The Coronavirus Economy

Estimating the Impact of Lockdown on Employment in Los Angeles County

Paul Bogaardt [1] Jung Lin Chang[1], Youngsun Hwang[1], Joseph Immormino[1*], Glenn-Iain Steinback[1] and Nicholas Stowell[1]

[1] *Claremont Graduate University, Claremont, CA, USA*
[*] *Corresponding Author: joseph.immormino@cgu.edu*

April 30, 2020

The ongoing COVID-19 pandemic and resulting Safer At Home guidelines imposed on March 19 have created an unprecedented economic crisis. The subsequent business closures, travel restrictions, and difficulties transitioning to remote work, have resulted in sudden loss of employment and economic uncertainty for many residents of Los Angeles County. To date, official counts of lost jobs and the impact on earnings for those affected are incomplete and uncertain. Our independent estimates indicate that within the first six weeks of crisis L.A. County shed nearly 1.2 million jobs, accounting for a nearly 30 percent reduction in total employment. Among these, 425,000 are from industries with a median annual wage less than $30,000 per year. The food service industry alone accounts for 319,000 lost jobs, with median annual wages of $23,184. Additionally, higher wage earners in the entertainment industry have been hard hit, losing 160,000 jobs as a result of delayed film and music production and cancelled live events. Unemployment benefits made available by both the state and federal government will provide many eligible individuals earning less than $50,000 a year with benefits exceeding their income. Yet, administrative delays risk the ability of the most vulnerable to meet immediate financial demands and provide for basic needs. Conversely, higher income earners will experience a distinct loss in monthly earnings, compromising their ability to meet monthly expense obligations. This paper summarizes the novel estimation approach we developed and serves as an initial case study and application of our framework for analyzing unfolding economic events with high uncertainty. We begin by summarizing our methodology, then transition to a discussion of our results and their implications. Finally, we compare our results against other published findings and conclude with a summary and discussion of our pending concerns for L.A. County.

1 Estimating Job Loss in Los Angeles County

We analyzed pre-pandemic employment levels across all sectors of the local economy using the February 2020 edition of the Current Employment Statistics data set provided by the California Employment Development Department(EDD, 2020). Our team then developed a multi-stage protocol to assess the risk exposure of each of the 62 subsector categories identified by the North American Industry Classification System (NAICS). This process included a detailed review of the Safer At Home guidelines (Office of Governor, 2020) and statewide list of essential business operations, as well as the development of a six point sliding risk scale informed by those public health orders. We then assembled a panel of analysts to score the risk level of the respective subsectors and industries within, generally considering:

1 whether or not the respective category qualified as 'essential'
2 how critical the industry actually is
3 how easily the average job within that industry could be adapted to remote work
4 whether or not the industry included a majority of salaried workers

We combined the panel's risk classifications and adopted the modal score when a majority generated the same value. If we were unable to reach a majority through voting and deliberation, we conducted further research into the representative businesses of that NAICS classification. The finalized risk scores were then converted to proportional estimates of anticipated job loss. The estimates were derived from an assumption that a moderate risk score of 3 would be associated with the loss of half of the jobs in a subsector. As a result, low risk areas with risk scores of 1 were assumed to suffer no job losses. Moderately low risk fields scored as 2 were assumed to suffer 20 percent losses, while moderate and moderately-high risk industries received 50 and 70 percent losses respectively. High risk industries were forecast to lose 90 percent of jobs and some industries, such as food and beverage stores, were scored as zero to account for the addition of 5 percent of jobs. Consequently, industries deemed essential or with more remote potential were found to have lower expected job losses than those that are non-essential, restricted, or unable to convert to a work from home format. Figure 1 details our estimated job losses relative to pre-pandemic employment

Industry	Score
Food Manufacturing	0
Food and Beverage Stores	0
Ambulatory Health Care Services	1
Animal Production	1
Chemical Manufacturing	1
Couriers and Messengers	1
Financial Investment & Related Activity	1
Health and Personal Care Stores	1
Hospitals	1
ISPs, Search Portals, & Data Processing	1
Nursing and Residential Care Facilities	1
Telecommunications	1
Utilities	1
Broadcasting (except Internet)	1.5
Credit Intermediation & Related Activity	1.5
Gasoline Stations	1.5
Insurance Carriers & Related Activities	1.5
Merchant Wholesalers, Nondurable Goods	1.5
Nonstore Retailers	1.5
Professional and Technical Services	1.5
Social Assistance	1.5
Truck Transportation	1.5
Administrative and Support Services	2
Building Material & Garden Supply Stores	2
Computer and Electronic Product Mfg	2
Construction of Buildings	2
Educational Services	2
Electrical Equipment and Appliances	2
Electronic Markets and Agents/Brokers	2
Fabricated Metal Product Manufacturing	2
Heavy and Civil Engineering Construction	2
Machinery Manufacturing	2
Paper Manufacturing	2
Personal and Laundry Services	2
Plastics & Rubber Products Manufacturing	2
Primary Metal Manufacturing	2
Publishing Industries	2
Support Activities for Transportation	2
Transportation Equipment Manufacturing	2
General Merchandise Stores	2.5
Merchant Wholesalers, Durable Goods	2.5
Repair and Maintenance	2.5
Air Transportation	3
Miscellaneous Manufacturing	3
Miscellaneous Store Retailers	3
Rental and Leasing Services	3
Specialty Trade Contractors	3
Transit and Ground Passenger Transport	3
Apparel Manufacturing	3.5
Motor Vehicle and Parts Dealers	3.5
Accommodation	4
Real Estate	4
Textile Product Mills	4
Food Services and Drinking Places	4.5
Motion Picture & Sound Recording Industry	4.5
Sporting Goods/Hobby/Book/Music Stores	4.5
Amusement, Gambling & Recreation Industry	5
Clothing and Clothing Accessories Stores	5
Furniture and Home Furnishings Stores	5
Furniture and Related Product Mfg	5
Museums, Parks and Historical Sites	5
Performing Arts and Spectator Sports	5

Table 1: *Risk Score by Industry*

To approximate the cost of unemployment to workers within an industry, we gathered median industry wage data from the California Employment Development Department (EDD, 2020) and consumer expenditure data from the Bureau of Labor Statistics(BLS, 2020). As local consumer expenditure data did not provide detail on spending by income, we used national level expenditure patterns to scale local spending proportions to income level. We then reviewed state and federal unemployment benefit guidelines and calculated benefits for the median earner within each NAICS category. Figure 3 details the estimated expenses versus available benefits for a median wage

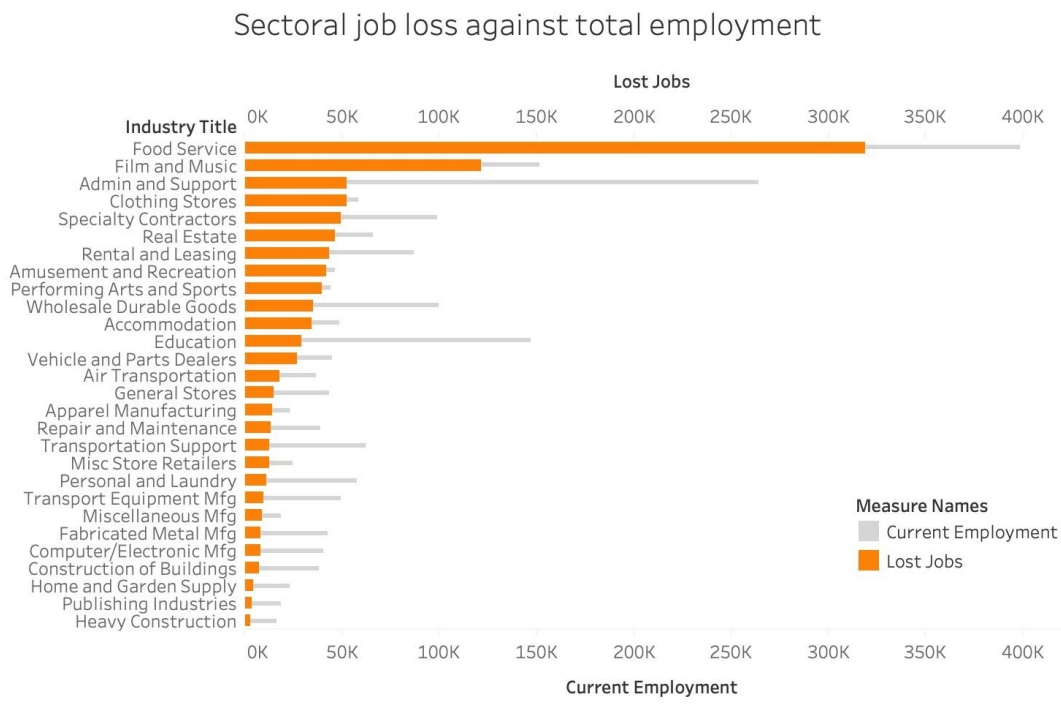

Figure 1: *Sectoral job loss against total employment*

earner in each of the most impacted economic subsectors.

2 Which Industries Will Suffer the Most?

We estimate that from the onset of pandemic related economic restrictions through April 30, 2020, L.A. County has lost 1,185,125 jobs, accounting for 29.4 percent of total employment. Of these losses, 36 percent are drawn from industries with median wages less than $30,000 and 70 percent are drawn from just 11 of the 62 NAICS categories considered. Food service is the most severely impacted, with an estimated loss of 319,000 jobs earning median pay of just $23,184 per year. Figure 2 plots expected job loss against median wages, illustrating the acute concentration of hardship in that industry.

While most food and drink service establishments are technically allowed to remain open, the abundance of workers are uniquely vulnerable to job loss due to take-out and delivery only mandates. This, coupled with stay at home orders, has reduced sales and the number of employees necessary to maintain restricted business operations. We expect that this particularly impacts the wait staff and food preparation employees who make up the largest number of employees in this industry. As a result, we estimate that 80 percent of employees will face job losses.

Industry	%	Lost Jobs
Air Transportation	50	18,200
Miscellaneous Manufacturing	50	9,200
Miscellaneous Store Retailers	50	12,400
Rental and Leasing Services	50	43,550
Specialty Trade Contractors	50	49,700
Transit and Ground Passenger Transport	50	5,800
Apparel Manufacturing	60	13,980
Motor Vehicle and Parts Dealers	60	27,060
Accommodation	70	34,300
Real Estate	70	46,200
Textile Product Mills	70	2,660
Food Services and Drinking Places	80	319,040
Motion Picture & Sound Recording Ind	80	121,360
Sporting Goods/Hobby/Book/Music Stores	80	10,400
Amusement, Gambling & Recreation Ind	90	41,850
Clothing and Clothing Accessories Stores	90	52,470
Furniture and Home Furnishings Stores	90	11,790
Furniture and Related Product Mfg	90	10,440
Museums, Parks and Historical Sites	90	5,220
Performing Arts and Spectator Sports	90	39,690

Table 2: *Number of Lost jobs by Industry*

Second to food service, in terms of total lost employment, is the entertainment sector. Highly concentrated in Los Angeles, the film and music production industry, in combination with performing arts and spectator sports, is estimated to have lost 160,000 jobs, accounting for 13.5 percent of all projected

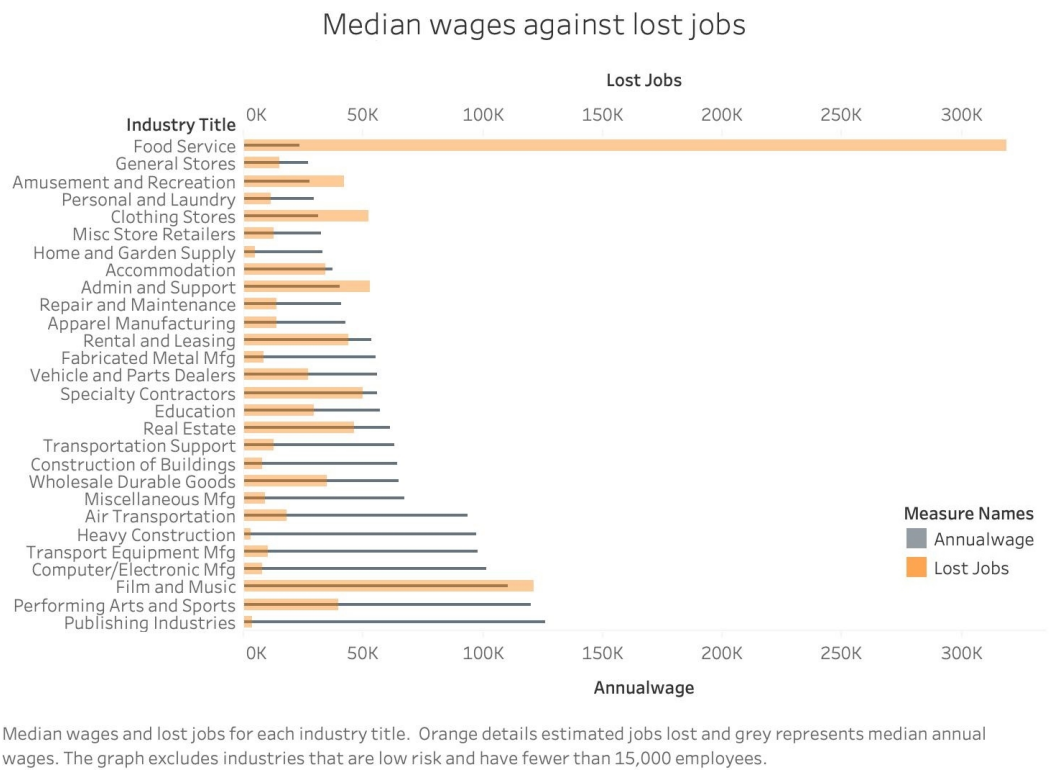

Figure 2: *Median wages against job loss*

losses in L.A. County. As median earning employees in these industries collect higher annual wages, combined state and federal unemployment benefits are not expected to meet their full expense obligations. Additionally, several smaller industries face severe losses relative to their size. We project that twenty industries will experience losses of 50 percent or higher, accounting for 74 percent of all COVID-19 related job losses. These industries include a number of manufacturing ventures, such as clothing, textile, and furniture production, as well as specialty stores and retailers. We also suspect significant unemployment in the air transportation industry and a significant contraction in hotel and accommodation services.

3 What Are the Costs to Workers?

We used two sources to estimate the cost of unemployment to an average worker in each industry. First, the median cost of living, as well as the ratio of spending to income from the Bureau of Labor Statistics Consumer Expenditure Survey (CES) (BLS, 2020). Second, median wage data for workers in each industry from the California Economic Development Department's Occupational Employment Statistics (EDD, 2020). Using these sources, we estimated an average monthly cost of living by level of income and then scaled the proportion of spending to median income for each industry to produce an expected monthly cost of living. The median worker in the median industry is estimated to have $3,846 in monthly expenses.

4 What Benefits Are Available?

With respect to benefits, the median unemployed worker is expected to receive $1,616 in monthly California state benefits, with a maximum possible benefit of $1,800. As noted in figure 3, such benefits cover less than half of the expected expenses of an average worker. However, the federal government's economic stimulus package helps to address this disparity. The Federal Pandemic Unemployment Compensation (FPUC) program provides eligible individuals with an additional $600 per week in unemployment benefits through July 26, 2020, and the Pandemic Unemployment Assistance (PUA) program extends benefits to previously excluded self-employed, freelance, and part time workers, as well as independent contractors (*CARES act of 2020*). Individuals that earn less than $99,000 per year receive an additional one-time payment of up to $1,200. (IRS, 2020). Notably, FPUC benefits are not dependent on income. The uniform nature of these payments serves to provide a greater relative benefit to low wage earners. However, the need for state administrative agencies to adapt systems to new federal laws has exacerbated pre-existing delays in obtaining payment, especially for those without bank accounts or unable to electronically file tax returns. For low wage earners, timing of payments may be nearly as consequential as the amount of payments, as delays in obtaining capital may prevent the timely payment of essential expenses and compromise the ability to meet unique financial demands presented by the public health crisis.

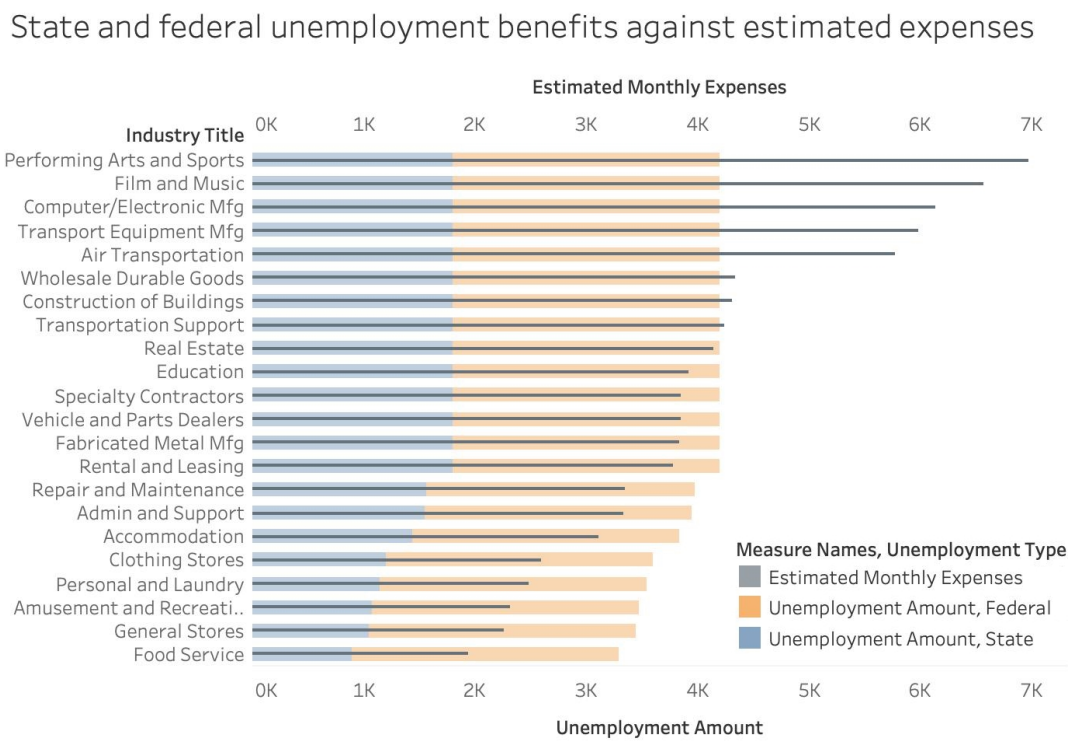

Figure 3: *Monthly Unemployment Benefits Against Expenses*

5 Validation

Our analysis estimates the employment ramifications of COVID-19 related economic restrictions in a time of high uncertainty regarding actual trends. The time sensitive nature of this report requires that we make informed approximations without the benefit of sufficient data to validate the model. However, we are able to benchmark our figures against similar published estimates. For example, the University of Southern California's USC Dornsife Understanding Coronavirus in America Study survey's a panel of 5,477 people nationwide and 1,080 L.A. County residents for their experiences of the COVID-19 crisis. They estimate that national employment fell from 62 percent in mid-March to 52 percent in mid-April, and that employment in L.A. County suffered a more severe decline from 61 to 45 percent (USC Dornsife Communication Staff, 2020). This reduction in L.A. County employment is equal to 1.3 million lost jobs. By contrast, we estimate a total of 1,185,125 lost jobs. Additionally, comparable studies have reported similar findings for L.A. County's most hard hit industries. Specifically, an April 20 publication by the National Restaurant Foundation reported that a nationwide survey of 6,500 food service operations indicated that by mid-April about 70 percent of restaurant workers had lost their job (Grindy, 2020), compared to our estimate of 80 percent. We expect this percentage to be higher in our analysis due to the longer applied timeframe and the comparatively broad restrictions enforced by the State of California. Finally, the International Alliance of Theatrical and Stage Employees (IATSE) estimated that by the end of March 120,000 jobs had been lost in the film industry as a result of production shutdowns (Berg, 2020). We estimate the loss across both film and music production within L.A. County to have reached 121,360 by the end of April. While the IATSE does not limit its estimates to jobs located in L.A. County, it does limit its estimate to film production specifically. Thus, given our longer timeframe, the concentration of film production work in Los Angeles, and the broader trend of more acute job loss in L.A. County, we take our estimate of 120,000 local jobs lost across both film and music production to be comparable to the IATSE's estimate.

6 Discussion

We estimate that so far COVID-19 related restrictions have resulted in the loss of 30 percent of jobs in L.A. County, impacting 1.2 million people. These losses have been most acute for lower wage industries, with roughly one in three lost jobs coming from an industry with a median income under $30,000 per year. Most notably, food service, despite being an essential industry, has suffered more than 300,000 losses as a result of restrictions on dine-in operations. For those workers who receive benefits, there appears to be enough provided to meet the needs of the median worker in most industries. Indeed, the federal response to COVID-19-driven unemployment is moder-

ately re-distributive, leaving many to qualify for more money than they previously earned. However, delays in accessing these funds are expected to create hardships for lower income workers. Additionally, the scope of this project is limited to those who qualify for unemployment benefits. Yet much of our local community does not. The homeless, undocumented, and prior-unemployed, among others, will not be eligible to receive the benefits discussed above. We recommend future research specifically focused on these communities.

Reference

Berg, Madeline (2020). *Coronavirus Could Be A $12 Billion Hit To Entertainment And Audiences May Never Be The Same*. URL: https://www.forbes.com/sites/maddieberg/2020/03/18/coronavirus-has-hit-entertainment-hard-audiences-may-never-be-the-same/#7618d4b257de.

BLS (2020). *Consumer Expenditure Surveys*. URL: https://www.bls.gov/cex/.

CARES act of 2020. URL: https://www.lcwlegal.com/uploaded/DOLProgramLetter15-20.pdf.

EDD (2020). *Occupational Employment Statistics*. URL: https://www.bls.gov/cex/.

Grindy, Bruce (2020). *Restaurant sales and job losses are widespread across segments*. URL: https://restaurant.org/Articles/News/Restaurant-sales-and-job-losses-are-widespread.

IRS (2020). *Economic Impact Payments*. URL: https://www.irs.gov/coronavirus/economic-impact-payment.

Office of Governor (2020). *Executive Order N-33-20*. URL: https://www.gov.ca.gov/wp-content/uploads/2020/03/3.19.20-attested-EO-N-33-20-COVID-19-HEALTH-ORDER.pdf.

USC Dornsife Communication Staff (2020). *Survey reveals extent of coronavirus-related job loss, outsized impact on blacks and Latinos*. URL: https://dornsife.usc.edu/news/stories/3198/coronavirus-covid-19-job-loss-and-anxiety-increases/.