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DRAFT REPORT

Summary Report: Potential Impacts of Increases in Wages and Benefits on the Port Authority of New York and New Jersey



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Draft of July 21, 2016

1 Introduction

The effect of an increase in wages – whether the federal minimum wage or an increase in state or local minimum wages -- has long been a controversial topic. The social debate has usually been framed in terms of the impact that an increase in wages will have on employment among low-wage earners, on their family incomes and well-being, on employers (especially among certain industries that often rely heavily on low-wage employment, such as restaurants and convenience stores), and on poverty in general. Economists tend to examine the issue largely in terms of the impact that an increase in wages will have on employment among low-wage earners, and on employers. This is not to say that they ignore the other issues, but the focus of much of research has been employment and employer impacts.

Increasing minimum wages historically has been framed in terms of raising incomes above subsistence. Recently, attention has been given to achieving a level of income that provides an allowance for medical care, some funds for education and other aspects of social life. This concept has been called achieving a *living wage* for workers and typically involves a one-time wage increase greater than inflation. While the living wage is a social concept, it is typically implemented by a one-time adjustment in regulatory minimum wages, after which inflationary increases may be all that is required.

The issue of raising minimum wages to a living wage level is controversial. On the one hand, advocates argue that beyond improving employees' financial well-being, a living wage enhances employees' job performance, customer service, and reduces employee turnover and absenteeism. This view is that at least part of the wage increase is recouped by employers via reduced costs and higher worker productivity. On the other hand, critics argue that increasing the wages and benefits paid to low-wage employees will hurt small business (especially but not only restaurants), for which wages and benefits are among the largest costs. This may cause higher prices, reduced sales and ultimately cause employers to reduce employment, especially among low wage workers.

In the United States, the airports community is among the vanguard of examining and implementing changes in minimum wages. Several major airports, including those in San Francisco, Seattle, and Minneapolis-St. Paul, have adopted and implemented minimum wage policies or requirements that exceed those requirements imposed by local cities, counties, or the state. However, relatively little has been written about the effects that such increases in wages and/or benefits has exerted on the airport itself, along with employers at the airport and their employees.

It is prudent that airport governing bodies gain an objective understanding of the potential impacts of how changes in wages and/or benefits for the many employees who work at the airport – either directly or indirectly for the airport authority – could affect total employment levels, economic activity, the prices paid for consumers of their goods or services, airport tenants, and revenues associated with airport leases and rents.

1.1 Objectives of the Study

To provide additional information for its consideration of possible future changes in its Wage and Benefit policies, the Board of Commissioners of the Port Authority of New York and New Jersey (the Port Authority or the PANYNJ) commissioned this study to determine answers to two basic questions:

1. What effect would further minimum wage increases, or health benefits mandates beyond existing provisions of the federal Affordable Care Act, have on the prices of products and services purchased onsite by the millions of travelers who visit Authority-managed facilities annually?
2. What impact would further minimum wage increases or health benefits mandates have on the Authority's competitive position with respect to tenants and potential tenants who have the option of locating their businesses either onsite at the Authority's airports and other transit facilities or on adjacent properties not owned by the Authority.

1.2 Approach to the Study

The project team adopted a methodology consistent with practices used in the academic world. There were four major elements of the approach.

First, the team updated a review of relevant academic literature on the impacts of wage and/or benefit increases among affected industries, focusing in particular on the impacts identified on public bodies in general (e.g., city and county governments) and airports. The project team was especially interested in the models that academic researchers applied to develop their estimates of the effects of the wage increase, along with the sources of their data and the results achieved. Some of the literature reviewed used research models or approaches using survey data, while others used more aggregate data. These models would inform other aspects of the study. These articles reviewed are shown in the bibliography attached as Appendix I.

Second, following the first set of research techniques, the study assembled data via a survey of employers. The team developed and implemented a survey of employers at the Authority's airports to gather data on changes in employment and wages. These data were useful for assessing any changes that may have occurred as a result of the PANYNJ's 2014 wage policy, which increased wages first on July 31, 2014 and subsequently on February 1, 2015. The survey also collected data on employee retention and/or turnover, and perceptions on the extent to which end prices to consumers (e.g., passengers) may have changed over time.

Third, the team also assembled more aggregate data reported by businesses to the government. As indicated, such data has been utilized in other parts of the literature on minimum/living wage effects. So that this option could be explored, the team sought detailed wage and employment data from the departments of labor in both New York State and New Jersey. These data also served to validate the survey results and provide some basis of comparison for trends in the regional economy against which any effects seen at the Authority's airports can be assessed. New York State was able to provide the study team with some of the requested data, but New Jersey was unable to do so.

Finally, the Team developed a third analytic option, combining the data gained from the academic literature, surveys, and publicly-available data. The team applied statistical tests to determine whether any changes in employment and prices identified among the Authority's concessionaires are significantly different from any changes that may have been identified in the broader regional economy.

The project was begun in late April 2016 and completed in June 2016. The project's methodology, including any limitations associated with the data, is discussed in greater detail in Appendix II.

2 Background

2.1 Increases in Wages and Benefits at Other Large Airports in the U.S.

Several other major U.S. airports have adopted wage and benefits policies that are more generous than that provided under U.S. federal law. The more notable examples include:

- Los Angeles. The City of Los Angeles implemented a living wage ordinance that applied to the airport as far back as 1997. The living wage began at \$7.25, with yearly adjustments, along with a minimum payment of health benefits. As of July 2015, the wage increased to \$11.17 with health benefits equivalent to \$4.87 per hour. The LAX living wage differs from the federal minimum wage through the provision related to employee benefits.
- San Francisco. In 2000, the city-owned airport established the Minimum Compensation Ordinance (MCO) that sets its minimum wage for jobs at the airport to be higher than the state minimum wage, and the airport wage also provides for a number of paid vacation days for airport workers. The rate increased from its original \$9/hour to \$13.02/hour in 2015. On January 1, 2015, San Francisco International Airport adopted a program that provides those who perform services which directly impact safety or security an additional \$0.50/hour above the MCO.
- Philadelphia. In June 2015, the Philadelphia City Council approved a new lease agreement that cover the Philadelphia International Airport and the airlines that use the city-owned airport. The agreement includes a guarantee of higher wages for baggage handlers and contractors. Beginning July 1, 2015, all workers at the airport were to receive at least \$12 per hour. The state minimum wage at the time was \$8.25.
- Minneapolis-St. Paul. In June 2015, the Metropolitan Airports Commission approved an increase of the minimum hourly wage at the Minneapolis-St. Paul International Airport to \$10 an hour. The rate is set to be \$1 above the state's minimum wage. The regulation applies to employers with 21 or more employees. Airport officials believe that the new minimum wage may affect 2,800 employees at the airport.

Clearly, the airports community in general is sensitive to the wage and benefits issues facing their workforces. According to informal contacts with many officials in the nation's airports community, what is unclear are the implications of adopting changes to those policies on employers at the airports, on the employees, and on the airports' own financial condition and competitiveness.

2.2 PANYNJ Wage and Benefits Policy

In March, 2014, the Port Authority adopted a minimum wage policy for non-trade labor service contracts that covered workers at LaGuardia Airport, John F. Kennedy International Airport, and Newark Liberty International Airport. The policy expressed the Port Authority's commitment to fair wages and benefits for service workers at Port Authority facilities. It applied to employees of all entities doing business at the airports in the defined "covered services" (see appendix III), including employees of

lessees, permittees, and contractors, as well as subcontractors and sublessees of those entities.¹ The policy established new minimum wages for workers performing those covered services. Effective February 1, 2015, the minimum wage was set at \$10.10 per hour. Wage levels were to be reviewed annually thereafter and adjusted as appropriate, after having received input from affected stakeholders and contractors. Beginning February 1, 2016, the level was to be increased by the annual percentage increase in the Consumer Price Index for Urban Wage Earners and Clerical Workers, as determined by the U.S. Bureau of Labor Statistics, rounded to the nearest multiple of \$0.05. The Port Authority's policy expressly does not apply in instances where other applicable laws or regulations provide minimum rates for employees falling within the policy and rules.

One such law would be that enacted by the State of New York, which in 2016 raised the minimum wage for workers from its current level of \$8.75 to \$15 per hour. The increase is to be phased in over time, and varies based on different regions of the state. For large businesses in New York City (those with 11 employees or more), the minimum wage is to be \$11 by the end of 2016, increasing by \$2/year and rising to \$15 at the end of 2018. For small businesses in New York City (those with less than 11 employees), the minimum wage is to be \$10.50 by the end of 2016, increasing by \$1.50/year and rising to \$15 at the end of 2019. In Nassau, Suffolk, and Westchester counties, the minimum wage is to be \$10 per hour and increase by \$1 per hour to reach \$15 in 2021.

In New Jersey, as of 2016, the minimum wage remains \$8.38 per hour.

As of July 2016, the U.S. federal minimum wage stood at \$7.25 per hour.

2.3 Employment at the PANYNJ's Airport

According to data from the Port Authority, more than 71,000 individuals worked at the three airports as of May 2016. The data indicate the number of employees who are badged to work on airport property. These are summarized in the table below. The table highlights the wide range of services and employment supported at each airport – a breadth and variety often not appreciated or understood by the general public. The largest group of employees – over 21,000 -- works directly in air transportation with airlines. Employees with various governmental or public agencies – such as the FAA, Transportation Security Administration, or Port Authority – represent the second largest category. Thousands of other employees work for ground handlers (e.g., employees who work on the airport ramps handling baggage), concessions (e.g., retail and food service within airport terminals), cleaning, maintenance, and other important functions.

¹ Employers who rely on tips toward compliance (e.g., restaurants) are required to certify that they comply with the applicable minimum wage requirements.

Table 1: Badged Employees at the Three Major Port Authority Airports

Category	Employees
Airlines	21,182
Government (incl law enforcement and PANYNJ)	12,592
Ground handling	8,326
Concessions	7,220
Security	6,635
Cleaning (incl sanitation and waste removal)	4,259
Maintenance (incl snow removal)	2,140
Catering	1,115
Food service or vendor	995
Cargo handling and aircraft	906
Retail (incl vending)	883
Unknown (not categorized)	833
Aircraft maintenance (incl deicing and fueling)	670
Technology	642
Customer service	563
Construction	558
Miscellaneous	1,917
Total	71,436

Source: Port Authority

Not all employees are subject to the wage policy. As noted above, only employees providing “covered services” are subject to the policy. As a result, employees of the Port Authority itself, as well as the large number of federal employees (for example, FAA air traffic control workers and TSA officers) are not included. However, those employees earn more than the Port Authority’s minimum. Excluding those employees, the total number of badged employees is just under 59,000 at the three major airports. Others not covered include skilled trade labor (covered by union contracts) and those earning above the minimum wage. This would include, for example, airline pilots and flight attendants, airline mechanics, electricians, and plumbers.

On the other hand, several thousand employees – especially those who work in food service, retail, ground handling, and other services in the terminals – would likely be subject to the wage policy.

The Port Authority asked employers, tenants, contractors, and lessees to certify whether they are in compliance with the wage policy. According to the Port Authority’s data, as of December 2015, firms at EWR, LGA, and JFK certified that they employed 41,111 persons in covered services.

2.4 Concessions

The Port Authority’s airports derive significant revenues from non-aeronautical sources, which include its concessions program. According to data from the Federal Aviation Administration (FAA), the Port Authority’s three major commercial service airports reported nearly \$100 million in revenues stemming

from just three “non-aeronautical” sources: terminal-food & beverage, terminal-retail stores and duty free, and terminal-services and other.²

The Port Authority’s concessions policy relies on the concept of “street pricing.” This generally means that the prices offered for a particular good or service on an airport property should be the same as the prices offered for the same good or service off the airport property – that is, on “the street.”³ This requirement is written into the contracts to concessionaires. According to the Port Authority, the policy uses a “market approach” in which prices at the airport are compared to and set based on the market in the area surrounding the airport. Such a policy is popular with travelers, as it appeals to their sense of fairness – that they are not being “taken advantage of” because they are within the airport. For concessionaires, the viability of street pricing policies depends in large part on their cost structure, including the rent paid to the airports.

² FAA CATS data, Form 127.

³ “Street pricing” plus a markup – often 10% -- is most commonly used among U.S. airports, except for duty free where prices are most often benchmarked to those at other airports. Transportation Research Board, ACRP Report 54, *Resource Manual for Airport In-Terminal Concessions*, 2011, p. 149.

3 Analysis of Potential Effects of Changes in Wages & Benefits

This section describes the potential effects of potential future changes in the Port Authority's wage and benefit policy. At the outset, the results from the academic literature are presented. This provides an overview of the debate about the nature and scale of effects of increasing wages and benefits. The section then discusses the changes in (1) employment and wages, (2) prices paid by the traveling public and other consumers of the goods and services offered at the airports, and (3) the Port Authority's competitive position. Each potential set of changes is reviewed using different analytic approaches.

3.1 Effects Reported in Academic Literature

There has been considerable academic debate about the impact of changes in wages and benefits on employment. Generally speaking, researchers differ based on the data and statistical / econometric models applied and the interpretation of their results, leading to different conclusions and positions about the impacts of increases in minimum wages and employer-provided benefits.

Of particular relevance to this project, little has been written by academic researchers on employment at airports.

- In 1997, Los Angeles passed a living wage ordinance (LWO) that required firms to pay either \$10.03 per hour (as of 2004-2005), or \$8.78 with a \$1.25 per hour contribution to health benefits, and to provide 12 paid days and 10 unpaid days off per year. About 22,000 jobs were covered by the LWO, although over half of those were already paid at rates above the required minimum. Over 60 percent of the affected jobs were at Los Angeles International or Ontario airports. Affected occupations included airline service workers, janitors, parking attendants, food service workers and retail clerks.⁴

To meet the ordinance requirements, pay increased for an estimated 8,000 jobs. The study concluded that average mandatory pay increase was 20 percent, or \$2,600 per year and health benefits improved for 2200 workers. Conversely, employers cut costs by making small reductions in employment and fringe benefits. Employment reductions totaled an estimated 112 jobs, representing one percent of all living wage employment in affected firms.

- In San Francisco, Over 9,700 low-wage workers at SFO received substantial pay increases after the new wage policy was implemented in 1999. The direct beneficiaries included 5,400 workers who had previously earned less than the mandated \$10 an hour. Entry-level pay for these directly-covered workers rose by an average of 33 percent after the policies.⁵

⁴ Fairris, D., Runsten, D., Briones, C., & Goodheart, J. (2005). *Examining the Evidence: The Impact of the Los Angeles Living Wage Ordinance on Workers and Businesses*

⁵ Reich, Michael, Peter Hall, and Ken Jacobs, "Living Wages And Economic Performance: The San Francisco Airport Model," Institute of Industrial Relations, University of California, Berkeley, March 2003.

Some of the academic literature focused on those business sectors that operate both within and outside of the airport environment. Food service is an example, as airport terminals include many restaurants that cater to travelers, including kiosks, fast food, and sit-down restaurants.⁶ The industry is one in which large numbers of workers receive relatively low wages. In one oft-cited article, Card and Krueger in 1994⁷ compared employment and wage growth in fast food restaurants in New Jersey, which had just raised the minimum wage, against similar restaurants in contiguous counties across the state border in Pennsylvania, which had not raised its minimum wage. Card and Krueger found no evidence that the rise in New Jersey's minimum wage reduced employment at fast food restaurants in the state. Contrary to textbook expectations, employment at fast food restaurants in New Jersey rose by 13 percent. The authors also found that the New Jersey restaurants passed along some of those increases in labor costs to consumers in the form of higher prices.

Other studies have found negative impacts on employment. For example, using county-level data from the U.S. Census Bureau, one study of the retail sector (also represented in airport environments) found that a 10% increase in the minimum wage is associated with a 1% decline in retail trade employment and usual weekly hours worked. Larger negative employment and hours effects are observed for the least experienced workers in the retail sector.⁸

However, the airport environment is unique because certain industry sectors are present on airport but usually not off airport in the general economy, such as ground handling or fuelers.⁹ The impact of increases in wages and/or benefits for these sectors has not been documented in the academic literature. Other businesses may operate both on airport and off-airport (e.g., cleaning/janitorial, catering, and maintenance).

Some studies report beneficial effects on employers that partially offset the increased labor costs. The study of the impact of the Los Angeles living wage ordinance, for example, reported that labor turnover declined as a result of the ordinance. Rates of turnover at living wage firms averaged 32 percent, compared to 49 percent at comparable non-living wage firms. Those turnover reductions represented a cost savings for the average firm that is 16 percent of the cost of the wage increase.¹⁰ The San Francisco airport study reported similar improvements in lower turnover rates, along with improvements in work performance and customer service.¹¹

The relatively little available research on the impact of increases in minimum wages on prices does not coalesce around a common finding. Our review found few academic studies on the issue, although

⁶ This type of casual dining restaurant is typified by table service, although there may be carry-away or "grab and go" components. Food is prepared to order and restaurants of this type often include a bar.

⁷ Card, David and Alan Krueger. 1994. "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania." *American Economic Review*, vol. 84, no. 5, pp. 772-93.

⁸ Sabia, Joseph J., "The Effects of Minimum Wage Increases on Retail Employment and Hours: New Evidence from Monthly CPS Data," *Journal of Labor Research*, March 2009, Volume 30, Issue 1, pp 75-97.

⁹ Seaports may also be an area where these types of companies operate, but they are not commonly found outside of major transportation hub.

¹⁰ Fairris et al., p. 5.

¹¹ Reich et al, p. 10.

more articles were available that appeared to have ties to industry positions. One early study of the impact of raising minimum wages in the fast food industry reported that price changes appeared to be unrelated to changes in wages resulting from the minimum wage increase. It cautioned, however, that larger increases in the minimum wage may well result in employment decreases and price increases.¹² Another piece highlighted the paucity of academic studies on the impact of wage increases on business profitability and prices.¹³ It concluded that most studies found that a 10% US minimum wage increase raises food prices by no more than 4%. Another recent paper, using data from the National Restaurant Association, estimated that increasing the pay of fast-food restaurant employees from an estimated \$12.80 to \$15 an hour (an increase of 17%) would lead to a 4.3 percent increase in prices at those businesses.¹⁴ The study also noted that higher wages would likely reduce excessively high turnover rates in the industry and address inadequate and poor customer service.

3.2 Impacts on Employment and Wages

First, the project team surveyed all tenants, concessionaires, lessees and others at JFK, LGA, EWR, TEB, and SWF. The results of this survey shed light on how employment and wages changed in response to the 2014 wage policy. Second, using those data and other results of published academic studies on the impacts of raising minimum wages, and drawing on data from the survey and the New York State Dept. of Labor, the team developed econometric estimates of how future changes in wages and benefits could affect employment.

3.2.1 Effects Seen in the Survey of Employers

The project team surveyed all tenants at the three major airports. The surveys gathered data on changes in employment and wages since 2014. In general, the survey asked firms to report information on the number of full-time, part-time, and seasonal employees on staff during particular times in 2014, 2015, and 2016. The survey also asked the firms to provide data on average wages, entry-level wages, total payroll and benefits, changes in prices, and changes in employee turnover and absenteeism. The project team's intent was to capture data that showed any possible changes that occurred as a result of the PA's wage policy that took effect in late 2014 and 2015. A total of 150 firms doing business at one or more of the three major airports responded to the survey, representing a response rate of 31 percent.

As shown in Table 2, among the firms responding to the survey, total employment rose by 14 percent during the period in which the policy took effect. Employment in the largest category of business – support activities for air transportation, which includes such types of employers as ground handlers and

¹² Katz, Lawrence F. and Alan B. Krueger, "The Effect of the Minimum Wage on the Fast Food Industry," National Bureau of Economic Research, Working Paper 3997, February 1992.

¹³ Lemos, Sara, "The Effect of the Minimum Wage on Prices," University of Leicester, Institute for the Study of Labor and IZA Bonn, IZA Discussion Paper 1072, March 2004, available at <http://ssrn.com/abstract=524803>

¹⁴ Jing Ma & Richard Ghiselli, "The minimum wage, a competitive wage, and the price of a burger: Can competitive wages be offered in limited service restaurants?", *Journal of Foodservice Business Research*, 19:2, 131-146, (2016) DOI: 10.1080/15378020.2016.1159889

fuelers – increased by 6 percent during the period.¹⁵ Employment in facilities support (which includes cleaning and janitorial services and wheelchair assist, among others) increased by nearly 1100 positions, or 39 percent. Only two categories of businesses – nonstore retailers (such as vending machine operators and kiosks) and the miscellaneous “other” category reported declines in employment over the period.

Table 2: Change in Employment among Responding Firms

Business Type	Employees			% Change (2014 -
	2014	2015	2016	
Support Activities for Air Transportation	5,602	5,043	5,918	6%
Air Transportation	5,005	5,002	5,281	6%
Facilities Support Services	2,825	4,033	3,916	39%
Food Services and Drinking Places	2,270	2,225	2,346	3%
Transit and Ground Passenger Transportation	308	491	610	98%
Warehousing, Storage, and Logistics	221	438	446	102%
Repair and Maintenance	356	362	365	3%
General Retail Stores	176	186	182	3%
Miscellaneous Store Retailers	27	28	24	-11%
Nonstore Retailers	21	22	24	14%
Other	45	40	39	-13%
Total	16,856	17,870	19,151	14%

Note: See Table II-1 in Appendix II for definitions of business types.

Restricted to employment among the Port Authority’s classifications of covered services, employment among the Port Authority’s classifications of covered services rose by 25 percent over the period, increasing in every category.

Table 3: Change in Covered Service Employment among Responding Firms

Covered Services Classification	Employees			% Change (2014 -
	2014	2015	2016	
Cargo Related & Ramp Services	6,064	5,999	6,527	8%
In-Terminal & Passenger Handling Services	4,035	4,144	4,812	19%
Cleaning Services	2,121	2,269	2,619	23%
Concession Services	1,451	1,494	2,152	48%
Passenger Related Security	924	2,113	2,062	123%
Total	14,595	16,019	18,172	25%

Note: See App. III for additional information on the covered service classifications.

¹⁵ These increases are generally in line with changes in passenger traffic. According to the most recent data available from the FAA, enplanements at the three major New York area airports increased between 5.1% and 5.8% between 2014 and 2015. Passenger traffic data for the first quarter of 2016 are not yet available.

The survey also shows that both average wages and starting wages for covered service employees increased during the period. Average wages rose by 10% (in current dollars) across all categories of covered services. (Table 4) The increases were greatest among those in cleaning services and security. Employees in those same classifications showed the largest percentage increase in starting wages as well (Table 5). Average starting wages across all covered service classifications exceeded the Port Authority's minimum wage in 2016.

Table 4: Change in Average Wages, Covered Service Employees

Covered Services Classification	Average Hourly Wages Surveyed			% Change (2014 -
	2014	2015	2016	
Passenger Related Security	\$ 9.44	\$11.04	\$11.17	18%
Cargo Related & Ramp Services	\$ 16.61	\$18.04	\$17.42	5%
In-Terminal & Passenger Handling Services	\$ 12.80	\$13.35	\$14.44	13%
Cleaning Services	\$ 9.22	\$11.38	\$11.74	27%
Concession Services	\$ 10.81	\$11.70	\$12.08	12%
Total	\$ 13.50	\$14.63	\$14.88	10%

Table 5: Change in Starting Wages, Covered Service Employees

Covered Services Classification	Average Entry Wages Surveyed			% Change (2014 -
	2014	2015	2016	
Passenger Related Security	\$ 8.76	\$10.31	\$10.31	18%
Cargo Related & Ramp Services	\$ 11.51	\$12.68	\$12.42	8%
In-Terminal & Passenger Handling Services	\$ 10.28	\$11.30	\$11.54	12%
Cleaning Services	\$ 8.48	\$10.13	\$10.20	20%
Concession Services	\$ 9.48	\$10.33	\$10.77	14%
Total	\$ 10.37	\$11.54	\$11.54	11%

Firms responding to the survey did not report positive changes in employee turnover and absenteeism as might have been expected based on the academic literature. Over 80 percent of responding firms did not report any change in turnover following the effective date of the wage increase. However, of those that did report a change, more reported increases in employee turnover and absenteeism, rather than the anticipated reductions. Over 20% of firms engaged in support activities for air transportation (e.g., ground handlers) reported increases in turnover (vs. 13% that reported decreased turnover). Of all responding firms, 9% reported increases in absenteeism over the period; over 20% food service businesses reported increases in absenteeism. Academic research suggests that firms will see offsets to wage increases through improvements in turnover and absenteeism, and that these changes are more likely to be manifested with the passage of time and further increases in the minimum wage

3.2.2 Effects Evident in Secondary Data

Table 6 summarizes the changes in employment and wages that employers reported for the period from the second quarter of 2014 (prior to the wage policy taking effect) through the third quarter of 2015

(after the wage policy had taken effect. This is the latest available at the time of this report). The table illustrates the differences that were reported for employers on airport properties compared to those that occurred off airport properties. Because of the need to protect the confidentiality of businesses' information, the data were not available at detailed levels for most business categories. (Data limitations are discussed in additional detail in Appendix II.)

Table 6: Changes in Employment for Selected Business Categories, On-Airport vs. Off-Airport

Business Category	on-airport				off-airport			
	Jun-14	Sep-15	Change	Chg %	Jun-14	Sep-15	Change	Chg %
Support activities for air transportation	4,908	5,834	926	18.9%	N/A	N/A	N/A	N/A
Automotive equipment rental & leasing	538	569	31	5.8%	N/A	N/A	N/A	N/A
Restaurants and other eating places	1,640	1,884	244	14.9%	531	644	113	21.3%
Total ALL Employees *	33,390	35,999	2,609	7.8%	2,861	4,716	1,855	64.8%

Note: * All employees include those for which the State of New York was not able to disclose figures for specific business categories.

Source: InterVISTAS analysis of data from the State of New York, Department of Labor

Total employment grew both on airport properties and in the immediate vicinities of LaGuardia and JFK airports. On airport employment grew by over 2,600 employees, of about 8 percent. Off airport employment grew faster; total employment in the areas surrounding the airports increased by 1,855, or nearly 65 percent. Most of this growth was around LaGuardia. Because of the need to protect the confidentiality of business records, we can only compare changes in employment in restaurants and other eating places. Employment grew both on-airport (244 positions, 15%) and off-airport (113 positions, 21%).

Somewhat surprisingly, average wages for all employees in the specified business categories fell during the period for workers on airport properties. Average wages dropped 9 percent. Off airport, average wages in the specified businesses increased by 8 percent. In the direct comparison between workers at restaurants and other eating places, average wages rose for workers both on and off airport properties. The percentage increase for employees off airport was slightly greater than those on airport properties, although the average wages remained higher for on-airport workers.

Because of the many data restrictions, the project team hesitates to draw any conclusions about whether the PA's 2014 wage policy had any specific negative (or positive) impact on restaurants or newsstands on their properties compared to those off-property and in the airports' immediate vicinity. We now turn to the more specific data from the employer surveys.

3.3 Impacts on Prices of Goods and Services Provided at the Airports

3.3.1 Effects Seen in the Survey of Employers

The survey of employers provided some insight into how employers responded to the Port Authority's 2014 wage policy. In general, most employers made no changes to their prices offered to downstream

purchasers – whether the traveling public or other consumers (e.g., airlines that contract for baggage handling services or concessionaires who further subcontract for security services). Over 80 percent of the 150 unique firms doing business at one or more of the three major airports did not raise prices after the Port Authority implemented its new wage policy. Conversely, 26 (or 17%) reported raising prices during the period, with only a fraction of that doing so directly in response to increased labor rates.

Table 7 summarizes the results of the survey.

Table 7: Responses from survey on effect of wage increase on prices offered

N	%	Response
72	48.0%	Our starting wages are above the \$10.10 minimum, so the wage policy had no impact on our pricing.
34	22.7%	Not Applicable
19	12.7%	Yes, prices rose directly in response to the increase in labor costs.
12	8.0%	No, we were unable to raise prices because of contractual obligations with customers.
7	4.7%	Yes, prices rose, but not solely because of the change in labor costs.
3	2.0%	No, our lease agreement with the PANYNJ does not allow prices on airport properties to increase relative to off-airport prices.
3	2.0%	Blank
150	100.0%	Total

Of those 26 firms that increased prices, most were in facilities support (e.g., cleaning and janitorial), food service, and support activities for air transportation (e.g., ground handling). Table 8 summarizes the responses of firms to the question of whether or not they raised prices during the period 2014-2016. Over 40% of firms in facilities support indicated raising prices either wholly or partially in response to the wage policy, over one-third of food service companies did likewise, and a quarter of the companies providing support activities did so as well.

Table 8: Incidence of Businesses Raising Prices during 2014-2016, by Type of Business

Business Type	Did The Firm Raise Prices 2014-2016?			Total Responding Firms	% Yes of Firms Responding
	Yes	No	N/A		
Facilities Support Services	8	-	10	18	44%
Food Services and Drinking Places	7	2	10	19	37%
Warehousing, Storage, and Logistics	1	2	1	4	25%
Support Activities for Air Transportation	9	6	23	38	24%
Air Transportation	1	2	29	32	3%
Repair and Maintenance	-	1	14	15	0%
General Retail Stores	-	-	6	6	0%
Nonstore Retailers	-	-	6	6	0%
Transit and Ground Passenger Transportation	-	2	2	4	0%
Miscellaneous Store Retailers	-	-	2	2	0%
Other	-	-	6	6	0%
Total	26	15	109	150	17%

Note: "N/A" = firms either did not answer the question or commented that they were not able to change prices because of specific reasons, such as contractual obligations.

The survey did not reveal the extent to which firms raised prices. Based on our review of the academic literature, we suspect that the increases were relatively small, reflecting the modest percentage increase in labor costs – and labor’s share of total costs – precipitated by the wage policy. We do not have a basis to estimate the potential decline in total sales and revenue resulting from the increase in prices.

Where airlines are the consumer – for example, where an airline may pay a contractor for service on a per person per hour basis -- tenants may pass the increased labor costs through to the airline automatically. Where contractors are paid for services delivered, as may be the case with ground handling and baggage service, the firms may be forced to absorb the increased costs in the short run. Over time, as contracts are rebid and/or re-negotiated, increased costs that are not offset by increases in productivity will be passed on to the airlines. The airline would subsequently consider whether to pass on some or all of those costs of operating at the local airport to passengers in the form of increased local fares.

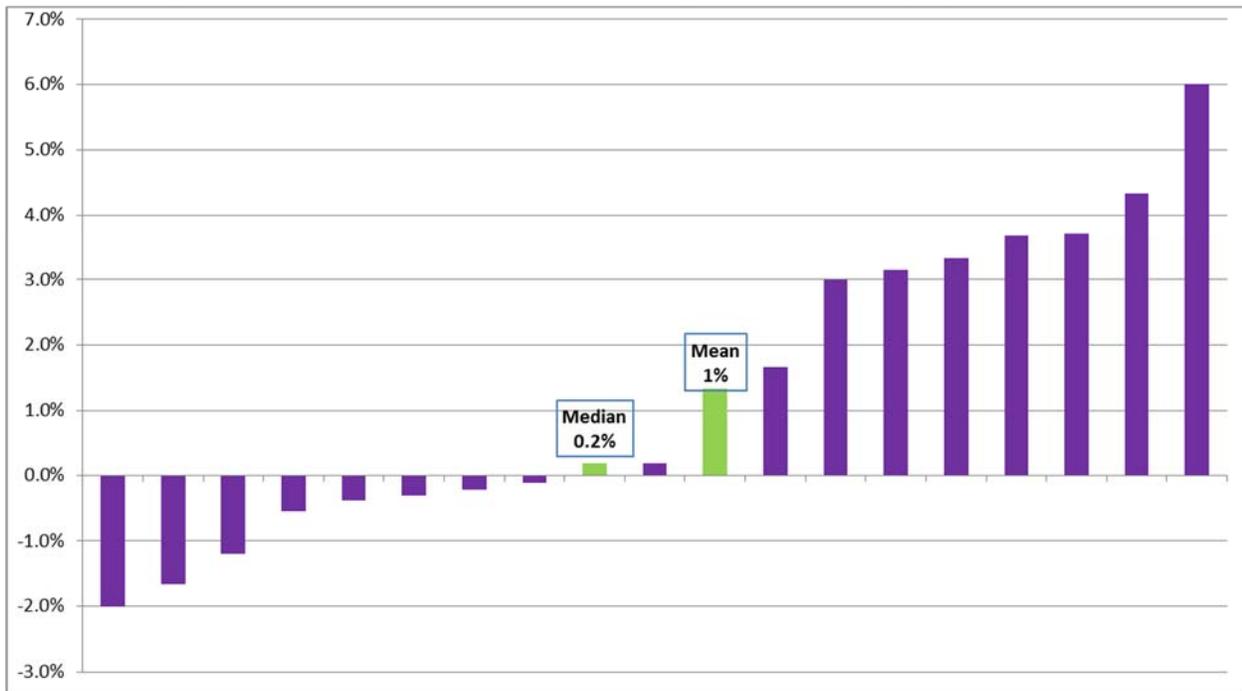
3.4 Effects Estimated from the Project Team’s Analysis

This section complements our direct survey research by conducting a ‘meta-analysis’ based on our review of the literature and the impacts found at other airports of both minimum wages and living wages. InterVISTAS reviewed over thirty papers, both academic and policy focused. Some of the studies focused on analyzing the actual impact of a wage increase, while others were focused on predicting potential impacts of a wage increase (either living or minimum wage). The literature included a mix of studies of minimum wage and living wage increases.

Analysis of Employment Impacts from Increased Wages. The literature provided a large range of calculated employment impacts from increased wages (both employment elasticities with respect to wage and employment impacts from given wage increases). Although the range was wide, the impacts centered around zero (with a small but positive mean value), meaning that some studies found employment decreases as a result of minimum wage increases, while other found employment increases. There was no consensus. InterVISTAS computed the effect of a 10% wage increase for each of the studies and show the range of effects in Figure 1.¹⁶ The figure shows the range of employment impacts based on the elasticities, and indicates the mean and median values. We note that the statistical significance of some of the estimates in the literature implied no changes to employment from a minimum wage increase (i.e., the change in employment is no different than zero).

¹⁶ Because we show the employment effects as percentages relative to a (10) percentage wage increase, these might be thought of as rough employment elasticities for a change in minimum wage. For the mean of the studies, the rough elasticity would be +0.10, meaning a 10% minimum wage increase was found, on average, to result in roughly a 1% employment increase. For the median of the studies, the elasticity is +0.02.

Figure 1: Range of Estimated Effects of a 10 Percent Wage Increase on Employment



Source: InterVISTAS Analysis of literature on impacts of wage increases (see bibliography)

The figure summarizes the results from different types of studies. Some studies are of effects of minimum wages changes, some of living wage changes. Some use different methods, some use different sources of data, some are analysis of actual data while others are predictive studies. Table 9 separates out the average findings for type of wage (minimum vs. living), and by type of study/data.

Table 9: Average Increase in Employment by Type Study (Assuming a 10% Wage Increase)

Type of Analysis/Data	% change
Econometric Models - using QCEW Data	2.1%
Meta- Analysis Studies	-0.3%
Meta- Analysis Studies - using Data	-0.3%
Average of the Studies	1%

Note: QCEW is the Quarterly Census of Employment and Wages data available from the Bureau of Labor Statistics. It is a quarterly count of employment and wages provided by employers, and covers 98% of jobs in the U.S. The difference between meta-analysis and Meta-analysis-using data is that the former provided a summary of elasticity estimates, but did not apply it to labor data.

Table 9 above does not differentiate between studies using measurement of *actual impacts* (ex post analysis), versus those that are *predictive studies* (ex ante studies). The latter type of research is often done to aid policy makers considering a potential wage policy change. Based on our review of the different studies, the ex ante predictive studies tended to predict small employment *decreases*. Ex post studies, on the other hand, tended to find small employment *increases*. One challenge with the ex post

studies is that they cannot always sort out whether the observed employment increases were due to general changes in economic conditions versus the wage policy impacts. Predictive studies are more focussed on the policy change effect.

Impacts of Wage Increases on Prices at Airports. To analyze the potential impact on prices charged to customers at the airport, we divide the market into four broad categories:

- In-terminal concessionaires on airport properties at the Port Authority’s airports in New York that can base their prices to consumers against similar businesses off-airport (e.g., food service, convenience stores, and other retail)
- On-airport property tenants at the Port Authority’s airports in New York that do not have comparable off-airport comparison firms against which prices can be evaluated (e.g., ground handlers)
- In-terminal concessionaires on airport properties at the Port Authority’s airports in New Jersey that can base their prices to consumers against similar businesses off-airport (e.g., food service, convenience stores, and other retail)
- On-airport property tenants at the Port Authority’s airports in New Jersey that do not have comparable off-airport comparison firms against which prices can be evaluated (e.g., ground handlers)

The differences can be summarized in the matrix below.

Figure 2: Categories of Businesses Exposed to Different Pricing Pressures

Type of business	State in which airports are located	
	New York	New Jersey
Concessionaires and tenants that sell to consumers both on-airport and off-airport properties (e.g., casual restaurants, food service, book stores)	1	2
Concessionaires and tenants on airport properties that do not generally exist off-airport (e.g., ground handlers, fuelers)	3	4

The Port Authority’s “street pricing” policy is the critical constraint, as it will exert differential impacts on those firms in categories 1 and 2 shown above.

In New York State, where the minimum wages are set to increase beyond that currently required by the PANYNJ, off-airport businesses will serve as the “price-setters,” and will adjust their prices to consumers in line with the particular elasticities of demand for their products. The extent to which increases in labor costs are passed along to consumers will depend on the market. This means that firms operating

at the airport (Category 1, such as fast food and retail) will also effectively be able to base their prices against market-determined street-level prices.

On the other hand, at the Port Authority's airports in New Jersey, similar types of businesses (Category 2) will continue to be constrained by the off-airport market, where labor rates will continue to be held at rates below New York's minimum. Those on-airport concessionaires will not be able to pass along similar increases in costs in the form of higher prices. As a result, they will operate at a comparative disadvantage in terms of profitability.

As a point of context for the scale of possible increases being discussed, we note that average spending per passenger on food and beverage, duty free, news, gifts, and specialty retail is relatively small. According to the most recent ACI-NA benchmarking study on concessions spending, the median amount per enplanement spent at airports in 2013 for these goods was \$9.09 in 2013 (or approximately \$9.37 in 2016 dollars). Based on the Port Authority's concessions program data on gross sales, we estimate that the average spending per enplanement at the three major airports in 2015 was \$19.39.¹⁷ For the two airports in New York, the average spending per enplanement in 2015 was slightly higher, \$21.07.

Under a "worst-case scenario," if all New York-based businesses offering these goods and services increased their prices to consumers as a result of the wage increase by the 4% estimated in the academic literature, and if total sales in these goods and services were unaffected by demand elasticities, then the increase in average spending per enplanement at the New York airports would equal \$0.84. We assume that prices would not rise at Newark Liberty due to the Port Authority's street pricing policy constraint.

However for other businesses at the airports (those in Category 3 or 4), the higher wages are likely to be passed on to the airport or airlines. A study on the impacts of a then proposed living wage mandate for the City of SeaTac (SeaTac airport is in this city and is the major employer) found that increased wage costs would be passed onto the *airport* instead of *consumers*. In turn, the airport would likely pass the costs onto the airlines.¹⁸ The extent to which the entire increase in costs is passed from the airport to the airlines is not clear. The airport could opt to absorb some or all of the increase.

The literature reviewed that computed the impacts on prices from increases in wages found a limited impact on consumer prices. Two examples of this effect come from studies of the Seattle-Tacoma Airport and Sonoma County Airport. Both discuss the impact of wage increases on overall passenger costs -- airline ticket prices along with prices paid for all concessions.

- For a proposed living wage at SeaTac, it was estimated that each passenger at the airport would likely have an increase of \$1.78 added to their total price (combining airfare, food and retail);

¹⁷ The data cover gross sales from food & beverage, retail, general services, news and gifts, and duty free. Enplanement data for the three airports are from the FAA and are preliminary as of the date of this report.

¹⁸ Puget Sound Sage (Kennan and Greenwich) (2013), "The Economic Impacts of a Transportation and Hospitality Living Wage in the City of SeaTac," p.28.

this represented less than 0.5% increase compared to the average total cost of air travel from Seattle.¹⁹

- The impact in additional costs for Sonoma County Charles Schultz Airport, in relation to a proposed living wage ordinance for Sonoma County, was estimated to be 0.9% of the total revenue at the airport; this was computed based on the cost-to-revenue ratios computed for Oakland Airport and San Francisco Airport. The author noted that even if the cost increase were directly passed onto the customers at the airport, the price increase would be minimal and unlikely to materially impact demand.²⁰

Potential impacts of any resulting combined changes in prices on passengers and passenger demand can be inferred from information on the price elasticity of demand as it relates to air travel.²¹ In a 2014 report to the Congress, the U.S. Government Accountability Office (GAO) estimated the potential impacts from possible increases in airport Passenger Facility Charges (PFCs).²² That report noted the complexity of determining how airlines could adjust prices in response to expected increases in PFCs, and that airlines consider both short-term and longer-term factors in weighing pricing decisions. Airlines may be able to pass through increases in costs to passengers in some markets more easily than in others (for example, in markets characterized by greater amounts of business travel that are less sensitive to small changes in prices). On the other hand, because leisure markets tend to be more price-sensitive, airlines may be more willing to absorb larger amounts of price increases, at least in the short term, to maintain passenger traffic.

Thus, how airline ticket prices might respond to increases in wage rates among its subcontractors cannot readily be determined. However, based on the impacts computed at the other airports in the literature and the relative sizes of the 2014 increase in wages, we believe that the impact on prices will be minimal in the short term.

¹⁹ Puget Sound Sage (Kennan and Greenwich) (2013), "The Economic Impacts of a Transportation and Hospitality Living Wage in the City of SeaTac," p.12.

²⁰ Wicks-Lim, Jeannette (2014), "An Assessment of the Fiscal Impact of the Proposed Sonoma County Living Wage Ordinance," pp.11 and 29.

²¹ In general, the price elasticity of demand is a measure of the extent to which demand for a product – such as air travel – changes in response to a change in prices.

²² U.S. Government Accountability Office, *Commercial Aviation: Raising Passenger Facility Charges Would Increase Airport Funding, but Other Effects Less Certain*, GAO-15-107, December 2014. The GAO report incorporated two analyses from InterVISTAS on air travel demand elasticities, including one produced in November 2014 for Airports Council International – North America. That latter analysis calculated the elasticity of -0.65, meaning that an increase in price of 1% will lead to a decrease in demand of 0.65%.

4 Impact on the Port Authority's Competitive Position

The impact of changes in wages and benefits on the Port Authority's competitive position are depending on three main variables:

1. Whether the businesses affected by the policy were operating at New York or New Jersey airports.
2. Whether the airport tenant or concessionaire was subject to the Port Authority's "street pricing" policy, where off-property competitors operated with lower labor costs, as with some food service or retail operations.
3. Whether affected businesses report losses of revenue as a result of decreased sales stemming from needing to charge higher prices to consumers, or from losses of net margin, in turn causing the firms to seek to renegotiate their concession agreements.

Businesses operating at more than one Port Authority airport – especially if they operate in both New York and New Jersey – will face different challenges in maintaining profitable operations. In New York State, the competitive situation facing firms on- and off-airport will be generally comparable. Assuming that the New York statute applies to employers located on airport property,²³ the existing PANYNJ policy would be effectively overridden by state law. As long as any possible future Port Authority policy changes in wages and benefits did not exceed the State's requirements, businesses would not be relatively "disadvantaged" with higher costs on airport properties compared to similar business operating off-airport. This would allow firms both on and off airport to raise prices in similar fashions to cover potential increases in wage bills. We would assume that any potential offsetting effects associated with decreased turnover and absenteeism and improvements in productivity and customer service would be found equally on and off-airport.

The situation facing businesses in New Jersey would be different. There, depending upon the wage policy set by the PANYNJ relative to New York, similar businesses could face very different costs and pricing environments due to the potentially higher labor costs required for airport tenants and concessionaires versus those off airport who only have to comply with the much lower New Jersey minimum wage rate. Whether this occurs or not depends on whether they are subject to the street-pricing concessions policy.

For businesses that do not have comparable competitors off-airport (such as ground handlers or fuelers), we anticipate that prices would eventually rise consistent with the wage policy. This effect was seen in the survey data, where some companies providing support services reported raising prices because of the 2014 wage policy. Any future mandated increases in wages and/or benefits – whether

²³ The project team is not qualified to offer a legal opinion about the applicability of the state law to the PANYNJ and its tenants.

from the Port Authority or consistent with the New York State law -- would likely also eventually be reflected in price increases. Consumers of those services (e.g., airlines), would probably not benefit from re-competing the contract, since new competitors would effectively be offering the same service at the same basic costs. Whatever minimum wage would be in effect would establish a “level playing field” of costs.

Businesses operating at the Port Authority’s airports in New Jersey could be financially disadvantaged if they are subject to pricing constraints that arise from off-site, street-level market-based competition that is not subject to the same labor cost requirements. In businesses where profit margins are thin, the combination of rising labor costs and prices set by lower-cost competitors can lead to difficulties or hardship. We note that in the case of New Jersey, the minimum wage difference between on and off airport would be sizeable.

The project team believes it is possible that some firms – especially those in labor-intensive, low-margin markets such as food service and retail – may find that their overall financial position has been negatively affected by wage and/or benefit increases. In such an event, we would expect tenants and concessionaires to request some sort of consideration on the part of the Port Authority with the terms of their concessions agreements, particularly since the wage requirements were imposed from the outside. This could result in lower concession income to the Port Authority due to the inflexibility of the street pricing policy to allow firms to adapt to higher labor costs.

If tenants and concessionaires – regardless of whether they are located at airports in New York or New Jersey – raise prices to recover some of the increase in labor costs, they encounter some losses of sales and revenue. This can be expected to reduce Port Authority income from its concessions program, both because of reduced volume based participation income, and from potential need to renegotiate terms of concessions when tenants are faced with a noticeable increase in wage costs without an ability to raise prices above street levels. The latter are not expected to change in New Jersey since off airport wage costs will not be increasing.

One aspect of the on vs. off airport wage disparity that would arise in New Jersey is that airport businesses can be expected to experience a combination of reduced employee turnover, increased dedication and the ability to attract the some of the better workers from off airport from off airport businesses. Based on previous experiences documented in the literature, this can be expected to partially, but not fully offset the on-airport employer increases in wage costs. Customer service is also expected to increase.

4.1 The Special Case of Newark

The situation in New Jersey, where employers potentially face a greater differential in labor costs and street-level pricing, will be quite different – assuming that the State takes no action to change its minimum wage. At Newark Liberty International Airport and Teterboro Airport, those businesses that are constrained by the Port Authority’s street-level concessions pricing policy could face great pressure on net revenues and profit margins. This in turn will affect income to the Port Authority, both in the short term from any revenue based participation rents, and in the long term when concessions are

retendered and concession fees renegotiated. The challenge is that New Jersey based off airport businesses will not face minimum wage increases and thus will not be compelled to increase prices for this reason. Airport based business could be severely impacted, depending on how the Street Pricing concession policy is interpreted. If street prices are defined broadly for the New York/New Jersey metro area, then presumably businesses such as food/beverage at Newark Airport would presumably be allowed to increase their prices to offset mandated wage increases. If the Street pricing policy is defined more narrowly, with Newark Airport concessions being required to not exceed street prices at New Jersey businesses where minimum wages will be roughly 30% lower, then some of the Newark Airport concessions could face a severe profit squeeze. This could lead them to question the value proposition of continuing to do business on airport properties absent some relief from the Port Authority on its concessions policy. The Port Authority may need to consider whether that policy will require clarification or revision to accommodate such divergent competitive situations facing those tenants and concessionaires so limited by the region's market pricing.

There is a partial offset in that off-airport businesses will now need to compete with airport-based businesses for workers, and the higher wages paid by airport-based businesses may put some upward pressure on off-airport wage rates. This pressure is not expected to be to the extent of wage equalization. A sizeable wage gap can be expected to continue to exist between on- and off-airport businesses in some sectors, such as food & beverage.

5 Conclusions

Impact of 2014 Revisions. The available evidence indicates that the Port Authority's 2014 revisions to its wage policy has exerted mixed but relatively modest impacts, some positive and some negative, on employees, employers, and the Port Authority itself.

- For employees, on the whole, the limited data show that total employment at the three major commercial service airports has increased, and that the total amounts paid in wages and benefits has increased as well. However, certain groups of employees may have been negatively affected by the policy, perhaps in terms of losing part-time work or having their hours reduced.
- For employers, the wage policy has also produced mixed impacts to date. Clearly, their costs of labor increased. Relatively few firms – less than 10 percent -- reported being able to (or being forced to) raise prices to compensate for the increased wage bill. Other firms have needed to absorb the increase because they were contractually constrained or otherwise limited in their abilities to pass through the new costs. Some firms reported reducing their total levels of employment and/or reducing the hours that they offered to employees. The evidence is not clear, however, whether those changes were solely attributable to the wage policy rather than to other business conditions.
- To date, passengers who travel through the Port Authority's airports are unlikely to have seen any changes in prices for goods and services consumed directly or indirectly at New York's three major airports. As noted, most tenants and concessionaires either have not yet adjusted retail prices, due mostly to the street-level pricing concessions policy in effect.
- At this point, we do not believe that the Port Authority itself has been adversely affected by the wage increase, either in terms of its competitive position vis-à-vis businesses that operate off airport properties, or in terms of the revenues produced by its concessions program.

The project team cautions that the full effects of the 2014 wage policy most likely have not been realized. Many firms reported being constrained in the short term by existing contracts with suppliers and customers, effectively preventing the firms from recovering those increases in costs. Firms may also be constrained by the PANYNJ's "street pricing" concessions policy, which would preclude their ability to raise prices in order to recover their increased labor costs. Many of the firms doing business at the airports tend to be very labor-intensive, so increases in their wage rates add pressure on firm's margins and profitability. Academic research suggests that firms will see offsets to wage increases through improvements in turnover and absenteeism, and that these changes are more likely to be manifested with the passage of time and further increases in the minimum wage. Academic research also points out that businesses can sometimes be slow to adjust employment to increase in wage rates, so

conclusions drawn on short-term bases will overlook important lagged impacts.²⁴ Firms may also seek some different terms with the Port Authority in upcoming concessions and lease agreements. Over the longer term, some businesses may also substitute capital for labor.

Impact of 2016 Changes. The coming increase in minimum wages in New York State will mitigate the potential negative impacts on the Port Authority for its airports there, effectively creating a new “level playing field” for all workers and employers. At the same time, the Port Authority and businesses (on- and off-airport) should anticipate some sales losses stemming from inevitable price increases over time, especially in labor intensive sectors such as food & beverage. For the New York airports, because the minimum wage increase applies on and off airport, in-terminal concessionaires who sell goods and services directly to the traveling public will not be at a relative competitive disadvantage against off-airport businesses on the basis of labor rates and final prices. Passengers are likely to see some increase in prices at the airports as concessionaires and tenants match price increases throughout the local economy. However, the prices offered to travellers should not be higher than those offered to consumers off-property, again owing to the concessions policy. Based on the available research and expected extent of the gradual increases in New York’s minimum wage rates, we believe that any increases in prices to travellers using LaGuardia and Kennedy International airports will be relatively minimal.

The situation in New Jersey, where employers potentially face a greater differential in labor costs and street-level pricing, will be quite different – assuming that the State takes no action to change its minimum wage. At Newark Liberty International Airport and Teterboro Airport, businesses constrained by the Port Authority’s street-level concessions pricing policy could face great pressure on net revenues and profit margins. New Jersey based off-airport businesses will not face minimum wage increases and thus will not be compelled to increase prices for this reason. The need to compete with airport-based businesses may put some upward pressure on off-airport wage rates, but not to the extent of wage equalization. A sizeable wage gap can be expected to continue to exist.

How the Port Authority’s street-pricing concessions policy is interpreted and enforced becomes central to the question of how travellers and airport-based business could be affected. If street prices are defined broadly for the New York/New Jersey metro area, then on-airport businesses such as food/beverage at Newark Airport would presumably be allowed to increase their prices, reflecting the expected increase in prices at off-airport New York-based businesses. In this case, travellers using these airports will likely face the same change in prices as would travellers using LGA and JFK. If the street pricing policy is defined more narrowly, with Newark Liberty Airport concessions being required to not exceed prices at nearby off-airport New Jersey businesses where minimum wages will be roughly 30% lower, then some of the on-airport concessions could face a severe profit squeeze. In that case, travelers using these airports are unlikely to experience any changes in the prices of goods or services. But the profit squeeze will likely lead the concessionaires to question the value proposition of continuing to do business on airport properties absent some relief from the Port Authority on its concessions policy. The

²⁴ Neumark, D., & Wascher, W. (2006). Minimum Wages and Employment: A Review of Evidence from the New Minimum Wage Research. doi:10.3386/w12663, p. 21.

Port Authority may need to consider whether that policy will require clarification or revision to accommodate such divergent competitive situations facing those tenants and concessionaires so limited by the region's market pricing.

Wage increases for other non-trade labor at the airports that do not sell directly to the traveling public – such as those relating to facilities services and ground handling – will eventually influence airline costs at the Port Authority's facilities. Yet it is unclear how airlines will react to those increases, both in the short and intermediate terms. In the short term, airlines are unlikely to be affected because existing contracts will shield them from rising labor costs. Beyond that immediate period, because ticket prices are subject to such a large number of factors – which can change dynamically depending on competitive market pressures – it is not possible to state with any certainty how airlines could react to the change in wage rates, especially considering that it is not known how those changes could affect their contractors' performance and bottom-line prices.

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Appendix II: Scope and Methodology

The project team adopted a four-part methodology to examine the impact of the Port Authority's 2014 wage policy and to estimate the potential effects of future changes in that policy.

First, the team built upon prior work and updated a review of relevant academic literature on the impacts of wage and/or benefit increases among affected industries, focusing in particular on the impacts identified on public bodies in general (e.g., city and county governments) and airports in particular. The project team paid particular interest to the models that the academic researchers applied to develop their estimates of the effects of the wage increase, along with the sources of their data and the results achieved. The team used these models to inform other aspects of the study.

Several models used data from surveys of employers. So that this option could be explored, the team developed and implemented a survey of employers at the Authority's airports to gather data on changes in employment and wages. The survey was designed to capture data showing any changes that may have occurred as a result of the PANYNJ's 2014 wage policy. The team pre-tested the survey with a small number of firms, made appropriate revisions, and then deployed the survey to all firms doing business at the five PANYNJ airports (excluding Atlantic City, NJ). The survey also collected data on employee retention and/or turnover, and perceptions on the extent to which end prices to consumers (e.g., passengers) may have changed over time. For purposes of categorizing responding firms by type of business, the survey asked firms to self-identify their principle business activity. These categories correspond with North American Industrial Classification System (NAICS) codes most often found at or associated with commercial air transportation and airports. They are summarized in Table II-1 below. The survey was conducted online during the first two weeks of June. The project team received a total of 262 responses out of 769 total surveys sent (34%), covering nearly 20,000 total employees at the airports as of June 2016.

Table II-1: Principal Business Activities Surveyed

Principle Business Activity	Definition or Example
General Retail Stores	Convenience stores, confectionary and nut stores, pharmacies and drug stores, optical goods, electronics, etc.
Sporting Goods, Hobby, Musical Instrument and Book Stores	Newsstands and bookstores
Miscellaneous Store Retailers	Gift and souvenir stores
Nonstore Retailers	Vending machine operators, kiosks
Air Transportation	Commercial airlines
Transit and Ground Passenger Transportation	Taxi and shuttle operators
Support Activities for Air Transportation	Ground handling. Services include airport operation, servicing, repairing (except factory conversion and overhaul of aircraft), maintaining and storing aircraft, and ferrying aircraft.
Warehousing, Storage, and Logistics	Cargo handling, warehousing, and logistical services, etc.
Automotive Equipment Rental and Leasing	Rental cars
Facilities Support Services	Establishments in this industry typically provide a combination of services, such as janitorial, maintenance, trash disposal, guard and security, mail routing, reception, laundry, and related services to support operations within facilities.
Food Services and Drinking Places	There is a wide range of establishments in these industries. Some provide food and drink only; while others provide various combinations of seating space, waiter/waitress services and incidental amenities, such as limited entertainment. Casual restaurants, fast food, grab-and-go eating places, caterers.
Repair and Maintenance	General maintenance. Business in this category restore machinery, equipment, and other products to working order. These establishments also typically provide general or routine maintenance (i.e., servicing) on such products
Other	All else

Third, because some of the academic research relied on public-available data on employment and wages reported through state and federal departments of labor, the project team also evaluated changes that might have been reflected in these data. The project team sought detailed information from the departments of Labor in both New York and New Jersey. In particular, the data sought covered all industry sectors that were represented on airport properties, as well as comparable business sectors not on airport properties, but near the airport. The intent was to be able to compare changes in employment and wages at business subject to the Port Authority's wage policy against businesses not subject to the same wage and benefit requirements.

The team identified the range of public and private sector activities doing business on airport properties and matched those to standard classifications of employment data, captured by the North American Industry Classification System (NAICS) and reported to the U.S. Bureau of Labor Statistics and state departments of labor. BLS regularly reports changes in employment and earnings as part of its Quarterly Census of Employment and Wages (QCEW). The data are reported at the county, metropolitan statistical area, and state levels.

The available data are commonly reported at the country, metropolitan statistical area, or state basis. However, those geographic levels of reporting would not allow the project team to isolate any potential impacts of the Port Authority's wage policy. The principle reason is that any differences in employment and wages that occurred at the airports would be lost within all data reported for the counties. Data for employers at LaGuardia and John F. Kennedy airports, for example, would be included in with the data reported by every other employer located in Queens County.

The project team subsequently asked the U.S. BLS and the New York and New Jersey departments of labor if those data were available at the census tract geographic level. The team requested employment and wage data for selected business categories only located in the census tracts comprising the airport grounds and the tracts immediately surrounding the airports. Because the airports represent distinct census tracts, this would theoretically allow a comparison of changes in employment and wages for businesses subject to the wage policy against those not subject to the wage policy. Firms providing data to the state departments of labor (and to BLS) do not report the census tract information, so the reported data would need to be separately geocoded to census tracts. Unfortunately, the State of New Jersey was unable to provide the data at that level. As a result, the project team was prevented from using these data to analyze any changes that might have occurred at Newark Liberty International Airport and Teterboro Airport.

The New York Department of Labor was able to provide some data at the census tract level. However, the project team encountered a separate obstacle with these data. In order to protect the identity, or identifiable information, of cooperating employers, state and federal government agencies must suppress data that are provided by or are substantially attributable to a single large employer. Various statistical techniques are used to limit the possibility of using published data to derive sensitive identifiable information. As a result, the state was not able to provide data at the most detailed level sought. Much of the data made available to the project team was suppressed to protect sensitive or proprietary business information. As a result, the team was unable to make direct comparisons of

changes in employment and wages for many similar types of firms that operate both on- and off-airport properties. Direct analyses were precluded for all except for employment and wages at restaurants and other eating places. The team could not compare employment and wages at various retail industries (e.g., electronics, newsstands, bookstores, or clothing), auto rental and leasing, or facilities support (e.g., cleaning, janitorial services, and building security).

Fourth, the team combined all of the information developed in the three project elements described above into a “meta analysis.” This analysis used the information on employment and wage impacts from the literature reviews to produce a range of estimates for the potential impacts that may arise with employment at the PANYNJ’s airports. The analysis will also take into account the available findings on the impact of increased minimum wages on pricing and whether (and to what extent) those increased prices are passed on to consumers. The project team then applied these findings to the available data from the Port Authority to generate estimates of the potential changes in employment and final prices. The results of this analysis were considered in relation to the Port Authority’s general policy on concessions pricing.

Appendix III: Covered Services Subject to the PANYNJ's Wage and Benefit Policies

- Passenger Related Security Services
 - Escorts
 - Catering Security
 - Passenger Aircraft Security
 - Fireguards
 - Terminal Security
 - Traffic Security
- Cargo Related and Ramp Services
 - Cargo Screening (including Guards) and Warehouse Security
 - Baggage and Cargo Handling
 - Load Control and Ramp Communication
 - Aircraft Mechanics and Fueling of Aircraft
 - Provision of water, cooling/heating, power
 - Equipment and toilet services to Aircraft
 - Passenger Aircraft Servicing
 - Cabin Equipment Maintenance
 - Guiding Aircraft in and out of Gates
 - Gateside Aircraft Maintenance
 - Ramp area cleaning
- In-Terminal and Passenger Handling Services
 - Baggage handling
 - Skycap
 - Wheelchair attendant
 - Ticketing agent
 - Customer Service Representatives
 - Queue Managers
 - ID Checkers
 - Porter Service for Baggage
 - Passenger and Employee Shuttle Drivers
- Cleaning Services
 - Building Cleaning
 - Aircraft and Cabin cleaning
 - Plane washers
- Concession Services
 - Food Service (including, food and beverage service, wait service, busing, cashiers)
 - Retail Service (including news/gifts and duty-free)
 - Cleaning for concession services
 - Security for concession services
 - Airport Lounge Services (Food, Retail, Cleaning and Security Services)



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