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Policy, Financial & Management Consultants

Draft Summary Report

2005-2035 AIRPORT ECONOMIC ANALYSIS

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D. , Opportunity Cost Impacts Related to Air Cargo Service

The analysis of the economic impacts of air cargo shipments is part of a developing area of economic research that is still limited by two key factors: (1) the lack of a complete and workable theory of the role of air cargo in economic development; and (2) the lack of data describing the quantity and value of exported goods at any level of specificity. These are complicated here by the fact that the San Diego region is not centrally located relative to key domestic and international export markets. Thus, the economic development of the region has occurred in spite of transportation-related limitations.

In the first category, one important issue that remains unanswered is the potential for other goods transport modes to substitute for air cargo services in the presence of supply constraints. In light of the complex and still developing regional transportation system found in southern California, that extends to Nevada, Arizona and into Mexico, estimating how substitution for air cargo services might take place and at what level is not possible with any level of reliability. Accordingly, this Report presents a range of air cargo economic impact estimates that assume: (1) 100 percent of the value of goods not shipped as a consequence of air cargo capacity constraints is assumed to be lost production that cannot be shipped from the region by any other transport mode; (2) only half of the value is assumed to be lost production, because the other half is shipped out using other transportation modes; and (3) only one-quarter of the value is assumed to be lost production, because the balance is shipped out using other transportation modes.

A second weakness is the inability to address the effects of constrained air services on the delivery of professional services. As discussed below, such services comprise approximately one-half of the San Diego region's export base. While it is certain that some portion of the service economy depends on air service to deliver its products, the magnitude and strength of the relationship is unknown, due to data limitations. Moreover, given the existing limitations on passenger air service in and out of SDIA (i.e., limited number of direct and connecting flights and relatively high fares), it is clear that the location and growth of the service sector industries in the region is occurring for other reasons. These include the region's attractive weather and amenities, skilled labor force, concentrations of companies in key industry sectors (e.g., biotech and wireless communications), among others.

Despite these limitations, the estimates of the effects of air cargo services are informative and valuable, because they reveal the importance of air cargo services to the future of the San Diego region's economy. By linking the most recent available commodity shipment data from the Bureau of Transportation Statistics to the REMI model, both the direct and indirect impacts of constrained air cargo services can be estimated. In conjunction with a forecast of future air cargo shipments out of the region, and the predicted capacity constraints, the tonnage and value per ton of commodities actually exported from the region by air can be used to estimate the lost value (or sales) attributed to the capacity constraints. The estimates of lost value are the direct impacts of constraints on air cargo services. The indirect impacts of air cargo service constraints are estimated by processing the direct losses through the REMI model. The model then calculates the impacts of the direct losses on the businesses and households supplying inputs to the businesses affected by the supply constraints.

The economic impacts of constrained air cargo capacity were estimated for each year over the projection period to 2035, as the difference between the value of unconstrained air cargo exports (regional and international) produced in the San Diego region and the value of exports that can be shipped from it, given the capacity allowed under the constrained capacity scenario. The economic impacts are estimated for exports only.

The economic impacts of air cargo capacity constraints on the region are determined primarily by three key variables: (1) unconstrained demand for air cargo, measured in tons; (2) constrained supply of air cargo services, measured in tons; and (3) the dollar value of air cargo per ton. As in the 2001 AEA, the analysis applies the results of testing alternative assumptions about weight-to-value and air cargo share of exports assumptions, to account for uncertainty about these relationships in the future. The total economic impact of constrained air cargo services is equal to direct impacts plus the "multiplier effect" associated with direct impacts, as measured by the REMI model.

E. Total Opportunity Cost Impacts

Table 7 shows the result of applying the calculation approaches described above and running them through the REMI model to determine the total number of jobs and amount of Gross Regional Product that would be associated with meeting all demand for air transportation services in the region by 2035. It shows that in 2035, meeting full demand for air transportation services would support about 164,000 total jobs in the region and $33 billion in GRP.

Table 7
Unconstrained Air Transportation's Contributions to the Regional Economy, by Source of Economic Activity, 2005 and 2035

Analysis Category	2005		2035	
	Amount	Percent	Amount	Percent
Jobs in the Region				
Airport Operations	13,100	11.4%	24,560	15.0%
Passenger Visitor Spending	55,680	48.4%	92,760	56.7%
Air Cargo	46,290	40.2%	46,160	28.2%
Total	115,070	100.0%	163,480	100.0%
Gross Regional Product (billions 2005 $)				
Airport Operations	$0.811	8.1%	$2.555	7.7%
Passenger Visitor Spending	$3.121	31.3%	$9.375	28.1%
Air Cargo	$6.041	60.6%	$21.386	64.2%
Total	$10.0	100.0%	$33.316	100.0%

Source: HR&A, Inc.

Table 8 shows the results of the REMI modeling for the constrained air transportation capacity scenario, with alternative assumptions about possible air cargo substitution effects. If all of the economic value of air cargo that is associated with the difference between unconstrained demand and constrained air transportation capacity is assumed to be lost to the region (i.e., no substitution), there would be about 125,000 jobs associated with air transportation activity in the region and $21 billion in GRP in 2035. If, on the other hand, 50 to 75 percent of the foregone air cargo's value is assumed to find its way our of the region using other modes of transportation, and therefore does not represent an economic loss to the region, the constrained air transportation capacity scenario would support about 106,000 to 113,000 jobs and about $13 billion to $15 billion in GRP.

Table 8
Constrained Air Transportation's Contributions to the Regional Economy, by Source of Economic Activity, 2005 and 2035

Analysis Category	2005		2035	
	Amount	Percent	Amount	Percent
Jobs in the Region				
Airport Operations	13,100	11.4%	20,400	16.3%
Passenger Visitor Spending	55,680	48.4%	79,460	63.4%
Air Cargo (0% substitution)	46,290	40.2%	25,510	20.3%
Total	115,070	100.0%	125,370	100.0%
With 50% Air Cargo Substitution	91,925		112,615	
With 75% Air Cargo Substitution	80,353		106,238	
Gross Regional Product (billions 2005 $)				
Airport Operations	$0.811	8.1%	$2.113	10.3%
Passenger Visitor Spending	$3.121	31.3%	$8.107	39.4%
Air Cargo (0% substitution)	$6.041	60.6%	$10.367	50.4%
Total	$9.973	100.0%	$20.587	100.0%
With 50% Air Cargo Substitution	$6.953		$15.404	
With 75% Air Cargo Substitution	$5.442		$12.812	

Source: HR&A, Inc.