

Labor Market Analysis for Program Modification:  
1006.00/Technical Theatre (Advanced Technical Theatre  
Certificate) (Assistant Stage Management Certificate)  
(Lighting Technician Certificate) (Sound Technician  
Certificate) (Stage Management Certificate) (Technical  
Theatre Certificate) (Theme Park Technician Certificate)

Orange County Center of Excellence, January 2025



## Summary

|                         |                                                         |                                                                     |                                           |
|-------------------------|---------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------|
| Program LMI Endorsement | Endorsed: All LMI Criteria Met <input type="checkbox"/> | Endorsed: Some LMI Criteria Met <input checked="" type="checkbox"/> | Not LMI Endorsed <input type="checkbox"/> |
|-------------------------|---------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------|

## Program LMI Endorsement Criteria

|                                                      | Yes <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No <input type="checkbox"/>            |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Supply Gap:                                          | <i>Comments:</i> there is projected to be <b>1,451 annual job openings</b> throughout Los Angeles and Orange counties for these middle-skill and below middle-skill technical theatre occupations, which <b>is below the 1,495 awards conferred by educational institutions</b> . However, these educational programs also prepare students for 26 other related occupations, <b>which account for 20,176 additional annual job openings</b> . <i>Because these programs train for a variety of occupations with high demand, there is most likely an undersupply of labor for these middle-skill and below middle-skill technical theatre occupations.</i> |                                        |
| Self-Sufficiency Standard Living Wage <sup>1</sup> : | Yes <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No <input checked="" type="checkbox"/> |
|                                                      | <i>Comments:</i> <b>all annual job openings</b> for these middle-skill and below middle-skill technical theatre occupations <b>have entry-level hourly wages below the OC living wage of \$27.13</b> , most likely due to the self-employment nature of these occupations.                                                                                                                                                                                                                                                                                                                                                                                  |                                        |
| Education:                                           | Yes <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No <input type="checkbox"/>            |
|                                                      | <i>Comments:</i> The majority (81%) of annual job openings for these middle-skill and below middle-skill technical theatre occupations typically require a postsecondary nondegree award and <b>38% of workers in the field have completed some college or an associate degree as their highest level of education</b> .                                                                                                                                                                                                                                                                                                                                    |                                        |

| Additional Considerations |                                                                                              |                               |                                        |
|---------------------------|----------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------|
| Emerging Occupation(s):   | Yes <input type="checkbox"/>                                                                 | Some <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
|                           | <i>Comments:</i> N/A                                                                         |                               |                                        |
| OC Resilient Job(s):      | Yes <input type="checkbox"/>                                                                 | Some <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
|                           | <i>Comments:</i> See <a href="#">Resilient Jobs and US News &amp; World Report Best Jobs</a> |                               |                                        |
|                           | Yes <input type="checkbox"/>                                                                 | Some <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

<sup>1</sup> At the direction of the California Community College Chancellor's Office, the living wage endorsement criteria in this report uses the University of Washington's Center for Women's Welfare Self-Sufficiency Standard, which the COE refers to as a living wage, to determine Orange County's living wage of \$27.13, last updated in March 2024.

The Orange County Center of Excellence for Labor Market Research (OC COE) prepared this report to determine whether there is a supply gap in the Los Angeles/Orange County regional labor market related to four technical theatre occupations:

- Below Middle-Skill – denoted with an asterisk (\*) throughout this report.
  - *Lighting Technicians (27-4015)\**
- Middle-Skill
  - *Audio and Video Technicians (27-4011)*
  - *Sound Engineering Technician (27-4014)*
- Above Middle-Skill – denoted with a caret (^) throughout this report.
  - *Set and Exhibit Designers (27-1027)^*

Based on the available data there appears to be a supply gap for these middle-skill and below middle-skill occupations. Though the number of awards for these three occupations exceeds demand, supply is overstated because the related educational programs train for an additional 26 occupations. In addition, though typical education requirements for these occupations align with a community college education, all annual job openings have entry-level wages below the Self-Sufficiency Standard living wage, most likely due to the self-employment nature of these occupations. **Therefore, due to some of the regional labor market criteria being met, the COE endorses this proposed program.**

Exhibit 1 lists the occupational demand, supply, typical entry-level education, and educational attainment for the occupations included in this report.

### Exhibit 1: Labor Market Endorsement Summary

| Occupation (SOC)                       | Demand (Annual Openings)      | Supply (CC and Non-CC)         | Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile) | Typical Entry-Level Education     | Community College Educational Attainment |
|----------------------------------------|-------------------------------|--------------------------------|-----------------------------------------------------------|-----------------------------------|------------------------------------------|
| Lighting Technicians (27-4015)*        | LA: 237<br>OC: 45<br>TTL: 283 | LA: 375<br>OC: 255<br>TTL: 630 | OC: \$21.48                                               | High school diploma or equivalent | 38%                                      |
| <b>Below Middle-Skill Total</b>        | <b>283</b>                    | <b>630</b>                     | <b>N/A</b>                                                | <b>N/A</b>                        | <b>N/A</b>                               |
| Audio and Video Technicians (27-4011)  | LA: 517<br>OC: 85<br>TTL: 602 | LA: 254<br>OC: 119<br>TTL: 373 | OC: \$19.16                                               | Postsecondary nondegree award     | 38%                                      |
| Sound Engineering Technician (27-4014) | LA: 509<br>OC: 58<br>TTL: 567 | LA: 492<br>OC: 0<br>TTL: 492   | OC: \$19.92                                               | Postsecondary nondegree award     | 38%                                      |
| <b>Middle-Skill Total</b>              | <b>1,169</b>                  | <b>865</b>                     | <b>N/A</b>                                                | <b>N/A</b>                        | <b>N/A</b>                               |
|                                        | LA: 184                       | LA: 422                        | OC: \$26.38                                               | Bachelor's degree                 | 29%                                      |

<sup>2</sup> "100 Best Jobs of 2024," U.S. News & World Report, accessed May 7, 2024, <https://money.usnews.com/careers/best-jobs/rankings/the-100-best-jobs>.

| Occupation (SOC)                     | Demand (Annual Openings) | Supply (CC and Non-CC) | Entry-Level Hourly Earnings (25 <sup>th</sup> Percentile) | Typical Entry-Level Education | Community College Educational Attainment |
|--------------------------------------|--------------------------|------------------------|-----------------------------------------------------------|-------------------------------|------------------------------------------|
| Set and Exhibit Designers (27-1027)^ | OC: 47<br>TTL: 231       | OC: 52<br>TTL: 474     |                                                           |                               |                                          |
| <b>Above Middle-Skill Total</b>      | <b>231</b>               | <b>474</b>             | <b>N/A</b>                                                | <b>N/A</b>                    | <b>N/A</b>                               |
| <b>Total</b>                         | <b>1,683</b>             | <b>1,969</b>           | <b>N/A</b>                                                | <b>N/A</b>                    | <b>N/A</b>                               |

## Demand:

- The number of jobs related to these middle-skill and below middle-skill technical theatre occupations are projected to increase 2% through 2028, equating to 1,451 annual job openings.
- Hourly entry-level wages for these middle-skill and below middle-skill technical theatre occupations range from \$19.16 to \$21.48 in Orange County; all annual job openings have entry-level wages significantly below the Self-Sufficiency Standard living wage.
  - It is important to note that many workers in these occupations are considered self-employed and have different earning dynamics than wage and salaried workers.
- There were 1,140 online job postings for these middle-skill and below middle-skill technical theatre occupations over the past 12 months. The highest number of postings were for audiovisual technicians, lighting technicians, and audiovisual specialists.
- The typical entry-level education for these middle-skill and below middle-skill technical theatre occupations ranges from a high school diploma or equivalent to a postsecondary nondegree award.
- Approximately 38% of workers in these middle-skill occupations have completed some college or an associate degree as their highest level of educational attainment.

## Supply:

- There was an average of 913 awards conferred by 21 community colleges in Los Angeles and Orange Counties from 2020 to 2023.
- Non-community college institutions conferred an average of 582 awards from 2019 to 2022.
- Orange County community college students that exited technical theatre programs in the 2020-21 academic year had a median annual wage of \$27,520 (\$13.23 per hour) after exiting the program and 25% attained the regional living wage.
- Throughout Orange County, 83% of technical theatre students that exited their program in 2019-20 reported that they are working in a job closely related to their field of study.

## Demand

### Occupational Projections:

Exhibit 2 shows the annual percent change in jobs for all four technical theatre occupations from 2018 through 2028. Employment in these technical theatre occupations declined 21% in Los Angeles and Orange counties from 2019 to 2020, which is much higher than the 7% decline across all occupations in Los Angeles and Orange counties due to the COVID-19 pandemic.

In the two years preceding the pandemic, employment for these occupations fluctuated in Orange County, with a period of stagnation in 2019 following a 9% increase in 2018. After a decrease in employment in 2020 and 2021 and an increase through 2023, employment for these four occupations in Orange County is projected to remain flat through 2028, experiencing a lower rate relative to all occupations in Los Angeles and Orange counties.

## Exhibit 2: Annual Percent Change in Jobs for Technical Theatre Occupations, 2018-2028

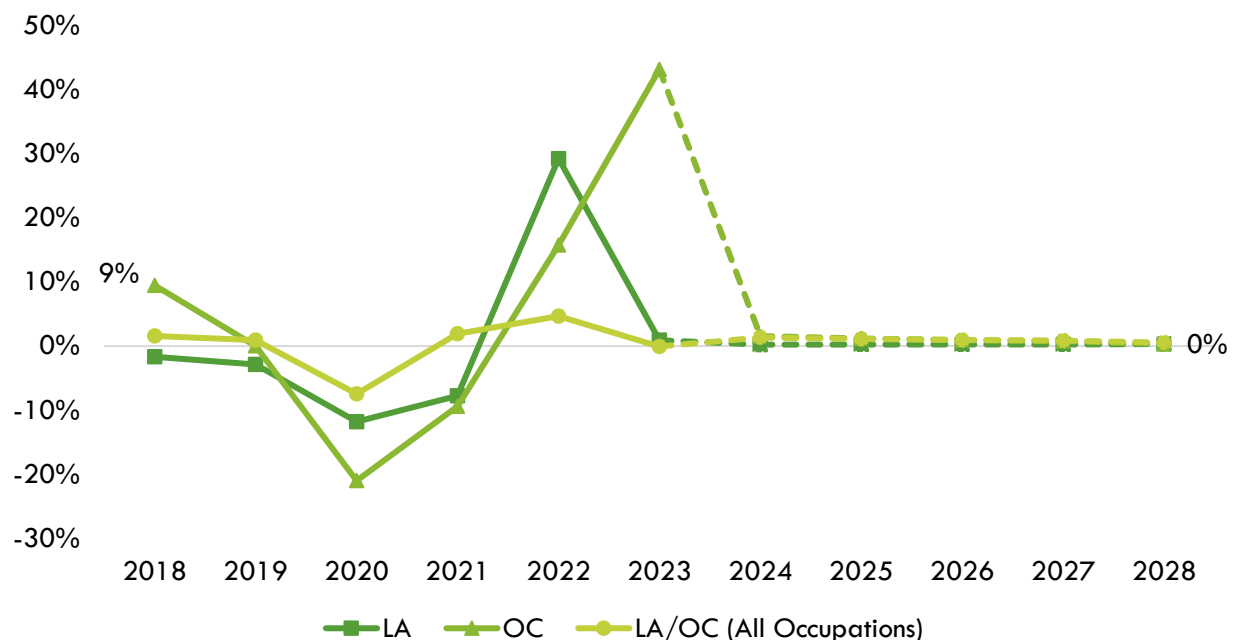


Exhibit 3 shows the five-year occupational demand projections for the below middle-skill technical theatre occupation, *lighting technicians*\*. In Los Angeles/Orange County, the number of jobs related to this occupation is projected to increase by 2% through 2028. There is projected to be 283 jobs available annually.

## Exhibit 3: Below Middle-Skill Occupational Demand in Los Angeles and Orange Counties<sup>3</sup>

| Geography    | 2023 Jobs    | 2028 Jobs    | 2023-2028 Change | 2023-2028 % Change | Annual Openings |
|--------------|--------------|--------------|------------------|--------------------|-----------------|
| Los Angeles  | 2,604        | 2,637        | 33               | 1%                 | 237             |
| Orange       | 449          | 471          | 22               | 5%                 | 45              |
| <b>Total</b> | <b>3,053</b> | <b>3,109</b> | <b>55</b>        | <b>2%</b>          | <b>283</b>      |

<sup>3</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Exhibit 4 shows the five-year occupational demand projections for the two middle-skill technical theatre occupations, *audio and video technicians* and *sound engineering technicians*. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 2% through 2028. There is projected to be 1,169 jobs available annually.

#### Exhibit 4: Middle-Skill Occupational Demand in Los Angeles and Orange Counties<sup>4</sup>

| Geography    | 2023 Jobs     | 2028 Jobs     | 2023-2028 Change | 2023-2028 % Change | Annual Openings |
|--------------|---------------|---------------|------------------|--------------------|-----------------|
| Los Angeles  | 10,825        | 11,027        | 202              | 2%                 | 1,026           |
| Orange       | 1,387         | 1,460         | 74               | 5%                 | 142             |
| <b>Total</b> | <b>12,212</b> | <b>12,487</b> | <b>275</b>       | <b>2%</b>          | <b>1,169</b>    |

Exhibit 5 shows the five-year occupational demand projections for the above middle-skill technical theatre occupation, *set and exhibit designers*<sup>5</sup>. In Los Angeles/Orange County, the number of jobs related to this occupation is projected to decrease by 1% through 2028. There is projected to be 231 jobs available annually.

#### Exhibit 5: Above Middle-Skill Occupational Demand in Los Angeles and Orange Counties

| Geography    | 2023 Jobs    | 2028 Jobs    | 2023-2028 Change | 2023-2028 % Change | Annual Openings |
|--------------|--------------|--------------|------------------|--------------------|-----------------|
| Los Angeles  | 2,226        | 2,190        | (36)             | (2%)               | 184             |
| Orange       | 494          | 510          | 16               | 3%                 | 47              |
| <b>Total</b> | <b>2,720</b> | <b>2,700</b> | <b>(20)</b>      | <b>(1%)</b>        | <b>231</b>      |

## Wages:

The labor market endorsement in this report considers the entry-level hourly wages for these technical theatre occupations in Orange County as they relate to the county's living wage. Los Angeles County wages are included below to provide a complete analysis of the LA/OC region.

At the direction of the California Community College Chancellor's Office, the living wage endorsement criteria in this report uses the University of Washington's Center for Women's Welfare Self-Sufficiency Standard, which the COE refers to as a living wage, to determine Orange County's living wage of \$27.13, last updated in March 2024. Additionally, data for the MIT Living Wage, updated on February 14, 2024, is provided as a reference. Currently, the MIT Living Wage in Orange County is \$30.48. Both figures, which account for geographic-specific costs of necessities such as housing, food, health care, and transportation to assess the cost of living, are notated in the exhibits below.

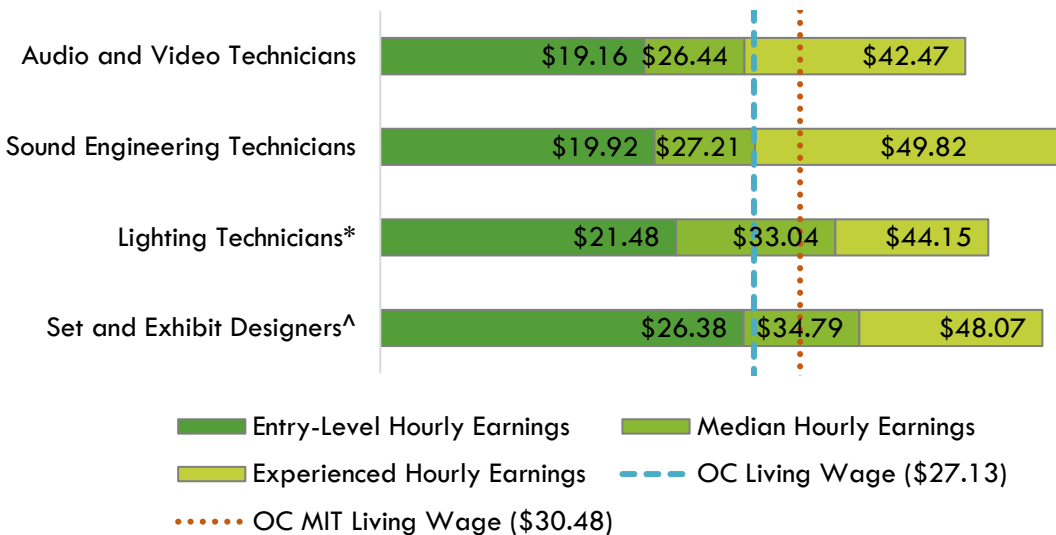
It is important to note that many workers in these technical theatre occupations in the Los Angeles/Orange County region are considered self-employed. Self-employed workers have different earning dynamics than wage and salaried workers, making direct comparisons difficult. Examples include deciphering what is a return to labor versus a return to capital, as well as showing possible negative earnings if expenses or investments exceed gross receipts.<sup>5</sup> For these reasons, wage data appears to be significantly lower than both the living wage and minimum wage.

<sup>4</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

<sup>5</sup> [https://www.brookings.edu/wp-content/uploads/2019/11/201911\\_Brookings-Metro\\_low-wage-workforce\\_Ross-Bateman.pdf](https://www.brookings.edu/wp-content/uploads/2019/11/201911_Brookings-Metro_low-wage-workforce_Ross-Bateman.pdf)

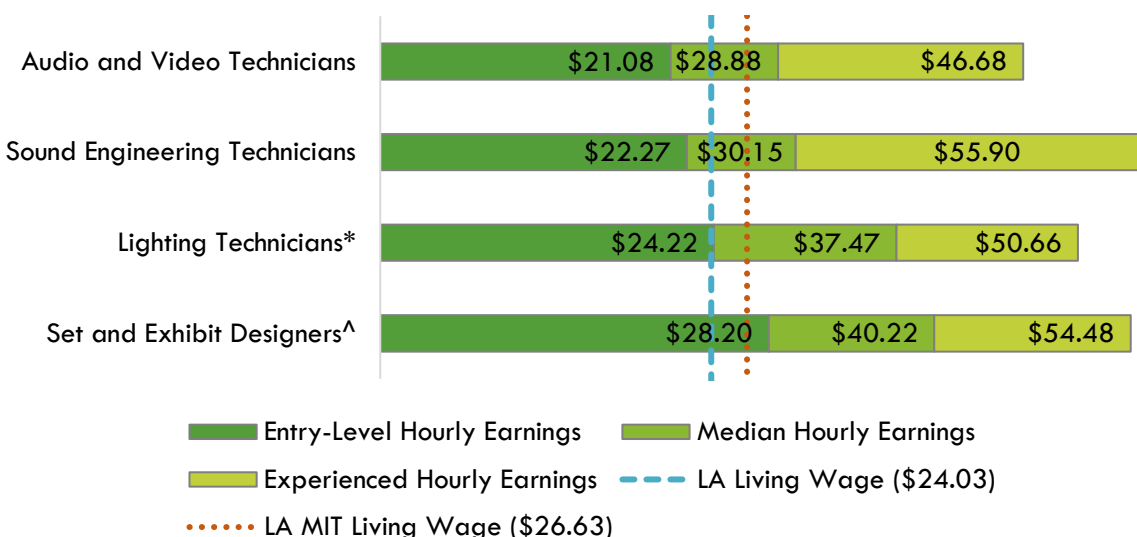
All annual openings for these middle-skill and below middle-skill technical theatre occupations have entry-level wages below the Self-Sufficiency Standard living wage for one adult (\$27.13 in Orange County). Typical entry-level hourly wages range between \$19.16 and \$21.48. Orange County's average wages (\$36.62) are nearly below the average statewide wage of \$39.20 for these occupations. Exhibit 6 shows the wage range for each of the four technical theatre occupations in Orange County and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

### Exhibit 6: Wages by Occupation in Orange County



The majority (81%) of annual openings for these middle-skill and below middle-skill technical theatre occupations have entry-level wages below the Self-Sufficiency Standard living wage for one adult (\$24.03 in Los Angeles County). Typical entry-level hourly wages range between \$21.08 and \$24.22. Los Angeles County's average wages (\$40.82) are above the average statewide wage of \$39.20 for these occupations. Exhibit 7 shows the wage range for each of the four technical theatre occupations in Los Angeles County and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

## Exhibit 7: Wages by Occupation in Los Angeles County



## Resilient Jobs and U.S. News & World Report Best Jobs:

Exhibit 8 shows if each occupation is considered an Orange County Great Recession-Resilient, COVID-19 Pandemic Recession-Resilient Job, or a 2024 U.S. News & World Report (USN&WR) Best Job. None of the four technical theatre occupations met the criteria to be considered any of the three designations.

## Exhibit 8: Resilient Jobs and USN&WR Best Jobs Designations

| Occupation                    | Great Recession-Resilient Job | COVID-19 Pandemic Recession-Resilient Job | 2024 USN&WR Best Job     |
|-------------------------------|-------------------------------|-------------------------------------------|--------------------------|
| <b>Below Middle-Skill</b>     |                               |                                           |                          |
| Lighting Technicians*         | <input type="checkbox"/>      | <input type="checkbox"/>                  | <input type="checkbox"/> |
| <b>Middle-Skill</b>           |                               |                                           |                          |
| Audio and Video Technicians   | <input type="checkbox"/>      | <input type="checkbox"/>                  | <input type="checkbox"/> |
| Sound Engineering Technicians | <input type="checkbox"/>      | <input type="checkbox"/>                  | <input type="checkbox"/> |
| <b>Above Middle-Skill</b>     |                               |                                           |                          |
| Set and Exhibit Designers^    | <input type="checkbox"/>      | <input type="checkbox"/>                  | <input type="checkbox"/> |

## Job Postings:

**Important Online Job Postings Data Note:** Online job postings data is sourced from Lightcast, a labor market analytics firm that scrapes, collects, and organizes data from online job boards such as LinkedIn, Indeed, Glassdoor, Monster, GovernmentJobs.com, and thousands more. Lightcast uses natural language processing (NLP) to determine the related company, industry, occupation, and other information for each job posting. However, NLP has limitations that include understanding contextual words or phrases; determining differences in words that can be used as nouns, verbs, and/or adjectives; and misspellings or grammatical errors.<sup>6</sup> For these reasons, job postings could be assigned to the wrong employer, industry, or occupation within Lightcast's database.

<sup>6</sup> K. R. Chowdhary, Fundamentals of Artificial Intelligence (Basingstoke: Springer Nature, 2020), <https://link.springer.com/book/10.1007/978-81-322-3972-7>.

Additionally, there are several limitations when analyzing job postings. A single job posting may not represent a single job opening, as employers may be creating a pool of candidates for future openings or hiring for multiple positions with a single posting. Additionally, not all jobs are posted online, and jobs may be filled through other methods such as internal promotion, word-of-mouth advertising, physical job boards, or a variety of other channels.

There were 1,236 online job postings related to these technical theatre occupations listed in the past 12 months. Exhibit 9 shows the number of job postings by occupation. The majority of job postings were for audio and video technicians (67%).

**Exhibit 9: Number of Job Postings by Occupation (n=1,236)**

| Occupation                    | Job Postings | Percentage of Job Postings |
|-------------------------------|--------------|----------------------------|
| Audio and Video Technicians   | 832          | 67%                        |
| Lighting Technicians*         | 183          | 15%                        |
| Sound Engineering Technicians | 125          | 10%                        |
| Set and Exhibit Designers^    | 96           | 8%                         |
| <b>Total Postings</b>         | <b>1,236</b> | <b>100%</b>                |

The top employers for the below middle-skill technical theatre occupation (*lighting technicians\**) in the region, by number of job postings, are shown in Exhibit 10.

**Exhibit 10: Below Middle-Skill Top Employers by Number of Job Postings (n=183)**

| Employer                                  | Job Postings | Percentage of Job Postings |
|-------------------------------------------|--------------|----------------------------|
| NBC                                       | 10           | 5%                         |
| Live Nation                               | 9            | 5%                         |
| Universal Studios Hollywood               | 6            | 3%                         |
| Production Resource Group                 | 5            | 3%                         |
| Solis Lighting And Electrical Services    | 5            | 3%                         |
| Superior Electrical Mechanical & Plumbing | 5            | 3%                         |
| Fullerton Electric Co.                    | 4            | 2%                         |
| Semp                                      | 4            | 2%                         |
| Elite Lighting                            | 3            | 2%                         |
| Istaffing Agency                          | 3            | 2%                         |

The top employers for the middle-skill technical theatre occupations (*audio and video technicians* and *sound engineering technicians*) in the region, by number of job postings, are shown in Exhibit 11.

**Exhibit 11: Middle-Skill Top Employers by Number of Job Postings (n=957)**

| Employer               | Job Postings | Percentage of Job Postings |
|------------------------|--------------|----------------------------|
| Encore                 | 37           | 4%                         |
| Walmart                | 37           | 4%                         |
| Encore Global          | 29           | 3%                         |
| Five Star Audio Visual | 23           | 2%                         |
| Skechers               | 23           | 2%                         |
| Insight Global         | 17           | 2%                         |
| Eidim Group            | 15           | 2%                         |
| Gig Life               | 13           | 1%                         |

| Employer                 | Job Postings | Percentage of Job Postings |
|--------------------------|--------------|----------------------------|
| University of California | 13           | 1%                         |
| Pinnacle Live            | 12           | 1%                         |

The top employers for the above middle-skill technical theatre occupation (*set and exhibit designers*<sup>^</sup>) in the region, by number of job postings, are shown in Exhibit 12.

### Exhibit 12: Top Above Middle-Skill Employers by Number of Job Postings (n=96)

| Employer                                                   | Job Postings | Percentage of Job Postings |
|------------------------------------------------------------|--------------|----------------------------|
| Oc Fair & Event Center                                     | 9            | 9%                         |
| Disney                                                     | 6            | 6%                         |
| California Science Center                                  | 3            | 3%                         |
| California Science Center Foundation                       | 3            | 3%                         |
| French Buckets                                             | 2            | 2%                         |
| Happily                                                    | 2            | 2%                         |
| Last.Fm                                                    | 2            | 2%                         |
| Museum Of Ice Cream                                        | 2            | 2%                         |
| Natural History Museum Of Los Angeles<br>County Foundation | 2            | 2%                         |
| Nickelodeon Animation                                      | 2            | 2%                         |

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown for the below middle-skill occupation (*lighting technicians*<sup>\*</sup>) in Exhibit 13.

### Exhibit 13: Top Skills for the Below Middle-Skill Occupation by Number of Job Postings (n=183)

| Top Specialized Skills             | Top Soft Skills                        | Top Computer Skills   |
|------------------------------------|----------------------------------------|-----------------------|
| Lighting Systems (31)              | Communication (65)                     | Microsoft Office (29) |
| Stage Lighting (30)                | Troubleshooting (Problem Solving) (50) | Adobe Photoshop (9)   |
| Electrical Wiring (26)             | Management (42)                        | AutoCAD (9)           |
| Rigging (20)                       | Lifting Ability (37)                   | Microsoft Excel (8)   |
| Lighting Design (19)               | Customer Service (30)                  | Vectorworks (8)       |
| Project Implementation (19)        | Microsoft Office (29)                  | AGi32 (7)             |
| Theatre Production (19)            | Leadership (27)                        | Adobe InDesign (5)    |
| Environment Health And Safety (18) | Interpersonal Communications (24)      | Autodesk Revit (5)    |
| Design Documentation (17)          | Good Driving Record (23)               | Lightwright (5)       |
| Project Management (17)            | Organizational Skills (23)             | Operating Systems (5) |

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown for the middle-skill occupations (*audio and video technicians* and *sound engineering technicians*) in Exhibit 14.

**Exhibit 14: Top Skills for Middle-Skill Occupations  
by Number of Job Postings (n=957)**

| Top Specialized Skills        | Top Soft Skills                         | Top Computer Skills                 |
|-------------------------------|-----------------------------------------|-------------------------------------|
| Crestron (A/V Systems) (138)  | Communication (416)                     | Microsoft Office (55)               |
| Project Management (133)      | Troubleshooting (Problem Solving) (413) | Microsoft Excel (52)                |
| Audio-Visual Technology (118) | Customer Service (311)                  | Microsoft PowerPoint (41)           |
| Audiovisual Equipment (108)   | Operations (227)                        | Zoom (Video Conferencing Tool) (40) |
| Control Systems (92)          | Management (221)                        | Microsoft Outlook (38)              |
| Electrical Wiring (90)        | Problem Solving (189)                   | Microsoft Teams (31)                |
| Effective Communication (88)  | Detail Oriented (184)                   | Mac OS (25)                         |
| Low Voltage (80)              | Lifting Ability (132)                   | Operating Systems (24)              |
| Equipment Operation (74)      | Professionalism (122)                   | Business Software (23)              |
| Electronic Components (73)    | Video Conferencing (112)                | Control4 (23)                       |

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown for the above middle-skill occupation (*set and exhibit designers*<sup>^</sup>) in Exhibit 15.

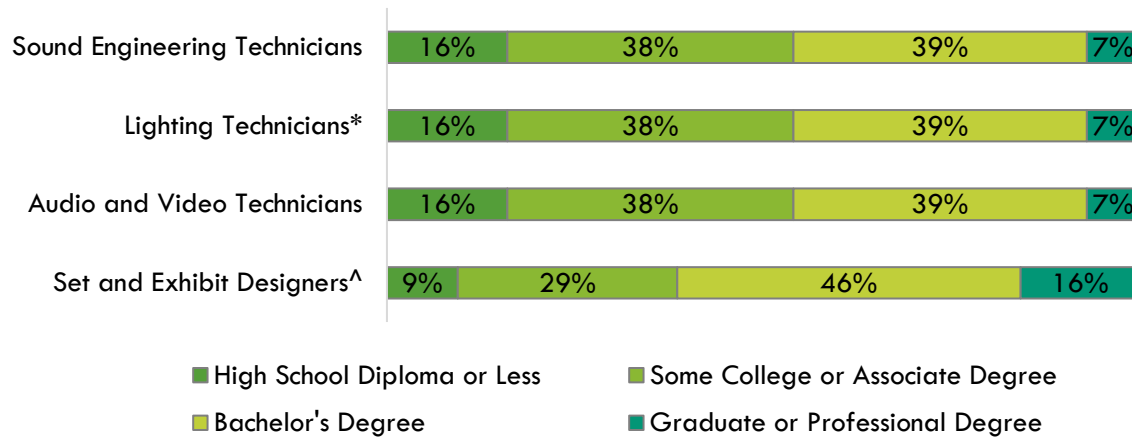
**Exhibit 15: Top Skills for the Above Middle-Skill Occupation  
by Number of Job Postings (n=96)**

| Top Specialized Skills                   | Top Soft Skills       | Top Software and Computer Skills     |
|------------------------------------------|-----------------------|--------------------------------------|
| AutoCAD (15)                             | Communication (39)    | AutoCAD (15)                         |
| Computer-Aided Design (11)               | Problem Solving (17)  | Microsoft Office (10)                |
| Workflow Management (11)                 | Customer Service (15) | SketchUp (3D Modeling Software) (10) |
| Exhibit Design (10)                      | Detail Oriented (15)  | Design Software (9)                  |
| Marketing (10)                           | Leadership (15)       | Autodesk Revit (7)                   |
| SketchUp (3D Modeling Software) (10)     | Time Management (15)  | Linux (7)                            |
| Design Software (9)                      | Coordinating (13)     | Microsoft Excel (7)                  |
| Exhibitions (9)                          | Writing (13)          | Rhinoceros 3D (7)                    |
| Additive Manufacturing (3D Printing) (8) | Innovation (12)       | SolidWorks (CAD) (7)                 |
| Floor Planning (8)                       | Multitasking (11)     | C (Programming Language) (6)         |

## Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for *lighting technicians\**, a postsecondary nondegree award for *sound engineering technicians* and *audio and visual technicians*, and a bachelor's degree for *set and exhibit designers*<sup>^</sup>. However, the national-level educational attainment data indicates between 29% and 38% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 16 shows the educational attainment for each occupation, sorted by highest community college educational attainment to lowest.

**Exhibit 16: National-level Educational Attainment for Occupations**



Of the 45% of the cumulative job postings for the middle-skill technical theatre occupations that listed a minimum education requirement in Los Angeles/Orange County, 63% (271) requested a high school diploma, vocational training, or an associate degree and 35% (149) requested a bachelor's degree.

Conversely, of the 45% of the postings for the below middle-skill technical theatre occupation that listed a minimum education requirement, 56% (46) requested a bachelor's degree and 44% (36) requested a high school diploma or an associate degree. Of the 41% of the postings for the above middle-skill technical theatre occupation that listed a minimum education requirement, 85% (33) requested a bachelor's degree and 10% (4) requested a high school diploma or an associate degree.

# Educational Supply

## Community College Supply:

Exhibit 17 shows the three-year average number of awards conferred by community colleges in the related TOP codes:

- Radio and Television (0604.00)
- Radio (0604.10)
- Television (including combined TV/Film/Video) (0604.20)
- Mass Communications (0610.00)
- Commercial Music (1005.00)
- Technical Theatre (1006.00)
- Applied Design (1009.00)
- Applied Photography (1012.00)

No awards were conferred under the following related TOP code: Technical Illustration (0953.60).

The colleges with the most completions in the region are Saddleback, Fullerton, and Mt. San Antonio. Over the past 12 months, there were three related program recommendation requests from regional community colleges.

### Exhibit 17: Regional Community College Awards (Certificates and Degrees), 2020-2023

| TOP<br>Code             | Program                                                | College        | 2020-<br>2021<br>Awards | 2021-<br>2022<br>Awards | 2022-<br>2023<br>Awards | 3-Year<br>Award<br>Average |
|-------------------------|--------------------------------------------------------|----------------|-------------------------|-------------------------|-------------------------|----------------------------|
| 0604.00                 | Radio and<br>Television                                | LA Valley      | 12                      | 9                       | 15                      | 12                         |
|                         |                                                        | Long Beach     | 2                       | 7                       | 9                       | 6                          |
|                         |                                                        | Mt San Antonio | 0                       | 0                       | 1                       | 0                          |
|                         |                                                        | Santa Monica   | 16                      | 8                       | 5                       | 10                         |
|                         |                                                        | LA Subtotal    | 30                      | 24                      | 30                      | 28                         |
|                         |                                                        | Fullerton      | 2                       | 1                       | 1                       | 1                          |
|                         |                                                        | Saddleback     | 98                      | 144                     | 112                     | 118                        |
|                         |                                                        | OC Subtotal    | 100                     | 145                     | 113                     | 119                        |
| Supply Subtotal/Average |                                                        |                | 130                     | 169                     | 143                     | 147                        |
| 0604.10                 | Radio                                                  | LA Valley      | 3                       | 4                       | 4                       | 4                          |
|                         |                                                        | Mt San Antonio | 0                       | 0                       | 12                      | 4                          |
|                         |                                                        | Pasadena       | 1                       | 1                       | 2                       | 1                          |
|                         |                                                        | LA Subtotal    | 4                       | 5                       | 18                      | 9                          |
|                         |                                                        | Fullerton      | 5                       | 0                       | 3                       | 3                          |
|                         |                                                        | OC Subtotal    | 5                       | 0                       | 3                       | 3                          |
| Supply Subtotal/Average |                                                        |                | 9                       | 5                       | 21                      | 12                         |
| 0604.20                 | Television<br>(including<br>combined<br>TV/film/video) | Cerritos       | 5                       | 13                      | 11                      | 10                         |
|                         |                                                        | El Camino      | 27                      | 32                      | 25                      | 28                         |
|                         |                                                        | Glendale       | 17                      | 25                      | 27                      | 23                         |
|                         |                                                        | LA City        | 45                      | 35                      | 30                      | 37                         |
|                         |                                                        | LA Mission     | 0                       | 0                       | 1                       | 0                          |

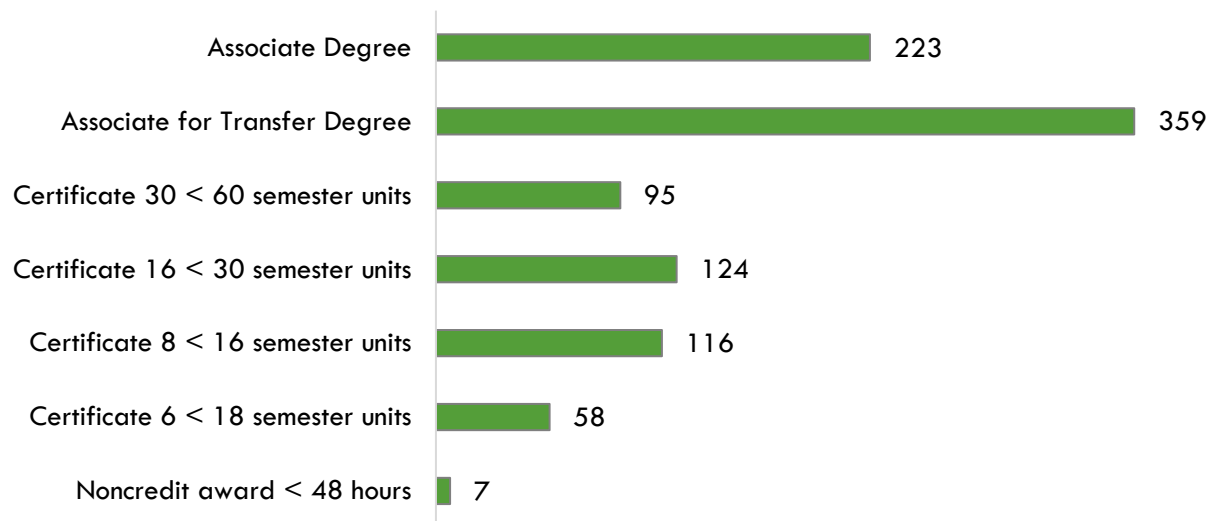
| TOP<br>Code             | Program                | College                 | 2020-<br>2021<br>Awards | 2021-<br>2022<br>Awards | 2022-<br>2023<br>Awards | 3-Year<br>Award<br>Average |
|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----------------------------|
|                         |                        | LA Pierce               | 29                      | 31                      | 31                      | 30                         |
|                         |                        | LA Valley               | 42                      | 48                      | 38                      | 43                         |
|                         |                        | Long Beach              | 42                      | 49                      | 43                      | 45                         |
|                         |                        | Mt San Antonio          | 34                      | 50                      | 78                      | 54                         |
|                         |                        | Pasadena                | 65                      | 51                      | 37                      | 51                         |
|                         |                        | LA Subtotal             | 306                     | 334                     | 321                     | 320                        |
|                         |                        | Cypress                 | 16                      | 20                      | 21                      | 19                         |
|                         |                        | Fullerton               | 52                      | 55                      | 54                      | 54                         |
|                         |                        | Orange Coast            | 22                      | 46                      | 38                      | 35                         |
|                         |                        | Saddleback              | 0                       | 15                      | 25                      | 13                         |
|                         |                        | Santa Ana               | 6                       | 13                      | 17                      | 12                         |
|                         |                        | OC Subtotal             | 96                      | 149                     | 155                     | 133                        |
|                         |                        | Supply Subtotal/Average |                         |                         | 402                     | 483                        |
| 0610.00                 | Mass<br>Communications | Glendale                | 0                       | 0                       | 1                       | 0                          |
|                         |                        | Long Beach              | 0                       | 0                       | 5                       | 2                          |
|                         |                        | LA Subtotal             | 0                       | 0                       | 6                       | 2                          |
|                         |                        | -                       | -                       | -                       | -                       | -                          |
|                         |                        | OC Subtotal             | -                       | -                       | -                       | -                          |
| Supply Subtotal/Average |                        |                         | 0                       | 0                       | 6                       | 2                          |
| 1005.00                 | Commercial Music       | Cerritos                | 8                       | 13                      | 6                       | 9                          |
|                         |                        | Citrus                  | 51                      | 26                      | 36                      | 38                         |
|                         |                        | Compton                 | 1                       | 0                       | 1                       | 1                          |
|                         |                        | East LA                 | 2                       | 0                       | 6                       | 3                          |
|                         |                        | Glendale                | 2                       | 0                       | 0                       | 1                          |
|                         |                        | LA City                 | 12                      | 25                      | 11                      | 16                         |
|                         |                        | LA Harbor               | 0                       | 7                       | 4                       | 4                          |
|                         |                        | LA Pierce               | 0                       | 0                       | 1                       | 0                          |
|                         |                        | LA Valley               | 6                       | 18                      | 12                      | 12                         |
|                         |                        | Long Beach              | 1                       | 0                       | 0                       | 0                          |
|                         |                        | Pasadena                | 2                       | 0                       | 3                       | 2                          |
|                         |                        | Rio Hondo               | 0                       | 1                       | 8                       | 3                          |
|                         |                        | LA Subtotal             | 85                      | 90                      | 88                      | 88                         |
|                         |                        | Cypress                 | 10                      | 12                      | 11                      | 11                         |
|                         |                        | Fullerton               | 8                       | 7                       | 2                       | 6                          |
|                         |                        | Orange Coast            | 1                       | 1                       | 0                       | 1                          |
|                         |                        | Saddleback              | 61                      | 95                      | 45                      | 67                         |
|                         |                        | Santa Ana               | 7                       | 7                       | 6                       | 7                          |

| TOP Code | Program             | College                 | 2020-2021 Awards | 2021-2022 Awards | 2022-2023 Awards | 3-Year Award Average |
|----------|---------------------|-------------------------|------------------|------------------|------------------|----------------------|
|          |                     | OC Subtotal             | 87               | 122              | 64               | 91                   |
|          |                     | Supply Subtotal/Average | 172              | 212              | 152              | 179                  |
| 1006.00  | Technical Theatre   | Citrus                  | 7                | 5                | 2                | 5                    |
|          |                     | East LA                 | 6                | 32               | 13               | 17                   |
|          |                     | Glendale                | 0                | 2                | 0                | 1                    |
|          |                     | LA City                 | 2                | 4                | 7                | 4                    |
|          |                     | LA Pierce               | 7                | 3                | 0                | 3                    |
|          |                     | LA Valley               | 1                | 1                | 2                | 1                    |
|          |                     | Mt San Antonio          | 0                | 0                | 2                | 1                    |
|          |                     | Pasadena                | 2                | 1                | 0                | 1                    |
|          |                     | Santa Monica            | 6                | 16               | 8                | 10                   |
|          |                     | LA Subtotal             | 31               | 64               | 34               | 43                   |
|          |                     | Cypress                 | 7                | 6                | 2                | 5                    |
|          |                     | Fullerton               | 33               | 0                | 4                | 12                   |
|          |                     | Irvine                  | 4                | 3                | 1                | 3                    |
|          |                     | Saddleback              | 4                | 3                | 2                | 3                    |
|          |                     | Santa Ana               | 6                | 2                | 0                | 3                    |
|          |                     | OC Subtotal             | 54               | 14               | 9                | 26                   |
|          |                     | Supply Subtotal/Average | 85               | 78               | 43               | 69                   |
| 1009.00  | Applied Design      | -                       | -                | -                | -                | -                    |
|          |                     | LA Subtotal             | -                | -                | -                | -                    |
|          |                     | Orange Coast            | 1                | 0                | 0                | 0                    |
|          |                     | OC Subtotal             | 1                | 0                | 0                | 0                    |
|          |                     | Supply Subtotal/Average | 1                | 0                | 0                | 0                    |
| 1012.00  | Applied Photography | East LA                 | 1                | 0                | 6                | 2                    |
|          |                     | El Camino               | 7                | 10               | 7                | 8                    |
|          |                     | Glendale                | 5                | 6                | 16               | 9                    |
|          |                     | LA City                 | 5                | 8                | 6                | 6                    |
|          |                     | LA Pierce               | 3                | 2                | 7                | 4                    |
|          |                     | LA Valley               | 0                | 3                | 11               | 5                    |
|          |                     | Mt San Antonio          | 10               | 32               | 30               | 24                   |
|          |                     | Pasadena                | 1                | 10               | 4                | 5                    |
|          |                     | Santa Monica            | 33               | 31               | 21               | 28                   |
|          |                     | LA Subtotal             | 65               | 102              | 108              | 92                   |
|          |                     | Cypress                 | 2                | 2                | 7                | 4                    |
|          |                     | Fullerton               | 4                | 5                | 16               | 8                    |
|          |                     | Orange Coast            | 21               | 10               | 16               | 16                   |

| TOP Code                | Program | College     | 2020-2021 Awards | 2021-2022 Awards | 2022-2023 Awards | 3-Year Award Average |
|-------------------------|---------|-------------|------------------|------------------|------------------|----------------------|
|                         |         | OC Subtotal | 27               | 17               | 39               | 28                   |
| Supply Subtotal/Average |         |             | 92               | 119              | 147              | 119                  |
| Supply Total/Average    |         |             | 891              | 1,066            | 988              | 982                  |

Exhibit 18 shows the annual average community college awards by type from 2020-21 to 2022-23. The plurality of the awards are for associate for transfer degrees, distantly followed by associate degrees and certificates between 16 and less than 30 semester units.

### Exhibit 18: Annual Average Community College Awards by Type, 2020-2023



### Community College Student Outcomes:

Exhibit 19 shows the Strong Workforce Program (SWP) metrics for technical theatre programs in North Orange County Community College District (NOCCCD), the Orange County Region, and California. Of the 486 Orange County technical theatre students in the 2020-21 academic year, 56% (274) attended an NOCCCD college.

NOCCCD students that exited technical theatre programs in the 2021-22 academic year had lower median annual earnings (\$22,874 or \$11.00 per hour) compared to all technical theatre students in Orange County (\$27,520 or \$13.23 per hour). A quarter (25%) of Orange County technical theatre students attained the living wage; due to a low number of students, this figure is not available at the district-level.

### Exhibit 19: Technical Theatre (1006.00) Strong Workforce Program Metrics, 2021-22<sup>7</sup>

| SWP Metric                                                                                | NOCCCD | OC Region | California |
|-------------------------------------------------------------------------------------------|--------|-----------|------------|
| SWP Students                                                                              | 274    | 486       | 3,277      |
| SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year | 16%    | 18%       | 18%        |

<sup>7</sup> All SWP metrics are for 2020-21 unless otherwise noted.

| SWP Metric                                                                                | NOCCCD             | OC Region          | California         |
|-------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------|
| SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course                | Insufficient Data  | Insufficient Data  | 67%                |
| SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status | Insufficient Data  | Insufficient Data  | 56                 |
| SWP Students Who Transferred to a Four-Year Postsecondary Institution (2019-20)           | 25                 | 56                 | 432                |
| SWP Students with a Job Closely Related to Their Field of Study (2019-20)                 | 80%                | 83%                | 55%                |
| Median Annual Earnings for SWP Exiting Students (2020-21)                                 | \$22,874 (\$11.00) | \$27,520 (\$13.23) | \$26,144 (\$12.57) |
| Median Change in Earnings for SWP Exiting Students (2020-21)                              | 56%                | 23%                | 40%                |
| SWP Exiting Students Who Attained the Living Wage (2020-21)                               | Insufficient Data  | 25%                | 30%                |

## Non-Community College Supply:

To comprehensively analyze the regional supply, it is crucial to include data from other institutions offering technical theatre training programs. Exhibit 20 displays the annual and three-year average awards granted by these institutions under the related Classification of Instructional Programs (CIP) codes:

- Photographic and Film/Video Technology/Technician (10.0201)
- Radio and Television Broadcasting Technology/Technician (10.0202)
- Recording Arts Technology/ Technician (10.0203)
- Design and Visual Communications, General (50.0401)
- Illustration (50.0410)
- Technical Theatre/Theatre Design and Technology (50.0502)
- Music Technology (50.0913)

No awards were conferred under the following related CIP codes:

- Communications Technology/Technician (10.0105)
- Audio Engineering Technology/Technician (15.0307)

The available data covers 2019 to 2022. During this period, non-community college institutions in the region conferred an average of 987 awards annually in related programs.

### Exhibit 20: Regional Non-Community College Awards, 2019-2022

| CIP Code                       | Program                                                   | College                    | 2019-2020 Awards | 2020-2021 Awards | 2021-2022 Awards | 3-Year Award Average |
|--------------------------------|-----------------------------------------------------------|----------------------------|------------------|------------------|------------------|----------------------|
| 10.0201                        | Photographic and Film / Video Technology / Technician     | Chapman University         | 0                | 1                | 0                | 0                    |
| <b>Supply Subtotal/Average</b> |                                                           |                            | <b>0</b>         | <b>1</b>         | <b>0</b>         | <b>0</b>             |
| 10.0202                        | Radio and Television Broadcasting Technology / Technician | Hollywood Cultural College | 20               | 12               | 20               | 17                   |

| CIP Code                | Program                                                 | College                                                | 2019-<br>2020<br>Awards | 2020-<br>2021<br>Awards | 2021-<br>2022<br>Awards | 3-Year<br>Award<br>Average |
|-------------------------|---------------------------------------------------------|--------------------------------------------------------|-------------------------|-------------------------|-------------------------|----------------------------|
| Supply Subtotal/Average |                                                         |                                                        | 20                      | 12                      | 20                      | 17                         |
| 10.0203                 | Recording Arts<br>Technology /<br>Technician            | California State<br>University-<br>Dominguez Hills     | 0                       | 2                       | 9                       | 4                          |
|                         |                                                         | Columbia College<br>Hollywood                          | 0                       | 21                      | 3                       | 8                          |
|                         |                                                         | Loyola Marymount<br>University                         | 13                      | 12                      | 13                      | 13                         |
|                         |                                                         | Mount Saint Mary's<br>University                       | 0                       | 0                       | 0                       | 0                          |
|                         |                                                         | Musicians Institute                                    | 73                      | 48                      | 31                      | 51                         |
| Supply Subtotal/Average |                                                         |                                                        | 86                      | 83                      | 56                      | 75                         |
| 50.0401                 | Design and<br>Visual<br>Communications,<br>General      | Azusa Pacific<br>University                            | 0                       | 0                       | 12                      | 4                          |
|                         |                                                         | Bethesda University                                    | 0                       | 0                       | 0                       | 0                          |
|                         |                                                         | Biola University                                       | 3                       | 9                       | 9                       | 7                          |
|                         |                                                         | California State<br>Polytechnic<br>University-Pomona   | 0                       | 0                       | 0                       | 0                          |
|                         |                                                         | Columbia College<br>Hollywood                          | 0                       | 7                       | 1                       | 3                          |
|                         |                                                         | FIDM-Fashion<br>Institute of Design &<br>Merchandising | 90                      | 69                      | 57                      | 72                         |
|                         |                                                         | Gnomon                                                 | 19                      | 42                      | 31                      | 31                         |
|                         |                                                         | Los Angeles Pacific<br>College                         | 13                      | 1                       | 1                       | 5                          |
|                         |                                                         | Otis College of Art<br>and Design                      | 36                      | 30                      | 39                      | 35                         |
|                         |                                                         | University of<br>California-Los<br>Angeles             | 0                       | 0                       | 1                       | 0                          |
|                         |                                                         | University of La<br>Verne                              | 0                       | 0                       | 0                       | 0                          |
|                         |                                                         | University of<br>Southern California                   | 12                      | 30                      | 49                      | 30                         |
| Supply Subtotal/Average |                                                         |                                                        | 173                     | 188                     | 200                     | 187                        |
| 50.0410                 | Illustration                                            | Art Center College<br>of Design                        | 140                     | 170                     | 149                     | 153                        |
|                         |                                                         | Laguna College of<br>Art and Design                    | 16                      | 24                      | 35                      | 25                         |
| Supply Subtotal/Average |                                                         |                                                        | 156                     | 194                     | 184                     | 178                        |
| 50.0502                 | Technical Theatre<br>/ Theatre Design<br>and Technology | California Institute<br>of the Arts                    | 28                      | 34                      | 22                      | 28                         |
|                         |                                                         | Chapman University                                     | 0                       | 1                       | 0                       | 0                          |

| CIP Code                | Program          | College                                    | 2019-<br>2020<br>Awards | 2020-<br>2021<br>Awards | 2021-<br>2022<br>Awards | 3-Year<br>Award<br>Average |
|-------------------------|------------------|--------------------------------------------|-------------------------|-------------------------|-------------------------|----------------------------|
|                         |                  | Pepperdine University                      | 6                       | 3                       | 1                       | 3                          |
|                         |                  | University of Southern California          | 4                       | 10                      | 8                       | 7                          |
|                         |                  | Vanguard University of Southern California | 1                       | 1                       | 1                       | 1                          |
| Supply Subtotal/Average |                  |                                            | 39                      | 49                      | 32                      | 40                         |
| 50.0913                 | Music Technology | California College of Music                | 0                       | 3                       | 3                       | 2                          |
|                         |                  | Los Angeles College of Music               | 21                      | 19                      | 14                      | 18                         |
|                         |                  | Los Angeles Film School                    | 474                     | 524                     | 411                     | 470                        |
|                         |                  | Mount Saint Mary's University              | 0                       | 0                       | 0                       | 0                          |
|                         |                  | The Master's University and Seminary       | 0                       | 0                       | 0                       | 0                          |
| Supply Subtotal/Average |                  |                                            | 495                     | 546                     | 428                     | 490                        |
| Supply Total/Average    |                  |                                            | 969                     | 1,073                   | 920                     | 987                        |

## Regional Demographics

This section examines demographic data for Orange County community college students in technical theatre programs compared to the OC population, along with occupational data, to identify potential diversity and equity issues addressable by community college programs.

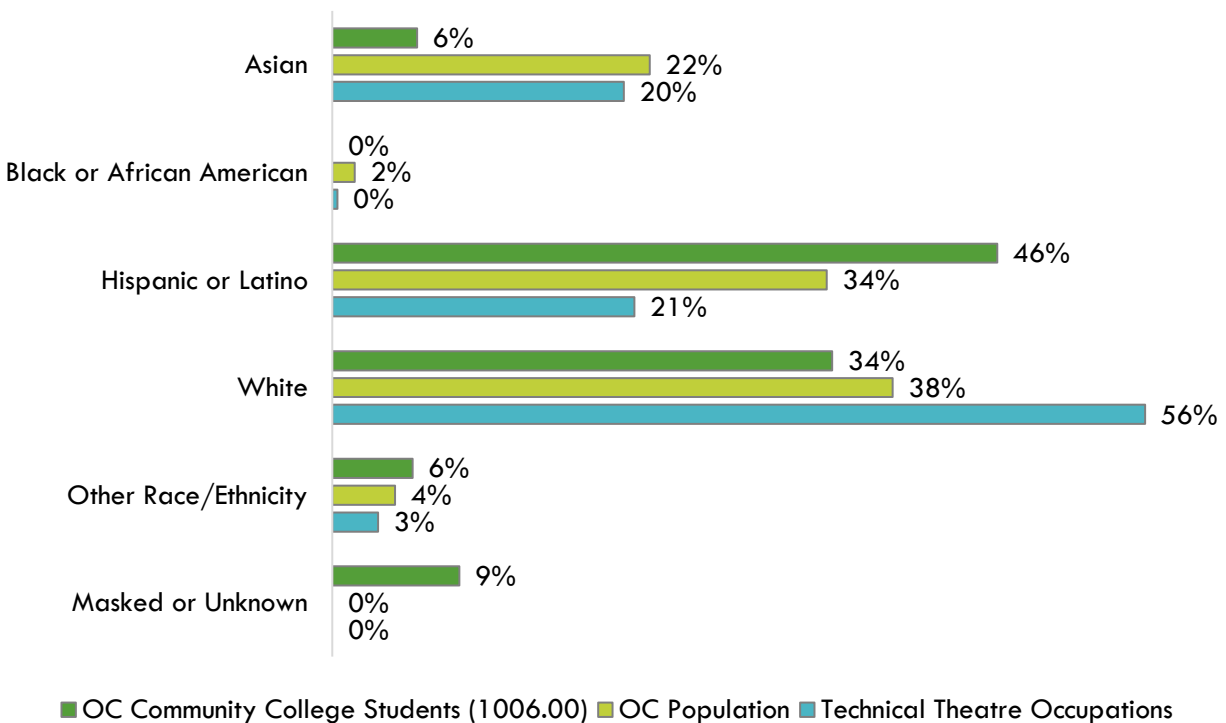
### Ethnicity:

Exhibit 21 compares the ethnicity of Orange County community college students enrolled in technical theatre programs, the overall Orange County population, and occupation-specific data for the four technical theatre occupations included in this report.

A majority of workers employed in these technical theatre occupations are white (56%), which is much higher than the population (38%) and community college technical theatre students (34%). Conversely, almost half of community college technical theatre students are Hispanic or Latino (46%), which is higher than the population (34%) and workers in the field (21%). Additionally, 22% of the population is Asian, which is slightly above workers in these occupations and significantly higher than community college technical theatre students (6%).

Examining disaggregated data for each occupation (not shown), white individuals account for the majority of workers (53%-60%) across all four technical theatre occupations and Hispanic or Latino workers account for the second largest ethnic group (27%) in all occupations except *set and exhibit designers*<sup>^</sup>, in which Asian workers represent over a fourth (27%) of the workforce. The *set and exhibit designers*<sup>^</sup> occupation has the highest entry-level wages and education requirements of the four technical theatre occupations.

Exhibit 21: Program and County Demographics by Ethnicity



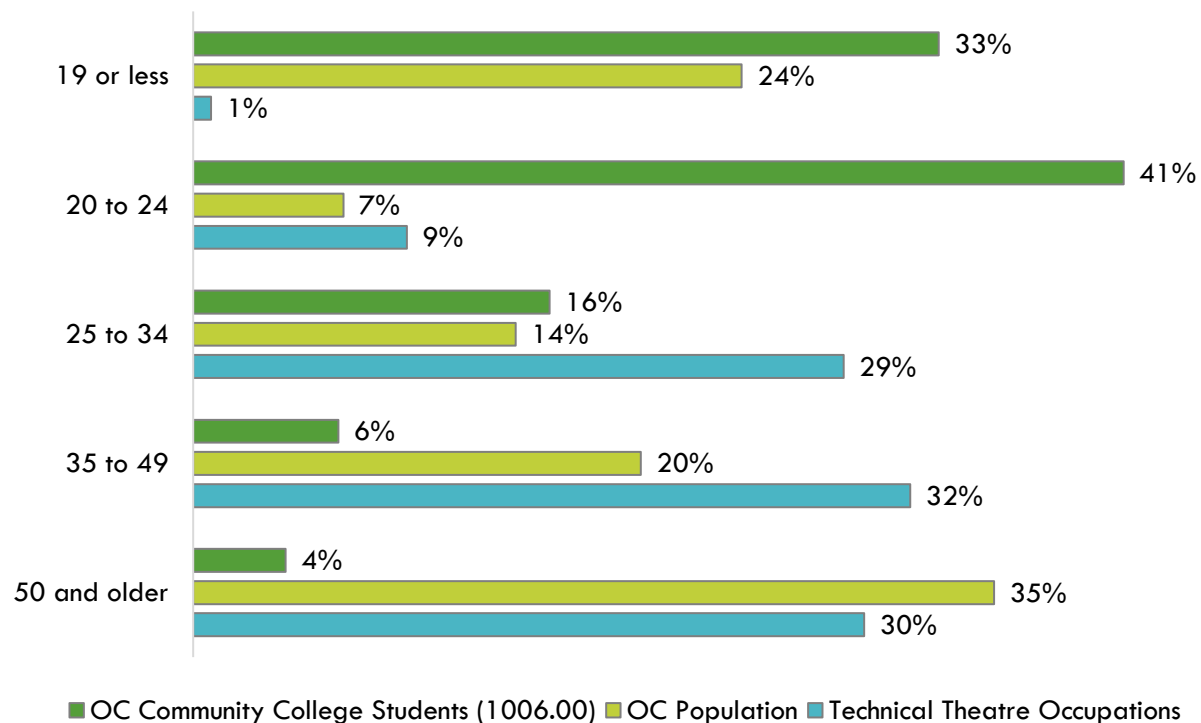
## Age:

Exhibit 22 compares the age of Orange County community college students enrolled in technical theatre programs, the overall Orange County population, and occupation-specific data for the four technical theatre occupations included in this report.

The majority of workers in these technical theatre occupations are age 35 and older (61%), which is higher than the population (55%) and significantly higher than community college technical theatre students (10%). Conversely, the vast majority of community college technical theatre students are 34 or less (90%), which is double the population (45%) and significantly above workers in the field (39%). Of the 90% of community college technical theatre students who are 34 or less, 82% are 24 or less.

Examining disaggregated data for each occupation (not shown), individuals 25 to 34 accounts for the plurality of workers in *audio and video technicians*, *sound engineering technicians*, and *lighting technicians*\* (36% each). Conversely, individuals 50 and older represent the plurality of workers in *set and exhibit designers*^, which has the highest entry-level wages and education requirements of the four technical theatre occupations.

Exhibit 22: Program and County Demographics by Age



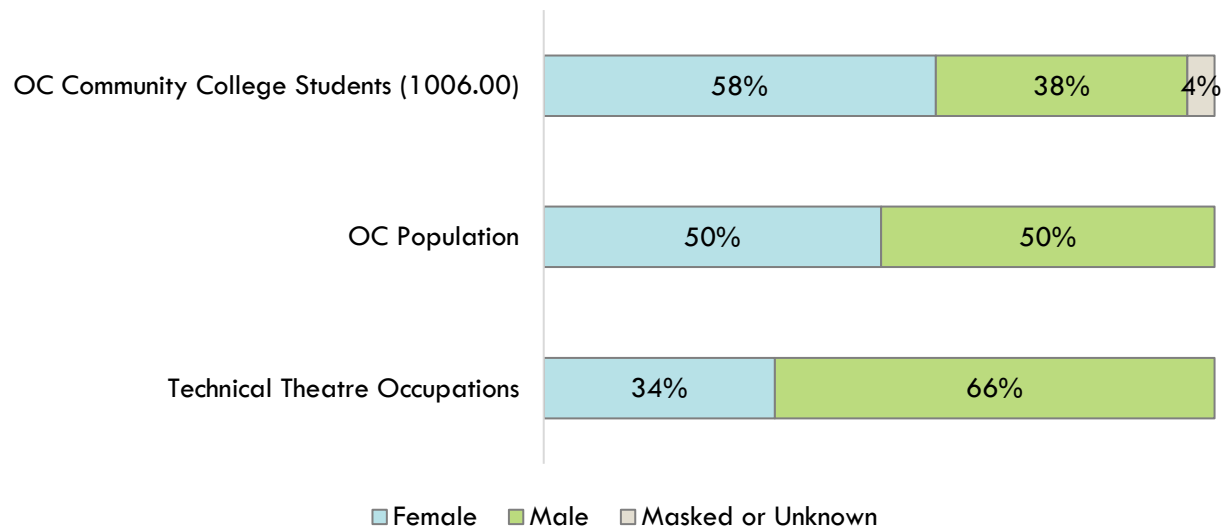
## Sex:

Exhibit 23 compares the sex of Orange County community college students enrolled in technical theatre programs, the overall Orange County population, and occupation-specific data for these technical theatre occupations.

Though the majority of community college technical theatre students are women (58%) and the population is split evenly between women and men, only 34% of workers in the field are women.

Examining disaggregated data for each occupation (not shown), the occupation with the highest percentage of women is *set and exhibit designers*<sup>^</sup>, which has the highest entry-level wages and education requirements of the four technical theatre occupations.

### Exhibit 23: Program and County Demographics by Sex



## Appendix A: Methodology

The OC COE prepared this report by analyzing data from occupations and education programs. Occupational data is derived from Lightcast, a labor market analytics firm that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS) and other government agencies. Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Using a TOP-SOC crosswalk, the OC COE identified middle-skill jobs for which programs within these TOP codes train. Middle-skill jobs include:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

The OC COE determined labor market supply for an occupation or SOC code by analyzing the number of program completers or awards in a related TOP or CIP code. The COE developed a "supply table" with this information, which is the source of the program supply data for this report. TOP code data comes from the California Community Colleges Chancellor's Office MIS Data Mart ([datamart.cccco.edu](http://datamart.cccco.edu)) and CIP code data comes from the Integrated Postsecondary Education Data System ([nces.ed.gov/ipeds/use-the-data](http://nces.ed.gov/ipeds/use-the-data)), also known as IPEDS. TOP is a system of numerical codes used at the state level to collect and report information on California community college programs and courses throughout the state that have similar outcomes. CIP codes are a taxonomy of academic disciplines at institutions of higher education in the United States and Canada. Institutions outside of the California Community College system do not use TOP codes in their reporting systems.

Data included in this analysis represent the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the OC COE. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study which can signal demand and show what employers are looking for in potential employees but is not a perfect measure of the quantity of open positions.

All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

## Appendix B: Data Sources

| Data Type                                                                                     | Source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Occupational Projections, Wages, and Job Postings                                             | Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics and the American Community Survey. For more information, see <a href="https://lightcast.io/">https://lightcast.io/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Living Wage                                                                                   | <p>“Living Wage” measures the income necessary for an individual or family to afford basic expenses by assessing the costs such as housing, food, child care, health care, transportation, and taxes.</p> <p>Per the CCCCCO's this report's endorsement criteria uses the University of Washington's Center for Women's Welfare Self-Sufficiency Standard last updated in March 2024, which is \$27.13 per hour (\$56,451 annually) in Orange County. For more information, see: <a href="http://www.selfsufficiencystandard.org/California">http://www.selfsufficiencystandard.org/California</a></p> <p>The MIT Living Wage, updated on February 14, 2024, is a nationally recognized living wage metric and is provided for reference. The current MIT Living Wage in Orange County is \$30.48. For more information, see: <a href="https://livingwage.mit.edu/counties/06059">https://livingwage.mit.edu/counties/06059</a></p> |
| Typical Education and Training Requirements, and Educational Attainment                       | The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see <a href="https://www.bls.gov/emp/documentation/education/tech.htm">https://www.bls.gov/emp/documentation/education/tech.htm</a>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences | The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. For more information, see <a href="https://www.onetonline.org/help/online/">https://www.onetonline.org/help/online/</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Educational Supply                                                                            | <p>The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: <a href="https://datamart.cccco.edu">https://datamart.cccco.edu</a></p> <p>The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see <a href="https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions">https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions</a></p>                                                                                                                                                                                                                                                                                                                       |
| Student Metrics and Demographics                                                              | LaunchBoard, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: <a href="https://www.calpassplus.org/LaunchBoard/Home.aspx">https://www.calpassplus.org/LaunchBoard/Home.aspx</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

| Data Type                                 | Source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Population and Occupation<br>Demographics | <p>The Census Bureau's American Community Survey (ACS) is the premier source for detailed population and housing information. For more information, see: <a href="https://www.census.gov/programs-surveys/acs">https://www.census.gov/programs-surveys/acs</a></p> <p>Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: <a href="https://usa.ipums.org/usa/about.shtml">https://usa.ipums.org/usa/about.shtml</a></p> |

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