

# Technical Appendix:

Postsecondary to Prosperity Dashboard version 2.0

## Table of Contents

<b>The Regions</b>	<b>2</b>
<b>Data Sources</b>	<b>3</b>
Primary Data Sources	3
California Department of Education	3
American Community Survey	3
Integrated Postsecondary Education Data System	3
California Community Colleges Chancellor's Office	4
California Employment Development Department	4
US College Scorecard	4
CollegeAPP	4
County Business Patterns	4
Strada-Gallup Education Survey	5
California Department of Corrections and Rehabilitation	5
Opportunity Insights	5
Supplementary Data Sources	5
Self-Sufficiency Standard	5
CIP to SOC Crosswalk	5
Geographic Datasets	5
Commuting Zones	5
Race/Ethnicity Categories	5
California Department of Education	6
American Community Survey	6
Integrated Postsecondary Education Data System	6
Strada Education Network	6
CollegeAPP	7
Categories for Women and Men	7
Income Tiers	7
<b>Specific Metrics</b>	<b>8</b>
Postsecondary	8
Workforce	10
Prosperity	10
<b>Changes from the previous version</b>	<b>12</b>
<b>Acknowledgements</b>	<b>12</b>
<b>References</b>	<b>13</b>

# The Regions

The Postsecondary to Prosperity (P2P) Dashboard divides the state into twelve regions, each of which is made up of one or more counties.

1. *Bay Area* consists of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties. (An earlier version of P2P placed Santa Cruz County in the Bay Area. The change was prompted by user feedback and to match other organizations' definitions of the Bay Area.)
2. *Central Sierra* consists of Alpine, Amador, Calaveras, Inyo, Mariposa, Mono, and Tuolumne Counties.
3. *Central Coast* consists of Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, and Ventura Counties. (An earlier version of P2P placed Santa Cruz County in the Bay Area.)
4. *Inland Empire* consists of Riverside and San Bernardino Counties.
5. *Los Angeles* consists of Los Angeles County.
6. *North-Far North* consists of Del Norte, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Plumas, Shasta, Sierra, and Siskiyou Counties.
7. *Orange* consists of Orange County.
8. *Sacramento-Tahoe* consists of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties.
9. *San Diego* consists of San Diego County.
10. *Imperial* consists of Imperial County.
11. *San Joaquin Valley* consists of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties.
12. *Upper Sacramento Valley* consists of Butte, Colusa, Glenn, Tehama, and Trinity Counties.

This set of regions was developed for both substantive and practical reasons. Substantively, each region is a relatively homogeneous grouping in terms of urbanicity, major industries, and (to a lesser extent) demographics. In practical terms, starting with counties as the smallest geographic building blocks enables P2P to use extant measures of K-12 education, living wage benchmarks, and businesses and to develop reliable measures from other national data sources (described in more detail below).

With two exceptions, these regions are the same ones used in earlier California Competes products such as [Untapped Opportunity](#) (2020), [Clarifying the True Cost of College for Student Parents](#) (2020), [Back to College](#) (2018), and [Opportunity Imbalance](#) (2018). The first exception is that P2P has separate regions for San Diego and Imperial Counties, whereas earlier publications combined the two counties into one region. The second exception is that an earlier version of P2P and earlier publications placed Santa Cruz County in the Bay Area rather than in the Central Coast.

Every regional breakdown has its limitations, and this one is no exception. For one, many individuals living near the border of a region, particularly in urban areas, will share opportunities with neighboring regions. It is not hard to imagine, for instance, Orange County residents taking advantage of education and employment options in Los Angeles, San Diego, and the Inland Empire (and vice versa). Also, the breakdown does not always align precisely with other geographic configurations, such as service areas for colleges and universities; government policies and programs for domains, such as housing and transportation; and local labor markets for employers. And to the extent they provide realistic alternatives, online higher education and telework allow students and workers to transcend the geographic boundaries that would otherwise limit their opportunities.

# Data Sources

P2P combines 11 primary and 4 supplementary data sources to create state, regional, and county metrics. These data sources are described below.

## Primary Data Sources

### California Department of Education

The California Department of Education (CDE) reports [statistics on student achievement and opportunity](#) for all public schools in the state. High school graduation and completion of the A–G requirements for California State University (CSU) and University of California (UC) admissions are presented for high school students who graduated in the 2019–20 academic year. College-going data, which are based on the California Longitudinal Pupil Achievement Data System and postsecondary enrollment data from the National Student Clearinghouse, are presented for high school students who graduated in the 2018–19 academic year. The ratio of students to Advanced Placement (AP) and International Baccalaureate (IB) courses is derived from course offerings in the 2018–19 academic year. CDE data are reported by summary race/ethnicity groups and for foster youth; homeless youth; migrant students; socioeconomically disadvantaged students in any of the previous three groups, those eligible for free or reduced price meals, and those for whom neither parent graduated from high school; English learners; and students with disabilities. The race/ethnicity groups are mutually exclusive but overlap with the other categories, and the other categories overlap with each other.

Although the CDE data represent the full population of public high school students, results for groups of fewer than 11 students are suppressed for privacy reasons. P2P metrics are calculated from school-level statistics and therefore may not precisely match statistics reported at the district, county, or state level.

### American Community Survey

The [American Community Survey](#) (ACS) is an [annual survey of over three million Americans](#) conducted by the US Census Bureau, covering a range of demographic, education, and economic [topics](#), among others. The 2019 one-year results used for P2P are based on a sample of 205,000 respondents representing 39.5 million Californians. ACS is the primary source for metrics including the highest level of education attained, several income-related metrics, employment rate, community racial-and-ethnic diversity, health insurance, homeownership, participation in Medicaid (Medi-Cal), college enrollment among adults ages 25–40, costs of renting and homeownership, access to broadband internet service, the wage premium for bachelor's degree

holders, and housing prices. The ACS includes more fine-grained race/ethnicity categories than other data sources (see "Race/Ethnicity" below).

Metrics based on small groups of respondents are subject to substantial sampling error and should be interpreted with caution. As a precaution against spurious results, results based on fewer than 30 respondents are not presented.

Most measures based on the ACS apply to individuals, but seven metrics—median household income, earning a living wage, homeownership, cost of rent, cost of homeownership, broadband internet access, participation in Supplemental Nutrition Assistance Program (SNAP) (food stamps)—apply to households rather than individuals.

### Integrated Postsecondary Education Data System

The US Department of Education's [Integrated Postsecondary Education Data System](#) (IPEDS) is a set of interrelated surveys of postsecondary institutions collected in three installments each year. It is the source for the number of public colleges in each county and region, the type of colleges attended by students, the most commonly completed programs, five-year bachelor's degree graduation rates, one-year retention rates, racial diversity of colleges, and communities with university access. It is also a component of the share of graduates in high-wage, high-demand jobs.

Notably, IPEDS measures aspects of the colleges and universities in the region in which they are located, even though their students and alumni may live in other regions or in other states or countries. For this reason, the two regions with no four-year institutions, Central Sierra and Imperial, do not have results for the most commonly completed bachelor's degrees programs.

Some of these metrics are disaggregated by race/ethnicity and gender and others are not. Graduation and retention rates are limited to full-time, first-time undergraduates. Metrics based on IPEDS do not include as separate institutions branch campuses in other locations, even when the branches are located in other regions, such as San Diego State University's Imperial Valley Campus or California State University San Marcos's Temecula Campus. Likewise, enrollment in CSU and UC Extension is not included in IPEDS. California Community Colleges awarding bachelor's degrees under the state's Baccalaureate Degree Program are treated as two-year institutions.

In addition, the metrics do not include graduate-only institutions, such as UC San Francisco and UC College of the Law, San Francisco (formerly known as UC Hastings), or the online-only Calbright College that is part of the California Community College system, but these institutions are noted in the counts of public institutions at the top of each area's page. The metrics also do not include branch and satellite campuses as separate institutions.

The college types (private for-profit, private nonprofit, California Community Colleges, the CSU, UC) are from the 2018 Institutional Characteristics survey. The fields of study for certificates and degrees completed in the 2018–19 academic year, used in the metrics for the most commonly completed programs and for graduates in high-wage, high-demand fields, are from the 2019 Completions survey. The race/ethnicity values for college students enrolled anytime in the 2018–19 academic year are from the 2019 12-Month Enrollment survey. The number of students who received financial aid in the 2018–19 academic year are from the 2019 Student Financial Aid survey. The five-year graduation rates for first-time students starting at four-year colleges in fall 2013 are from the 2019 Graduation Rate survey. The one-year retention rates for first-time students starting in fall 2018 are from the 2019 Fall Enrollment survey. The college admissions rates used to identify university access (percentage of communities within commuting distance of a public, four-year university with an acceptance rate greater than 60 percent) are from the 2018 Admissions survey.

## California Community Colleges Chancellor's Office

The California Community Colleges Chancellor's Office [Transfer Velocity report](#) is the source for the proportion of students transferring to four-year colleges within three years. This metric is based on the cohort starting in the 2015–16 academic year.

## California Employment Development Department

The California Employment Development Department (EDD) is the source of the number of jobs that provide a living wage for a family of four, which combines [projected job openings by field and county](#) with a county-specific minimum value for wages. The metric is based on employment in 2018 and employment projections for the year 2028.

EDD data are also a component of the share of graduates in high-wage, high-demand jobs, namely by identifying job openings in high-demand fields and the education requirements and median earnings for those jobs. Due to a change in how EDD reports employment statistics, values

cannot be calculated for the North-Far North or Upper Sacramento Valley region, and both the Bay Area and Central Coast regions have a slightly different configuration of counties than is used in other metrics in which the Bay Area region includes Santa Cruz and San Benito counties.

## US College Scorecard

The US Department of Education's [College Scorecard](#), which combines federal enrollment, student loan, and earnings data, reports the median student loan debt for graduates of every US college and university at the time they entered repayment. Individuals typically enter repayment within six months of leaving college unless they pursue additional education. The P2P metrics are the median values of these amounts for all graduates of colleges in a particular region, irrespective of where they resided before or after college. There are separate metrics for graduates of two-year colleges, who usually completed associate's degrees, and of four-year colleges, who usually completed bachelor's degrees. Because College Scorecard reports debt across two graduating cohorts, this metric applies to individuals who graduated in both the 2017–18 and 2018–19 academic years.

## CollegeAPP

[CollegeAPP](#) is a proprietary, individual-level dataset that uses predictive analytics to estimate the interest in pursuing higher education. The results presented here are based on responses to a fall 2021 survey, which in turn are matched to a dataset representing the population of Californians age 25 and older. Individuals are deemed interested in higher education if they have an estimated 54 percent or higher probability of answering yes to the question "Do you plan to enroll in an education or training program in the next two years?" This metric is disaggregated by five summary race/ethnicity categories, gender, and age group. Percentages are calculated by dividing counts of individuals planning to enroll by population estimates from the 2019 American Community Survey.

## County Business Patterns

The US Census Bureau's [County Business Patterns](#) reports annual counts of businesses (among other things) at the local and state level. The P2P metrics tally the number of essential businesses in each zip code by their North American Industry Classification System codes. The five business types and their corresponding codes are grocery stores (445110), gas stations (447190, 447110), banks (90013, 522110), doctors' offices (90012, 621111), and dental offices (621210). The P2P business desert metrics measure the percentage of zip codes in a region that lack each of the respective business types. These results are based on the 2018 data collection.

## Strada-Gallup Education Survey

The Strada-Gallup Education Survey, conducted by the Strada Education Network and Gallup, surveyed 35,000 California adults from June 2016 through April 2019 as part of a national survey. Respondents were asked how much they borrowed in student loans to pursue training or college education. The categories presented in the survey were \$0 (or none); less than \$5,000; \$5,000–\$15,000; \$15,001–\$25,000; \$25,001–\$50,000; \$50,001–\$75,000; \$75,001–\$100,000; \$100,001–\$150,000; \$150,001–\$200,000; and \$200,001 or more. Results © 2016–2021 Strada Education Network, Inc. [www.stradaeducation.org](http://www.stradaeducation.org). All Rights Reserved.

## California Department of Corrections and Rehabilitation

The California Department of Corrections and Rehabilitation [Office of Research](#) provides counts of individuals on parole from state prison. These values, from 2019, are divided by population estimates from the American Community Survey to create the number per 100,000 residents.

## Opportunity Insights

The [Opportunity Atlas by Opportunity Insights](#) links parents' and children's federal income tax records across decades to estimate intergenerational economic mobility. Tax records are also linked to Census records, to determine race and ethnicity, and to Social Security Administration records, to determine gender and age. This metric estimates the probability that a child born between 1978 and 1983 to a family with income at the 50th percentile will have had an income in the top 20 percent in 2014 and 2015 (when the child was 31 to 37 years old).

## Supplementary Data Sources

In addition to the sources described above that directly provide values for metrics, P2P uses several other data sources to assign values to metrics and geographic areas to regions.

## Self-Sufficiency Standard

The [Self-Sufficiency Standard](#), published by the Center for Women's Welfare at the University of Washington, specifies minimum values for living wage for varying family types, adjusting for geographic differences in the cost of living. For measuring the number of job openings that provide a living wage, P2P uses the value for a family of two adults and two school-aged children. The percentage of families

earning a living wage is tailored to the family configuration of each household, which may have more or fewer adults and children of varying ages. This data source also provides average monthly childcare costs across all family configurations, adjusted for regional differences, which in turn is used to calculate the percentage of families with affordable childcare costs. P2P uses the 2018 version of the standard.

## CIP to SOC Crosswalk

To link fields of study to occupational fields when calculating the number of students completing awards corresponding to high-wage, high-demand occupations, P2P uses the 2010 version of the [Classification of Instructional Programs \(CIP\) to Standard Occupational Classification \(SOC\) crosswalk](#) from the US Department of Education and US Department of Labor.

## Geographic Datasets

P2P uses three US Census Bureau datasets to map zip codes and counties to Census-defined geographic regions known as PUMAs (Public Use Microdata Areas). These datasets are the [2010 Census Tract to 2010 PUMA Relationship File](#), the [2010 Zip Code Tabulation Areas to Census Tract Relationship File](#), and the [2017 TIGER/Line Shapefile](#). (TIGER stands for Topologically Integrated Geographic Encoding and Referencing.)

## Commuting Zones

A [commuting zone](#) is a group of counties in which a substantial proportion of individuals commutes to work within the zone and relatively few workers commute outside the zone. Zones can cross regions, so, for example, California State University Sacramento (in the Sacramento-Tahoe region) is in the commuting zone of the Central Sierra region.

Commuting zones were originally empirically derived using the statistical method of cluster analysis, as detailed in Tolbert and Sizer (1996). The commuting zones used in P2P were mapped to PUMAs using a crosswalk described in Autor and Dorn (2013).

## Race/Ethnicity Categories

For the four data sources that can be disaggregated by race/ethnicity, the P2P metrics use slightly different approaches. This section outlines how race/ethnicity is categorized by the CDE, the ACS, the IPEDS, the Strada Education Network, and CollegeAPP.

## California Department of Education

The P2P metrics based on CDE data use the following seven categories:

1. Asian
2. Black
3. Filipino
4. Latinx
5. Native American or Alaska Native
6. Pacific Islander
7. White

## American Community Survey

The P2P metrics combine ACS race/ethnicity data into six summary categories and fourteen detailed categories. Individuals of Latinx ethnicity are classified as Latinx irrespective of their race.

The six summary race/ethnicity categories are as follows:

1. White
2. Black
3. Native American or Alaska Native
4. Pacific Islander (including Native Hawaiian)
5. Asian
6. Latinx

The 14 detailed race/ethnicity categories are as follows:

1. White
2. Black
3. Native American or Alaska Native
4. Pacific Islander (including Native Hawaiian)
5. Asian (Chinese, Taiwanese, Japanese, or Korean; or speaks Tibetan)
6. Southeast Asian (Burmese, Cambodian, Filipino, Hmong, Indonesian, Laotian, Malaysian, Thai, or Vietnamese; or speaks Iu Mien or Hmong; or born in Singapore)
7. South Asian (Bangladeshi, Bhutanese, Nepalese, Pakistani, Sri Lankan, or Asian Indian)
8. Other Asian (Mongolian or other Asian)
9. Mexican
10. Puerto Rican
11. Cuban
12. Central American (Costa Rican, Guatemalan, Honduran, Nicaraguan, Panamanian, Salvadoran, or other Central American)

13. South American (Argentinean, Bolivian, Chilean, Colombian, Ecuadorian, Paraguayan, Peruvian, Uruguayan, Venezuelan, or other South American)

14. Other Latinx

Individuals of another race and individuals of two or more races are included in the totals but are not presented separately.

**Household race/ethnicity.** Eight metrics based on ACS data—median household income, earning a living wage, income spent on rent, affordable home ownership costs, home ownership, broadband internet access, receiving SNAP benefits, and childcare affordability—are disaggregated by the racial/ethnic composition of households rather than the race/ethnicity of individuals. For these metrics, disaggregation by race/ethnicity is shown only for households in which all members are of the same race or ethnicity.

## Integrated Postsecondary Education Data System

The P2P metrics based on IPEDS data use the following nine categories:

1. Asian
2. Black
3. Latinx
4. Native American or Alaska Native
5. Pacific Islander
6. White,
7. Two or more races
8. Race unknown
9. International

The final three categories are not used in all metrics.

## Strada Education Network

The P2P metrics based on Strada Education Network data use the following six categories:

1. Asian
2. Black
3. Latinx
4. Native American or Alaska Native
5. Pacific Islander (including Native Hawaiian)
6. White

## CollegeAPP

The P2P metrics based on CollegeAPP data are disaggregated into six summary categories and one detailed category, namely

1. Asian
2. Black
3. Latinx
4. Native American or Alaska Native
5. White

## Categories for Women and Men

P2P statistics for women and men are based on categories that vary by primary data source.

The California Department of Education refers to students' gender and has categories for male, female, nonbinary, and missing.

The American Community Survey refers to individuals' sex and asks respondents to report themselves and household members as male or female. Missing values are imputed.

The IPEDS data used for P2P requires each institution to report all students as women or men, even those for whom gender is unknown or other than men or women, using an imputation method of its own choosing. Categories for unknown gender and for another gender were added recently.

The US College Scorecard uses gender data from IPEDS.

The California Community Colleges Chancellor's Office collects and reports student gender as female, male, or unknown. A nonbinary category was recently added.

CollegeAPP uses gender with these categories: female, male, and unknown.

The Strada-Gallup Education Survey asks respondents to state their gender or gender identity and offers options for female, male, and other.

The Opportunity Insights data use values of sex from the Social Security Administration, which in turn uses the categories of female and male collected in application forms.

## Income Tiers

For metrics disaggregated by income, values are grouped into five levels of household income within each area (county, region, or state). The values of each region and county are based on the respective area's median household income, so the thresholds vary across the state. To illustrate, the statewide median household income in 2019 was \$80,000, but regional values ranged from \$50,250 in Imperial County to \$130,000 in the Bay Area, and county values were as high as \$159,200 in San Mateo County.

- *Very low income* describes values less than one-third of the area's median household income. For statewide metrics, this category describes individuals and households with household incomes of \$26,400 or less.
- *Lower income* describes values one-third through two-thirds of the area's median household income. For statewide metrics, this category describes household incomes greater than \$26,400 and less than \$53,600.
- *Middle income* describes values more than two-thirds but less than twice the area's median household income. For statewide metrics, this category describes household incomes greater than or equal to \$53,600 and less than \$160,000.
- *Higher income* describes values at least twice but less than three times the area's median household income. For statewide metrics, this category describes household incomes greater than or equal to \$160,000 and less than \$240,000.
- *Very high income* describes values at least three times the area's median household income. For statewide metrics, this category describes household incomes of \$240,000 or higher.

# Specific Metrics

The following entries describe how the P2P metrics were calculated. It is organized into the three categories used elsewhere in P2P: postsecondary, workforce, and prosperity.

Some metrics are based on communities within areas. Each community, formally known as a PUMA, is a geographic area with a population of at least 100,000 people defined by the US Census Bureau. PUMAs are geographically contiguous areas nested within states.

Due to rounding, percentage distributions may not total to 100 percent.

## Postsecondary

**Highest level of education attained** is the percentage distribution of highest educational attainment among individuals 25–54 years old. The bachelor's category includes individuals with graduate degrees.

**High school graduates** is the [number of high school students who graduated with a standard high school diploma](#). It is the numerator in the high school graduation rate.

**High school graduation rate** is calculated as the [number of students who received a standard high school diploma divided by its adjusted ninth grade cohort](#). The adjusted ninth grade cohort is the number of students who entered ninth grade four years earlier, plus any students who transferred in during ninth grade or the following three years, minus any students who transferred out, transferred to a correctional facility, or died during the same period.

**A-G course completers** is the [number of high school students who met the A-G course requirements](#) for admission to the CSU and UC. It is the numerator for the A-G course completion rate.

**A-G course completion rate** is the [number of high school students who met the A-G course requirements](#) for admission to the CSU and UC divided by the number of students who graduated with a standard high school diploma.

**College destinations of high school students** are shown for students attending college within 12 months of completing high school. An estimated [11 percent of college enrollment records are blocked at the students' request](#) under the federal Family Educational Rights and Privacy Act, so these college enrollment counts likely underestimate the true values. The percentage for enrollment in each college category is the count divided by the number of high school students who completed a standard or adult education high school diploma or a high school equivalency certificate (California High School Proficiency Exam or GED).

Students per AP and IB course is the number of high school students divided by the sum of [AP and IB courses offered](#).

**Percentage of underrepresented minority high school students who take AP or IB courses** is an estimate calculated as the number of Black, Filipina and Filipino, Latinx, Native American, and Pacific Islander high school student enrollments in [AP and IB courses](#) divided by all course enrollments by the same group of students during 2018–19 academic year.

**Adult intent to enroll** is the percentage of adults 18 and older with an estimated 54 percent or higher probability of expressing plans in enrolling in postsecondary education within the next two years (see "CollegeAPP" above).

**25+ enrollment** is the percentage of individuals currently enrolled in college, 25–40 years old, and without a bachelor's degree.

**College enrollment in the area** is calculated as the number of undergraduates attending a type of college in the area divided by the number of undergraduates attending all colleges in the area. Students who enrolled at any time over a 12-month period are counted. Colleges are assigned to the area in which they are headquartered, irrespective of where the students attended high school or where they lived while they were enrolled. In the Central Sierra and Imperial regions and a number of counties, California Community Colleges are the only degree-granting colleges.

**Online enrollment rate** is the percentage of college students enrolled in the fall term at colleges in the area who are enrolled exclusively in online courses. Note that these students may live in other counties, regions, states, or countries.

**Retention** is the percentage of first-time students who started in the fall term at all colleges in the area who were enrolled at the same college in the fall term of the following year.

**Transfer** is the proportion of California Community College students [transferring to four-year colleges within three years](#).



**Five-year graduation rate** is the percentage of full-time, first-time bachelor's degree-seeking students who started in the fall term at all four-year colleges in the area who earned a bachelor's degree from the same college where they started.

**Underrepresented students of color** is the percentage of college students in the area who are Black, Latinx, Pacific Islander, or Native American or Alaska Native. It is based on 12-month enrollment counts.

**University access** is a community that has a public university (a CSU or UC campus) with an acceptance rate greater than 60 percent in its commuting zone. (See "Geographic Datasets" and "Commuting Zones" for more details.) The metric shows the percentage of communities in the area that have university access.

The Imperial region consists of a single community that does not have a CSU or UC campus within commuting distance. None of the communities in the San Diego region have university access because the region's three public universities (CSU San Marcos, San Diego State University, and UC San Diego) had admissions rates below 60 percent. Central Sierra consists of a single community with university access because it is in the same commuting zone as Sacramento State University, even though parts of the region would be several hours' drive from the university. (A previous version of P2P used the metric of university deserts to measure the percentage of communities lacking a broad-access public university.)

Programs for certificates and majors for degrees are grouped into 11 categories, with percentage distributions calculated separately for certificates, associate's degrees, and bachelor's degrees (see "Programs completed at colleges in the area and most commonly completed programs" below).

**Percent of students [who] graduate in high-wage, high-demand fields** is the percentage of college completers whose awards correspond to an occupation that requires some postsecondary education, a certificate, an associate's degree, or a bachelor's degree (but not a graduate degree); has median annual earnings greater than or equal to the state median; has projected job growth higher than the state average; and has projected growth of at least 1,000 positions statewide between 2018 and 2028. Examples of high-wage, high-demand occupations include registered nurses, management analysts, accountants and auditors, and web developers. Metrics are calculated separately for students completing certificates, associate's degrees, and bachelor's degrees. Occupations are matched to award fields using the 2010 version of the [CIP to SOC crosswalk](#).

**Programs completed at colleges in the area and most commonly completed programs** were arranged into 11 summary categories based on the first two digits of their [CIP codes](#). Colleges and universities report completions to the US Department of Education using six-digit CIP codes. Each pair of digits provides an increasing level of specificity. To illustrate, codes starting with 45 refer to social sciences (sociology, political science, economics, etc.), codes starting with 45.06 specifically refer to economics, and the code 45.0605 specifically refers to international economics.

P2P uses the 2010 version of CIP. The following list presents the general fields of study and their corresponding two-digit CIP codes for each P2P category. Some combinations of award types and fields, such as certificates in psychology and associate's degrees in education, are uncommon overall. In many areas, no students completed these programs, as indicated by values of 0 percent.

- *Arts, humanities, and social sciences* consists of area, ethnic, cultural, and gender studies (05); foreign languages, literatures, and linguistics (16); English language and literature/letters (23); liberal arts and sciences, general studies, and humanities studies (24); philosophy and religious (38); theology and religious vocations (39); social sciences (45); visual and performing arts (50); and history (54).
- *Biological, agricultural, and environmental sciences* consists of agriculture, agriculture operations, and related sciences (01); natural resources and conservation (03); and biological and biomedical sciences (26).
- *Business* consists of business, management, marketing, and related support services (52).
- *Communications* consists of communication, journalism, and related programs (09) and communications technologies/ technicians and support services (10).
- *Education* consists of education (13).
- *Engineering and computer sciences* consists of computer and information sciences and support services (11), engineering (14), and engineering technologies/technicians (15).
- *Legal* consists of legal professions and studies (22).
- *Psychology* consists of psychology (42).
- *Science and mathematics* consists of mathematics and statistics (27), physical sciences (40), science technologies/technicians (41), and health professions and related clinical sciences (51).

- *Services* consists of personal and culinary services (12); library science (25); parks, recreation, leisure, and fitness studies (31); security and protective services (43); public administrative and social service professions (44); construction trades (46); mechanic and repair technologies/technicians (47); precision production (48); and transportation and materials moving (49).
- *Other* consists of architecture and related services (04), family and consumer sciences/human sciences (19), reserve officer training corps (JROTC, ROTC) (28), military technologies (29), multi/interdisciplinary studies (30), citizenship activities (33), health-related knowledge and skills (34), interpersonal and social skills (35), leisure and recreational activities (36), personal awareness and self-improvement (37), high school/secondary diplomas and certificates (53), and residency programs (60).

The two regions with no four-year institutions, Central Sierra and Imperial, and 25 mostly rural counties do not have results for the most commonly completed bachelor's degrees programs.

## Workforce

**Employment** is the percentage of individuals ages 25–64 who are employed for pay, excluding those not in the workforce who are also not looking for work. Employment includes part-time and irregular employment. This rate, based on the ACS, tends to be slightly lower than [the employment rate calculated by other federal surveys](#).

**Median household income** applies to households and not individuals, so values for racial and ethnic groups are presented only if all members of the household are of the same race or ethnicity. An earlier version of this metric adjusted for household size by dividing by the square root of the number of household members.

**Median individual income** is total individual income (including nonwage income) among individuals age 18 and older.

**Earning a living wage** is the percentage of households earning a living wage to support two adults and two school-aged children, adjusted for family size and local cost of living (see "Self-Sufficiency Standard" above). Because this metric applies to households and not individuals, values for racial and ethnic groups are presented only if all members of the household are of the same race or ethnicity.

**Number of job openings that provide a living wage** is calculated for the minimum income amount required to support a family of two adults and two school-aged children. Minimum income amounts are adjusted for local cost of living (see "Self-Sufficiency Standard" above).

**Male wage premium or how do wages differ by race and gender** is the difference of men's median individual income minus women's individual income, among men and women who work 30–40 hours per week and are not enrolled in school. Negative values indicate the median income of women is greater than the median income of men.

**College wage premium** is the difference of the median wage of bachelor's or graduate degree holders minus the median wage of those without a bachelor's degree, among individuals working 35–40 hours per week and not enrolled in education.

## Prosperity

**Cost of rent** is the average annual rent divided by the average annual household income. Because this metric applies to households and not individuals, values for racial and ethnic groups are presented only if all members of the household are of the same race or ethnicity.

**Homeownership affordability** is the percent of home-owning households whose total home ownership costs (including mortgage payments, insurance, property taxes, utilities, and fees) are less than 30 percent of household income, a common affordability benchmark.

**Homeownership** is the percentage of households owning a home. Because this metric applies to households and not individuals, values for racial and ethnic groups are presented only if all members of the household are of the same race or ethnicity.

**Median student debt** ("What do people owe in student loans?") is the median amount owed in federal student loans for graduates of two-year and four-year colleges at the time they enter repayment, which is typically within six months of graduation (see "US College Scorecard"). Debt amounts from private, state, and institutional loans, which are not common, are not included. Graduates with no debt are not included in the calculation of medians. Two regions, Central Sierra and Imperial, and many counties have zero values for both categories of debt because [no colleges in these areas appear to have participated in the federal student loan program](#) at the time the statistics were reported for the most recent graduating cohorts. For an alternative measure of student debt, see "Total education borrowing" below.

**Total education borrowing** ("How much did area residents borrow for college?") is the total amount borrowed in student loans, irrespective of whether, when, and how long the individual attended college. Amounts are not limited to federal student loans, though private, state, and institutional student loans are uncommon. Values are self-reported, are not adjusted for inflation, and reflect the respondent's residence when they were surveyed in June 2016 through April 2019. For an alternative measure of student debt, see "Median student debt" above.

**Health insurance** is the percentage of individuals who have health insurance of any type, including government plans such as Medicaid (Medi-Cal), Medicare, and programs for military and veterans and private plans offered by employers, unions, and insurance companies.

**Diverse communities** or **community diversity** rate estimates the probability that any two individuals selected at random would be of different races or ethnicities. For this metric, each person is assigned to white, Black, Native American or Alaska Native, Pacific Islander, Asian, Latinx, some other race, or two or more races. In each community, the diversity value is one minus the sum of squared proportions of the eight race/ethnicity categories. The diversity rate is the average value across all communities in the area.

**Communities [that] lack essential businesses**, also called **business deserts**, show the percentage of zip codes in an area that lack particular essential businesses: grocery stores, gas stations, banks, doctor's offices, and dental offices.

**High-speed internet** is the percent of households that have broadband (high-speed) internet access. Because this metric applies to households and not individuals, values for racial and ethnic groups are presented only if all members of the household are of the same race or ethnicity.

**SNAP benefits** is the percentage of households in which at least one person receives SNAP benefits, also known as CalFresh or food stamps. Because this metric applies to households and not individuals, values for racial and ethnic groups are presented only if all members of the household are of the same race or ethnicity.

**Monthly childcare costs** is the estimated median monthly cost of childcare, which varies by area and family configuration. To illustrate, monthly costs for a family of two adults, one infant, and one preschooler range from \$1,727.82 in Glenn County to \$3,732.35 in Marin County.

**Affordable childcare costs** is the percentage of households with children under 13 years old whose estimated annual childcare costs are no more than 7 percent of household income, a common affordability benchmark.

**Residents who outearn their parents** is the estimated probability that an individual born in the area between 1978 and 1983 to a family with income at the 50th percentile will have had an income in the top 20 percent in 2014–15.

**Parolee population** is the number of parolees from state prison living in the area in 2019.

**Parolees per hundred thousand residents** is the number of parolees divided by hundred thousand area residents of all ages.

# Changes from the previous version

In addition to using more recent versions of source data, this version of P2P contains numerous additions and changes since its first release in 2020. The following summary describes these changes.

**County-level metrics.** P2P now includes metrics at the county level where possible. Rural counties with smaller populations, such as Alpine County (population 1,129 in 2019) and Sierra County (population 3,005) have fewer values than urban counties, especially among specific demographic groups, due in part to suppression of values based on small groups.

**New metrics.** This version features several new metrics: percentage of underrepresented high school students enrolled in AP and IB courses, childcare costs and affordability, housing affordability for renters and homeowners, individual income (in addition to household income), counts of formerly incarcerated individuals, broadband internet access, economic mobility, and total educational borrowing.

**Additional disaggregation.** This version disaggregates metrics by a wider array of demographic categories. New groups include the combination of race or ethnicity plus gender (e.g., Latinx men, Latinx women, white men, white women), immigrants and nonimmigrants, adults 25 years and older, persons younger than 25, and individuals with

and without children under 18. It also disaggregates a larger share of metrics by bachelor's degree attainment and by income level. At the statewide level, educational attainment is disaggregated for individuals ages 18–44 who are institutionalized, a proxy for incarceration that includes a small fraction of people living in nursing homes and other care facilities (Ewert & Wildhagen, 2011) and their counterparts who are not institutionalized.

**Changes to regions.** To match regional definitions used by several government agencies and other associations, this version of P2P places Santa Cruz County in the Central Coast region, whereas the previous version placed it in the Bay Area. One exception is that the metric for the number of jobs that pay a living wage metric places Santa Cruz and San Benito Counties in the Bay Area because of how the source data are arranged.

**Suppression of values based on small samples.** For metrics calculated based on the American Community Survey and the Strada-Gallup Education Survey, values based on fewer than 30 respondents are suppressed. This step reduces the likelihood that sampling error leads to metrics that are dramatically different from values in the corresponding population. Thirty individuals is a commonly used minimum threshold for reporting (e.g., US Department of Education, 2022).

## Acknowledgements

This update to P2P was made possible through support from the ECMC Foundation, which also supported the original version released in 2020. The Michelson 20MM Foundation provided support for metrics and disaggregations for incarcerated and formerly incarcerated persons. The Strada Education Network provided support for total educational borrowing and the data to create that metric. The Bill & Melinda Gates Foundation and the College Futures Foundation provided general operating support.

Sara Adan did the lion's share of programming for both versions of P2P. Carolina Ayala helped prepare the initial list of metrics to be updated. Gail Yen provided expertise on terminology and data sources for incarcerated and formerly incarcerated Californians. Seth Reichlin tabulated the CollegeAPP data for both P2P versions.

We thank the many individuals who provided feedback in focus groups from the Bay Area Council, California Forward, the California Higher Education Equity Coalition, the Silicon Valley Leadership Group, and several media outlets. All errors are our own.

# References

Autor, D. H., & Dorn, D. (2013). The growth of low-skill service jobs and the polarization of the US labor market. *American Economic Review*, 103(5), 1553–1597.

Ewert, S., & Wildhagen, T. (2011). *Educational characteristics of prisoners: Data from the ACS*. Presentation at the Population Association of America. <http://www.census.gov/content/dam/Census/library/working-papers/2011/demo/ewert-wildhagen-prisoner-education-4-6-11.pdf>

Tolbert, C. M., & Sizer, M. (1996). *US commuting zones and labor market areas: A 1990 update*. Economic Research Service Staff Paper AGES-9614. Washington, DC: US Department of Agriculture.

US Department of Education. (2022, May). *Technical documentation: College Scorecard institution-level data*. <https://collegescorecard.ed.gov/assets/InstitutionDataDocumentation.pdf>