii. Rather, the experiments are designed to isolate effects and illustrate interactions among the labor force, households, and tourists under a variety of conditions.

Additionally, the current analysis focuses distinctly on the interaction of tourism and labor markets. While important for long-run economic growth, alternative factors such as capital accumulation and technological progress are not considered in this static analysis. Empirical forecasts by the University of Hawai'i Economic Research Organization have found technological progress within Hawai'i to be lagging rates in other locations. While this is a limitation of the current study, the topic would require significant investment beyond the scope of the present analysis. As a result, per worker income growth is due specifically to changes in tourism demand rather than underlying changes in technology or productivity.

Three growth scenarios are considered. Each involves a range of percentage point increases, so as to yield sensitivity analysis. The scenarios are:

1. Percentage point increases in nominal visitor expenditures and no change in the labor force.
2. Percentage point increases in the labor force and no change in nominal visitor expenditures.
3. Percentage point increases in nominal visitor expenditures, whereby labor markets are perfectly price elastic. Hence the labor force expands to a level that maintains constant real returns to labor.

Scenario 1: Visitor Expenditure Growth with Inelastic Labor Supply

In the first scenario, the labor supply is held constant at 594.7 thousand workers and nominal visitor expenditures are increased in increments of a percentage point, from one to ten percent. An increase in nominal (dollar) visitor expenditures increases raises demand for locally produced goods and services. Without compensating increases in productive factors, this growth will increase local prices and income levels.

Insert Table 3: Macroeconomic Impact of Visitor Expenditure Growth with Inelastic Labor Supply

Table 3 provides the macroeconomic impacts of increases in nominal visitor expenditures from the baseline level of $10,931 million. First consider the impact of visitor expenditure growth on the quality of the visitor experience. Visitor well-being is given by real, inflation adjusted, visitor expenditures (EV). A one percent increase in nominal visitor expenditures generates an increase of 0.4 percent in real visitor expenditures. As exogenous nominal visitor expenditures grow, the change in real visitor

expenditures initially increase and eventually decline due to price inflation. The simulation results indicate that the maximum real growth in visitor expenditures (1.6 percent) is reached at nominal expenditures of 7.0 percent. One could consider this to be Hawaii's 'carrying capacity' as visitor expenditures beyond this point generate inflation levels that dominate income effects. Note, that this does not define the 'carrying capacity' in terms of a fixed number of visitors but rather in the economic activity that is supportable by an inelastic labor market. The inflationary impact of the visitor expenditure increase is captured in the consistent rise in the visitor price index with a ten percent increase in nominal expenditures causing an estimated 8.2 percent increase in visitor prices overall.

Hawaii households benefit from the increase in visitor demand. With an increase of 1 percent in nominal visitor expenditures, real household expenditures would increase by 0.5 percent equivalent variation (EV). This increase is attributed to real increases in labor and proprietor compensation of 0.2 percent each. Household expenditures are monotonically increasing as visitor expenditures rise over the range of the scenarios considered. Finally, nominal visitor expenditure growth has a positive effect on both real and nominal gross state product GSP. Nominal visitor expenditure growth of 1 percent spurs output growth of 0.9 percent (nominal) and 0.2 percent (real). Similar growth rates are seen in terms of total output, with nominal and growth of 0.7 and 0.1 percent respectively.

Scenario 2: Labor Force Growth With Fixed Visitor Expenditures

The second scenario involves incremental increases in the labor force (LF), from 594.7 to 654.2 thousand workers, while nominal visitor expenditures are held constant. In

order to isolate the impact of LF growth, all other sources of value added are assumed to remain fixed in real terms.

Insert Table 4: Macroeconomic Impact of Labor Force Growth with Fixed Visitor Expenditures

Table 4 provides the macroeconomic impact of this ceterus paribus labor force expansion. Not surprisingly, the growth in workers has a positive real impact on the visitor experience. The welfare of the tourist is measured in terms of real visitor expenditures, or EV, which increase from between 0.6 percent (with a 1% LF increase) to 3.9 percent (with a 10% LF increase). Visitor welfare increases as the purchasing power of a nominal visitor dollar improves. The visitor price bundle falls from between 0.5 percent (with 1 percent LF increase) to 3.1 percent (with 10 percent LF increase).

While total household expenditures rise in both real and nominal terms, the growth is less than the growth in labor force and hence per capita welfare declines. With a one percent increase in the LF, nominal household expenditures are nearly unchanged while real expenditures increase by 0.5 percent (corresponding to the associated 0.5 percent fall in the consumer price index) and per capita expenditures fall by 0.5 percent. Ten percent LF growth results in 6.6 percent rise in total real household expenditures and 3.1 fall in per capita household expenditures. Per capita wage and salary compensation falls from between 0.9 percent (with 1% LF increase) to 7.4 percent (with a 10% LF increase). A similar trend exists with proprietor income. Labor force expansion without an increase in visitors (or alternative external demand) is not sustainable in terms of maintaining a standard of living for Hawaii residents.

Scenario 3: Visitor Expenditure Growth with Perfectly Elastic Labor Supply

The final set of scenarios considers the impact of exogenous incremental increases in nominal visitor expenditures under the assumption that the labor force can expand Hawaii's productive capacity to accommodate the growth in demand. The labor supply is assumed to be perfectly elastic whereby workers move into the labor force and real wages are constant.

Insert Table 5: Macroeconomic Impact of Visitor Expenditure Growth with Perfectly Elastic Labor Supply

Table 5 provides the macroeconomic impacts of changes in nominal visitor spending. The labor inflow associated with a one percent increase in nominal spending is significant (0.21 percent of the total labor force), and the rate of increase is slightly increasing as expenditures grow (10% expenditure increase induces 2.43% increase in labor force). Growth impacts the quality of the visitor experience. Real visitor expenditures expand by 0.5 percent (with 1% nominal expenditure growth) to 4.2 percent (with 10% nominal expenditure growth). The consumer price index increases by 5.8 percent, and visitor price index by 5.4 percent, with a ten percent increase in nominal visitor expenditures.

Total household expenditures increase, ranging from 1.1 percent to 12.4 percent in nominal terms and from 0.6 percent to 6.3 percent in real terms. By assumption, this increase is driven by labor force growth rather than by growth in real labor compensation, and thus per capita real household expenditures lag behind that of total expenditures. With visitor expenditure growth, total real compensation to employees increases at the rate of

increase in the labor force. By assumption, total per capita compensation to labor remains fixed. Nominal gross state product grows by from between 0.8 percent (with a 1% growth in visitor spending) to 9.1 percent (with a 10% growth in visitor spending). Real GSP increases from 0.3 percent to 3.1 percent.

Tourism Growth under Alternative Labor Market Assumptions

Table 6 provides summary macroeconomic impacts of an increase in visitor expenditures of 1%, 5%, and 10%. Two alternative labor force assumptions are simulated: the labor force is perfectly inelastic (scenario one, Table 3), and the labor force is perfectly elastic (scenario three, Table 5). Several important conclusions are drawn from this comparison.

Insert Table 6: Visitor Expenditure Growth under Alternative Labor Force Assumptions

First, the quality of the visitor experience is significantly dependent on the responsiveness of the labor force to tourism growth. Visitor welfare is measured in terms of real visitor expenditures (EV). When labor supply is perfectly inelastic, a nominal (dollar) increase in visitor spending of 5% and 10% result in an identical visitor welfare level with real expenditures in either case increasing by only 1.4%. In other words, while dollar spending increases from 5% to 10% the value of the bundle of goods purchased does not change. In contrast, when labor supply is perfectly elastic an expansion of nominal visitor expenditures is supported by an inflow of workers, and thus real expenditures may steadily increase. Nominal visitor expenditure increases of 10% generate real expenditure

growth of 1.4% with a fixed labor supply, and of 4.2% with an elastic labor supply. Clearly, at any level of nominal spending visitors are better-off in an environment with a flexible rather than a fixed labor market.

Second, the more visitors spend the higher are prices, for both visitors and residents. Additionally, increases in visitor spending generate more inflation when labor markets are inelastic than when there may be in-migration. The visitor price index, as well as the consumer price index, measures the percentage change in the cost of a market basket of goods due to price changes over initial levels and is computed as a true Hicksian-neutral price index. A 10 percent increase in nominal visitor spending generates an 8.2 percent increase in the visitor price bundle with a fixed labor market. Under flexible market conditions, this same 10 percent increase implies a more tempered 5.4 increase in the visitor price index.

Third, residents are better off when visitor spending is not accompanied by a growth in the labor force. While increases in visitor spending fuels consumer price inflation, compensation to employees is increasing even faster when the labor market is price inelastic. Thus, real per capita labor compensation increases by 2.8 percent, and real household income by 6.2 percent, when visitor expenditures expand by 10% nominally. By definition, perfectly elastic labor markets imply that workers will enter the market up to a point where real returns to labor are unchanged. Thus, the welfare gains on a per-household basis from growth in nominal visitor spending are much more moderate (and due to increased demand for non-labor factors of production) when labor markets are flexible.

Fourth, the real gross state product, or the overall value of economic production, is strikingly similar with visitor expenditure growth under either labor market condition. In-migration of labor only modestly contributes to overall economic growth. This is in part because capital accumulation is assumed fixed and the inflow of workers moderately low. While the value of gross state product is similar under fixed and flexible labor markets, the distribution of income is quite different, with visitors benefiting most from flexible labor markets and resident households benefiting most from fixed labor markets.

The mechanisms underlying macroeconomic impacts of visitor expenditures can be better understood by examining changes in output values and activity levels. Table 7 provides simulation results associated with a five percent increase in visitor expenditures. Under inelastic labor supply conditions, visitor growth increases the value of visitor related services by anywhere from 4.8 percent (entertainment) to 5.5 percent (restaurants). However, price inflation represents a significant component of the value increase as the level of output increases only marginally, at 0.7 and 1.5 percent for entertainment and restaurants respectively.

As labor is drawn into visitor-related activities and endowments are fixed, economic activity declines in key sectors including other (non-visitor) related services such as health, education, and business and manufacturing. Agricultural output falls most significantly, by 4.4 percent in value and 8.3 percent in activity levels. This is due in part to increasing labor costs and in part due to balance of payments conditions. While agricultural output for local consumption remains relatively constant, export-oriented agriculture falls with the increase of tourism.

Modeling visitor expenditure growth under conditions of a perfectly elastic labor supply allows visitor expenditures to be accommodated in the economy with lower inflation levels. As shown in Table 7, the value of a 5 percent increase in visitor expenditures is lower by about 0.2 percentage points for most sectors, with outliers being the extremely labor intensive sectors (government, agriculture and construction).

4. CONCLUDING REMARKS

In this paper, a computable general equilibrium model is developed from a detailed 131-sector social accounting matrix of the Hawaii economy. Visitor expenditure growth is simulated under alternative labor market scenarios. The impact of growth on the visitor experience, residential household income, income distribution, and prices is considered. Several interesting results emerge.

Most notably, labor market constraints provide limits to growth in tourism. As demonstrated in Table 3, Hawaii's existing labor force would support a maximum growth in real expenditures of only 1.6%, requiring a 7.0% increase in nominal (dollar) spending, with visitor inflation of 5.2%. Given the numerous alternative tourist destinations, it seems unlikely that visitors would come in increasing numbers to an inflationary environment. Thus, a dynamic visitor industry is not sustainable without growth in Hawaii's labor force.

Similarly, the welfare of Hawaii's labor force is closely tied to the visitor industry. When there is no new entry into the labor force, visitor expenditure growth generates an increase in household welfare, or real household expenditures. Under these conditions, visitor growth essentially transfers income from visitors to residents through inflation of factor prices. The reverse is also true, that labor force growth without an increase visitor

spending will harm Hawaii households, and benefit visitors, as real incomes fall. Labor force expansion without an increase in visitors, or alternative export sectors, is not sustainable in terms of maintaining a standard of living for Hawaii residents.

Because visitors do not earn their income in Hawaii's economy, their expenditures tend to increase price levels in Hawaii relative to that of the rest of the world. The more visitors spend, the greater is the demand for local factors, and the higher are prices. Similarly, as the resident labor force grows wages fall, and the cost of providing the visitor bundle decreases. Clearly, because prices act to redistribute income the welfare of one group expands at the expense of another.

Another possibility is that tourism growth will attract new workers to Hawaii's labor market. It is shown that visitor-induced labor migration is potentially significant, with 1% increase in dollar spending generating 0.21 labor inflows. A 10% increase in visitor spending results in 2.43 percent more workers. By holding down labor costs, inflation is somewhat moderated, thus supporting expansion in real visitor expenditures.

A limitation of the present analysis is that other determinants of long-run economic growth are not considered. Technological progress or capital accumulation might provide avenues to circumvent the limitations that a labor force can pose on a visitor destination. Hawai‘i has a tradition of constraining tourism infrastructure development such as new hotel construction, roadways, or mass transportation. Yet, there may be private and public initiatives that would make the destination more attractive for visitors and provide additional venues for growth in per capita income and gross state product.

A key limiting force in the growth of the visitor industry is the availability of labor. Without a responsive labor force, the increase in demand that tourism dollars generate are

highly inflationary and likely unsustainable for the industry. At the same time, tourism has traditionally been the primary export for Hawaii. Other export sectors, such as agriculture, clothing manufacturing or intellectual property, are unlikely to grow at a rate sufficient to maintain living standards for a growing population. In order to provide a consistent standard of living for future generations, visitor revenues will undoubtedly play an important role.

In Hawaii, where goes residential growth so goes a need for tourism revenues. Where goes tourism, so goes a demand for labor. The relationship between the standard of living of people within Hawaii, be they residents or transients, are intricately linked. Yet, in an island economy such as that of Hawaii, the constraints of the natural and built environment also present limits to growth of tourism and other industrial sectors. There is a larger question concerning the ultimate carrying capacity of the islands to sustain people, be they resident or visitors. This analysis helps to inform the tradeoffs that are involved.

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Table 1: Structure of Output and Production in Hawaii

Industry	Output	Inter-industry demand	Imports	Labor income	Proprietor income	Other value added	Jobs
Total	$58.7 bil	$14.4 bil	$5.7 bil	$21.6 bil	$2.1 bil	$14.9 bil	742,231
Agriculture	1.4%	1.9%	1.4%	1.3%	1.8%	1.0%	2.9%
Construction	6.0%	7.9%	11.1%	5.8%	11.6%	1.7%	4.5%
Manufacturing	5.8%	5.9%	28.8%	2.4%	2.2%	2.4%	2.4%
Air Transportation	3.5%	4.8%	5.3%	2.4%	0.3%	3.5%	1.4%
Transportation	2.6%	4.5%	4.0%	1.7%	1.2%	1.8%	1.9%
Entertainment	1.4%	1.8%	1.8%	1.4%	3.0%	0.8%	2.7%
Golf	0.4%	0.6%	0.3%	0.4%	0.0%	0.2%	0.5%
Hotels	5.9%	7.6%	3.4%	5.9%	1.7%	5.7%	5.6%
Real Estate Rental	15.4%	13.7%	2.9%	1.8%	17.6%	41.0%	3.9%
Restaurants	3.9%	5.5%	5.2%	3.7%	2.0%	2.3%	6.8%
Trade	10.4%	9.9%	8.2%	11.1%	9.6%	10.9%	14.9%
Other Services	25.8%	30.3%	23.4%	27.2%	48.9%	17.3%	29.8%
Utilities	2.9%	4.1%	2.5%	1.6%	0.1%	4.1%	0.8%
Government	14.6%	1.5%	1.4%	33.2%	0.0%	7.3%	22.0%

Source: *The Hawaii Input-Output Study, 1997 Benchmark Report*, Department of Business, Economic Development, and Tourism, State of Hawaii, March 2002 (updated August 2003).

Table 2: Household and Visitor Expenditures in Hawaii

	Hawaii Output		Household Expenditures		Visitor Expenditures	
Industry	($ million)	(%)	($ million)	(%)	($ million)	(%)
Total	$72,921.3	100.0%	$24,962.0	100.0%	$10,931.0	100.0%
Agriculture	823.5	1.1%	122.0	0.5%	18.4	0.2%
Construction	3,524.3	4.8%	0.0	0.0%	0.0	0.0%
Manufacturing	3,416.4	4.7%	683.0	2.7%	296.2	2.7%
Air Transportation	2,044.1	2.8%	337.9	1.4%	1,555.2	14.2%
Transportation	1,543.5	2.1%	406.3	1.6%	536.3	4.9%
Entertainment	844.2	1.2%	207.3	0.8%	569.4	5.2%
Golf	229.8	0.3%	88.5	0.4%	141.3	1.3%
Hotels	3,456.4	5.9%	170.0	0.7%	3,247.4	29.7%
Real Estate Rental	9,019.3	15.4%	5,211.4	20.9%	239.7	2.2%
Restaurants	2,274.7	3.1%	1,017.1	4.1%	1,126.2	10.3%
Trade	6,118.5	8.4%	2,998.3	12.0%	1,278.0	11.7%
Other Services	15,181.0	20.8%	7,832.2	31.4%	439.8	4.0%
Utilities	1,691.0	2.3%	595.3	2.4%	0.0	0.0%
Government	8,565.8	11.7%	264.9	1.1%	45.6	0.4%
Imports	14,188.8	19.5%	5,027.8	20.1%	1,437.6	13.2%

Source: *The Hawaii Input-Output Study, 1997 Benchmark Report*, Department of Business, Economic Development, and Tourism, State of Hawaii, March 2002 (updated August 2003).

Table 3: Macroeconomic Impact of Visitor Expenditure Growth with Inelastic Labor Supply (% change)

Scenario Parameters	**Baseline**	**Percentage change:**									
Labor Force (thousands)	594.7	---	---	---	---	---	---	---	---	---	---
Visitor Expenditure ($ million)	10,931.0	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**
Visitor Impacts											
Real Visitor Expenditures ($1997 million)	10,931.0	0.4	0.7	1.0	1.2	1.4	1.5	1.6	1.6	1.5	1.4
Visitor Price Index (1997 = 100)	100.0	0.6	1.3	1.9	2.7	3.5	4.3	5.2	6.1	7.1	8.2
Household Impacts											
Household Expenditures ($ million)	24,962.0	1.1	2.3	3.5	4.8	6.3	7.8	9.4	11.1	13.0	15.0
Consumer Price Index (1997 = 100)	100.0	0.6	1.3	2.0	2.8	3.6	4.4	5.3	6.3	7.3	8.4
Real Household Expenditures ($1997 million)	24,962.0	0.5	1.0	1.5	2.0	2.6	3.3	3.9	4.6	5.4	6.2
Real Per Cap Household Expend ($1997)	41,741	0.5	1.0	1.5	2.0	2.6	3.3	3.9	4.6	5.4	6.2
Real Labor Compensation ($1997 million)	21,626.2	0.2	0.4	0.7	0.9	1.2	1.4	1.7	2.1	2.4	2.8
Real Per Capita Labor Comp. ($1997)	35,133	0.2	0.4	0.7	0.9	1.2	1.4	1.7	2.1	2.4	2.8
Real Proprietor Income ($1997 million)	2,088.0	0.2	0.4	0.6	0.8	1.1	1.4	1.7	2.0	2.4	2.8
Real Per Cap. Proprietor Income ($1997)	16,481	0.2	0.4	0.6	0.8	1.1	1.4	1.7	2.0	2.4	2.8
Production Impacts											
Gross State Product ($ million)	35,456.2	0.9	1.8	2.7	3.8	4.9	6.1	7.3	8.7	10.1	11.7
Real Gross State Product ($1997 million)	35,456.2	0.2	0.5	0.7	1.0	1.3	1.6	1.9	2.2	2.6	3.0
Total Output ($ million)	58,732.5	0.7	1.5	2.4	3.2	4.2	5.2	6.3	7.5	8.7	10.0
Real Total Output ($1997 million)	58,732.5	0.1	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.3	1.5

Table 4: Macroeconomic Impact of Labor Force Growth with Fixed Visitor Expenditures (% change)

Scenario Parameters	**Baseline**	**Percentage Change:**									
Labor Force (thousands)	594.7	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**
Visitor Expenditures ($ million)	10,931.0	--	--	--	--	--	--	--	--	--	--
Visitor Impacts											
Real Visitor Expenditures ($1997 million)	10,931.0	0.6	1.2	1.7	2.2	2.6	3.0	3.3	3.6	3.9	4.1
Hawaii Visitor Price Index (1997 = 100)	100.0	-0.6	-1.1	-1.6	-2.1	-2.5	-2.8	-3.1	-3.4	-3.7	-3.9
Household Impacts											
Household Expenditures ($ million)	24,962.0	0.0	0.1	0.3	0.5	0.9	1.2	1.7	2.2	2.7	3.3
Hawaii Consumer Price Index (1997 = 100)	100.0	-0.5	-1.0	-1.4	-1.7	-2.0	-2.3	-2.5	-2.7	-2.9	-3.1
Real Household Expenditures ($1997 million)	24,962.0	0.5	1.1	1.7	2.3	3.0	3.7	4.4	5.1	5.8	6.6
Real Per Cap Household Expend ($1997)	41,741.0	-0.5	-0.9	-1.3	-1.6	-1.9	-2.2	-2.4	-2.7	-2.9	-3.1
Real Labor Compensation ($1997 million)	21,626.2	0.1	0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.7	1.9
Real Per Capita Labor Comp ($1997)	35,133.0	-0.9	-1.7	-2.5	-3.3	-4.0	-4.7	-5.4	-6.1	-6.7	-7.4
Proprietors Income ($ million)	2,088.0	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.5	1.9	2.3
Real Proprietor's Income ($1997 million)	2,088.0	0.5	1.0	1.5	2.1	2.6	3.2	3.7	4.3	4.9	5.6
Real Per Cap Proprietors Income ($1997 thousand)	16,481.0	-0.5	-1.0	-1.4	-1.9	-2.3	-2.7	-3.0	-3.4	-3.7	-4.0
Production Impacts											
Gross State Product ($ million)	35,456.2	-0.2	-0.3	-0.4	-0.4	-0.3	-0.2	-0.1	0.1	0.4	0.6
Real Gross State Product ($1997 million)	35,456.2	0.3	0.7	1.0	1.4	1.8	2.1	2.5	3.0	3.4	3.8
Total Output ($ million)	58,732.5	0.0	0.1	0.3	0.5	0.7	1.0	1.4	1.7	2.1	2.6
Real Total Output ($1997 million)	58,732.5	0.6	1.1	1.7	2.3	2.8	3.4	4.0	4.6	5.2	5.8

Table 5: Macroeconomic Impact of Visitor Expenditure Growth with Perfectly Elastic Labor Supply (% change)

Scenario Parameters	Baseline	Percentage Change:									
Visitor Expenditures ($ million)	10,931.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
Real Per Cap. Wage ($97 thous)	35,133.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Labor Force Impact											
Labor Force (thousands)	594.7	0.21	0.43	0.66	0.89	1.13	1.38	1.63	1.89	2.16	2.43
Visitor Impacts											
Real Visitor Expenditures ($1997 million)	10,931.0	0.5	1.0	1.5	1.9	2.4	2.8	3.2	3.5	3.9	4.2
Hawaii Visitor Price Index (1997 = 100)	100.0	0.5	1.0	1.5	2.0	2.5	3.0	3.6	4.2	4.8	5.4
Household Impacts											
Household Expenditures ($ million)	24,962.0	1.1	2.2	3.3	4.5	5.7	6.9	8.2	9.6	11.0	12.4
Hawaii Consumer Price Index (1997 = 100)	100.0	0.5	1.0	1.6	2.1	2.7	3.3	3.9	4.5	5.2	5.8
Real Household Expenditures ($1997 million)	24,962.0	0.6	1.1	1.7	2.3	2.9	3.6	4.2	4.9	5.6	6.3
Real Per Cap Household Expend ($1997)	41,741.0	0.3	0.7	1.0	1.4	1.8	2.2	2.5	2.9	3.3	3.7
Real Labor Compensation ($1997 million)	21,626.2	0.2	0.4	0.7	0.9	1.1	1.4	1.6	1.9	2.2	2.4
Real Per Capita Labor Comp. ($1997 thousand)	35,133.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Real Proprietor Income ($1997 million)	2,088.0	0.3	0.6	0.8	1.2	1.5	1.8	2.2	2.5	2.9	3.3
Real Per Cap Proprietor Income ($1997 thousand)	16,481.0	0.3	0.6	0.8	1.2	1.5	1.8	2.2	2.5	2.9	3.3
Production Impacts											
Gross State Product ($ million)	35,456.2	0.8	1.6	2.4	3.3	4.2	5.1	6.1	7.1	8.1	9.1
Real Gross State Product ($1997 million)	35,456.2	0.3	0.5	0.8	1.1	1.4	1.8	2.1	2.4	2.8	3.1
Total Output ($ million)	58,732.5	0.7	1.5	2.2	3.0	3.9	4.7	5.6	6.5	7.4	8.4
Real Total Output ($1997 million)	58,732.5	0.2	0.4	0.6	0.9	1.1	1.3	1.6	1.9	2.1	2.4

Table 6: Visitor Expenditure Growth under Alternative Labor Force Assumptions

		Perfectly Inelastic Labor Supply			Perfectly Elastic Labor Supply		
		1%	5%	10%	1%	5%	10%
Labor Force Impacts							
Labor Force (thousands)	594.7	---	---	---	0.21	1.13	2.43
Visitor Impacts							
Real Visitor Expenditures ($1997 million)	10,931.0	0.4	1.4	1.4	0.5	2.4	4.2
Visitor Price Index (1997 = 100)	100.0	0.6	3.5	8.2	0.5	2.5	5.4
Household Impacts							
Consumer Price Index (1997 = 100)	100.0	0.6	3.6	8.4	0.5	2.7	5.8
Real Per Cap Household Expend ($1997)	41,741	0.5	2.6	6.2	0.3	1.8	3.7
Real Per Capita Labor Comp. ($1997)	35,133	0.2	1.2	2.8	0.0	0.0	0.0
Production Impacts							
Real Gross State Product ($1997 million)	35,456.2	0.2	1.3	3.0	0.3	1.4	3.1

Table 7: Output with 5% increase in visitor expenditures

	Initial Output	Output under Perfectly Inelastic Labor Supply			Output under Perfectly Elastic Labor Supply		
			% change			% change	
Industry	$ m 1997	$ m	Value	Level	$ m	Value	Level
Total	$58,732.5	$61,195.5			$60,989.8		
Agriculture	823.5	787.5	-4.4	-8.3	802.4	-2.6	-5.4
Construction	3,524.3	3,655.8	3.7	0.0	3,615.8	2.6	0.1
Manufacturing	3,416.4	3,382.9	-1.0	-3.3	3,418.9	0.1	-1.7
Air Transportation	2,044.1	2,145.6	5.0	1.4	2,144.0	4.9	2.3
Transportation	1,543.5	1,602.1	3.8	0.0	1,601.0	3.7	0.9
Entertainment	844.2	884.3	4.8	0.7	884.1	4.7	1.8
Golf	229.8	242.4	5.5	1.2	241.9	5.3	2.2
Hotels	3,456.4	3,631.10	5.1	0.6	3,630.0	5.0	1.2
Real Estate Rental	9,019.3	9,503.03	5.4	0.5	9,488.5	5.2	1.8
Restaurants	2,274.7	2,398.8	5.5	1.3	2,393.2	5.2	0.9
Trade	6,118.5	6,426.7	5.0	0.7	6,403.2	4.7	1.6
Other Services	15,181.0	15,801.0	4.1	-0.2	15,779.5	3.9	0.8
Utilities	1,691.0	1,763.9	4.3	0.8	1,759.0	4.0	1.3
Government	8,565.8	8,970.2	4.7	0.0	8,828.3	3.1	0.1

Source: Author estimation; Scenario values and % change reported at post-scenario prices. Activity level changes reported at 1997 benchmark prices.
Detailed 131-sector analysis and results on exports, labor, and other are available upon request.

Appendix: Sensitivity Analysis

The analysis makes a number of assumptions regarding functional forms that are relevant for the analysis. The elasticity of central interest is the responsiveness of the labor force to visitor expenditures, and summary results are presented in Tables 6 and 7. Another significant assumption concerns the elasticity of transformation between production of commodities for export or domestic consumption. Central to the scenarios provided is the assumption that this Armington elasticity of transformation is constant at a level of 5 for all sectors. Empirical estimates do not exist, and thus the analysis relies on elasticity levels that are broadly common in the literature. Extensive sensitivity analysis was conducted to determine the robustness of the results to alternative elasticity assumptions. A brief summary is presented below.

Consider the appendix table. Visitor expenditure growth is examined under alternative assumptions for the Arming constant elasticity of transformation (CET) between output for domestic consumption and export. In Panel A, the CET equals 5 and in Panel B the CET equals 8. The former elasticity reflects the base scenarios present in the paper and the latter reflects an environment where domestic and exportable commodities are more highly substitutable.

While the overall conclusions of the analysis remain robust to variations in the Armington elasticity, a number of observations can be made. First, the more elastic is the transformability of domestic products into exportable ones the greater is the impact of visitor expenditure growth on real gross state product. Higher Armington CETs also have a dampening effect on inflation for visitors and overall. Finally, the greater is the Armington CET the greater is the absorptive capacity of the domestic economy and the

later is the point at which visitor expenditures reach a 'capacity'. For inelastic labor supply the capacity of real expenditure growth is 7% at a CET = 5 and is 12% at a CET = 8.

Table: Visitor Expenditure Growth

Panel A: Elasticity of transformation between domestic output and exports equals 5

		Perfectly Inelastic Labor Supply			Perfectly Elastic Labor Supply		
		1%	5%	10%	1%	5%	10%
Labor Force Impacts							
Labor Force (thousands)	594.7	---	---	---	0.21	1.13	2.43
Visitor Impacts							
Real Visitor Expenditures ($1997 million)	10,931.0	0.4	1.4	1.4	0.5	2.4	4.2
Visitor Price Index (1997 = 100)	100.0	0.6	3.5	8.2	0.5	2.5	5.4
Household Impacts							
Consumer Price Index (1997 = 100)	100.0	0.6	3.6	8.4	0.5	2.7	5.8
Real Per Cap Household Expend ($1997)	41,741	0.5	2.6	6.2	0.3	1.8	3.7
Real Per Capita Labor Comp. ($1997)	35,133	0.2	1.2	2.8	0.0	0.0	0.0
Production Impacts							
Real Gross State Product ($1997 million)	35,456.2	0.2	1.3	3.0	0.3	1.4	3.1

Panel B: Elasticity of transformation between domestic output and exports equals 8

		Perfectly Inelastic Labor Supply			Perfectly Elastic Labor Supply		
		1%	5%	10%	1%	5%	10%
Labor Force Impacts							
Labor Force (thousands)	594.7	---	---	---	0.16	0.85	1.9
Visitor Impacts							
Real Visitor Expenditures ($1997 million)	10,931.0	0.6	2.6	4.2	0.7	3.1	5.7
Visitor Price Index (1997 = 100)	100.0	0.4	2.8	5.4	0.3	1.8	3.9
Household Impacts							
Consumer Price Index (1997 = 100)	100.0	0.4	2.9	5.6	0.4	1.9	4.3
Real Per Cap Household Expend ($1997)	41,741	0.3	1.8	4.2	0.2	1.3	2.8
Real Per Capita Labor Comp. ($1997)	35,133	0.1	0.8	1.9	0.0	0.0	0.0
Production Impacts							
Real Gross State Product ($1997 million)	35,456.2	0.1	0.8	2.0	0.2	1.1	2.3