

2019 Consumer Buying Power™

Release Notes for ENVISION5

Data Vintage

2019 Estimates
2024 Projections

Variables

1,752

Update Frequency

Annually

To view the complete list of variables please visit:

environicsanalytics.com/en-us/variables

What it is

Consumer Buying Power™ (CBP) by Environics Analytics provides current-year estimates and five-year projections of annual household expenditures in the United States. Both the 2019 estimates and 2024 projections include data for 741 expenditure items, spanning 14 categories of goods and services. This database tracks everything from fashion, apparel and household furnishings to cell phones and charitable donations. CBP produces expenditure estimates for 114 retail store types. The database also contains basic variables from Claritas' Pop-Facts® Premier demographic estimates detailing the number of consumer units, households, college dormitory population and average household income.

The database lets users analyze potential consumer expenditures by total dollars spent or average dollars spent

per consumer unit (a combined count of households as well as the college and university dormitory population). Expenditures can be analyzed across all census, postal and designated marketing area geographies, as well as small custom-defined trade areas such as drive times or radii.

To help customers understand the demand growth in any trade area, ENVISION5 offers reports that include additional CBP metrics. ENVISION5 also gives users access an extensive library of executive reports that give users easy access the current-year and five-year growth figures for each variable. It can be used to visualize these growth metrics through the mapping tools.

Major Changes

The 2019 edition of the Consumer Buying Power database features the following improvements and changes to both current-year estimates and five-year projections:

- The Retail Store Types category features 74 new variables that are easily identifiable by NAICS code
 - The category is now presented with the NAICS code hierarchy; for example men's clothing stores (NAICS 44811) and women's clothing stores (NAICS 44812) are shown under Clothing Stores (NAICS 4481)
- As new items become available through the Consumer Expenditure Survey (CEX) they are added to Consumer Buying Power, while other variables are combined or removed. Some 2018 variables were combined into a single variable in 2019 because of low sample rates from the Consumer Expenditure Survey. Overall, the Total Expenditures category features 23 new variables.
- Methodology changes:

- To enable better estimates that reflect different spending patterns by consumers according to where they live, CPB now applies control totals at the census regional level: Northeast, Midwest, South and West.
- Regional control totals are projected using the historical trend of income shares (1994 to 2017) to predict future years.
- The number of income variables used to estimate consumption has been reduced to improve alignment with survey respondent self-reported demographic data.
- Improved methods to annualize and integrate raw data from interview and diary components of the CEX.

Variable Categories and Counts

All variables are available as current year estimates and five-year projections.

Category	Variables
Basics	6
Total Summary Category Expenditures	15
Food	173
Alcoholic Beverages	17
Housing	219
Apparel and Services	75
Transportation	67
Healthcare	38
Entertainment	90
Personal Care Products and Services	13
Reading	6
Education	11
Tobacco Products and Smoking Supplies	4
Miscellaneous Fees and Expenses	15
Cash Contributions	10
Life and Other Personal Insurance	3
Retail Store Types	114

How it was built

Key Data Sources

The primary data source for CPB is the Consumer Expenditure Survey (CEX), which is administered by the U.S. Bureau of Labor Statistics (BLS). A series of models are calibrated on the

CEX. These models are used to score a multi-dimensional cross-distribution of consumer demographics derived from Claritas' Pop-Facts 2019 and the U.S. Census Bureau's American Community Survey 2016.

Beyond these estimates, Environics Analytics uses CEX weighted annual expenditure data at the regional level as control values for 100 spending categories. The annual data is utilized to create control totals for the years 2019 and 2024 in combination with Claritas Pop-Facts Premier's income estimates for those years.

CBP incorporates the interview and daily diary components from the CEX survey. The interview component collects monthly expenditures of approximately 7,000 individual households for 12 consecutive months. The daily diary component tracks the household expenditures of approximately 5,000 households for a two-week period. Environics Analytics maintains a rolling five-year CEX survey archive to update the model coefficients used in creating current-year estimates.

Modeling Framework

The construction of CBP estimates at the Universal Classification Code (UCC) level involves three distinct phases:

- Creation of initial small-area behavioral estimates
- Collection and projection of the regional control totals
- A mathematical reconciliation process that ensures everything "adds up" across all levels of geography and among the complete hierarchy of expenditure categories.

Small Area Estimates

A series of log-linear and multinomial logit models are calibrated using observation-level CEX micro-data. The models predict consumption using a combination of demographic, location and time data as independent parameters. The log-linear models generally estimate the ratio of total expenditure over total income before tax, which is then converted back to dollar value of total expenditure. These estimates are partitioned using a parent-child structure of spending categories, which, for example, might break the category Food into Food at Home and Food Away From Home. These categories are further subdivided into their root components (Lunch is subdivided into Lunch at Fast Food, Take-Out, Delivery, Concession Stands, Buffet, etc.) for all CEX UCC codes.

Our researchers use these models to score a multidimensional cross-distribution of consumer demographic variables derived from the current release of Claritas Pop-Facts demographic estimates and the U.S. Census Bureau's American Community Survey 2016. This combination of the multidimensional cross-distribution of consumer demographics and CEX consumption data is produced for every block group in the U.S. Altogether, the initial development of CBP 2019 required more than 700 estimates of consumption using more than 200 models and more than 100,000 coefficients.

Regional Control Totals

CBP uses spending control totals from the CEX aggregate expenditure share tables available from BLS for calendar years 1994 through 2017. There are 100 categories of consumer expenditures at the regional level used as control totals in CBP 2019.

Consumption control totals for 2019 and 2024 are generated by applying historical share trends that correspond to each expenditure category in combination with Claritas' Pop-Facts Premier income estimates for 2019 and 2024 respectively.

Reconciliation of small area estimates to Regional control totals

For each year, the initial small-area estimates at the block group level are reconciled for 2019 and 2024 to reflect the control totals based on the published CEX data from BLS. This reconciliation is achieved using a set of mathematical optimizations that adjust the initial small-area estimates to agree with higher geographic level control totals. This reconciliation process results in estimates that match the control totals at different levels of geography. This process also ensures the estimates deviate as little as possible from the estimates derived from the model scoring stage.

By using both a bottom-up approach, through the aggregation of block group estimates, and a top-down approach, to control those estimates to known values, CBP provides a realistic picture of household expenditures for any trade area. The modeling structure and rescaling system we use allows for reliable estimates at the small area level based on demographics that are subject to high-quality regional controls.

Retail Store Type Estimates

The variable All Retail Stores (NAICS 44-45) estimates expenditures at retail stores only; it excludes expenditures on services such as Hospital Room and Services. The estimates are created using a matrix that assigns merchandise level expenditures to one or more retail store types. As an example, bread can be purchased at grocery stores or convenience stores. A similar process is used for Total Accommodation and Food Services (NAICS 72) variables.

The estimate for All Retail Stores (NAICS44-45) and Total Accommodation and Food Services (NAICS 72) are different from the estimate for Aggregate Annual Expenditures.

- All Retail Stores and Total Food Services represent consumer spending for 114 retail stores and food services establishments
- Aggregate Annual Expenditures is comprised of consumer spending on relevant merchandise items and services

The variables have their own aggregation hierarchy and low-level variables add up to high levels. For example, S4411 (Automobile dealers), S4412 (Other motor vehicle dealers) and S4413 (Automotive parts, accessories and tire stores) add up to S441 (Motor vehicle and parts dealers).

Five-Year Projections

Five-year projections for 2024 are established by first using the aggregate expenditure share tables available from BLS for calendar years 1994 through 2017. The series of log-linear and

multinomial logit models calibrated on the CEX data are scored against a 2024 multidimensional cross-distribution of consumer demographic based on Claritas Pop-Facts five year projection. The small area estimates are bound by the 2024 regional control total. This approach allows the five-year projection to reflect demographic changes at the small area level.

Demographic variables used in CBP

CBP uses the following variables from Claritas Pop-Facts to produce a multidimensional cross-distribution of consumer demographics used to score statistical models.

Demographic Variable	Used in type of model
Household Income	Introduces household budgetary constraints to CBP models
Age of Head of Household	Introduces the consumer lifecycle dimension to CBP demand models for spending on education, household repairs, travel, apparel, personal expenses, contributions and more
Presence of Children	Apparel, medical expenses and healthcare, prescription drugs, infant items, daycare, education, sports and recreation, electronics and others
Household Size	Personal care products and services, grocery and more
Marital Status	Alimony and child support expenditures
Educational Attainment	Contributions, school expenses, reading material and similar merchandise items
Housing Tenure (Own, Rent and Dormitory Population)	Household repairs, household expenses, furniture and furnishings, domestic services, pet expenses, contributions and more
Census Region	Transportation, apparel services, grocery, house expense, domestic services, apparel, reading materials, food at home, household durables, smoking products and more
Urban/Rural	Geographic component to household repairs, transportation, house expense, domestic service, travel, medical expense, smoking products and more

Geographic levels used in Consumer Buying Power

Consumer expenditure estimates and projections are created for the current year geographic data roster sourced from TomTom North America Inc. Data are created for the following levels:

Geographic Level	Count of current Year geographies
National	1

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State	50 + Washington D.C.
County	3,142
Tract	72,739
Block Group	217,182
Combined Statistical Area	172
Core-Based Statistical Area	933
Place	29,261
Minor-Civil Division/Census Civil Division	35,611
ZIP code	30,794
DMA	210

HOW IT'S USED



Create area rankings by merchandise line item or retail store type to understand, which areas present greater opportunity for additional stock or new retail operations.



Understand current household spending habits by merchandise line item and retail store type.



Analyze projected consumer expenditure trends five years out, based on growth rates and area demographic changes.

Sample Questions it can Answer

- Which types of stores are consumers most likely to shop at and what are they most likely to buy in my trade area?
- Which areas present better opportunities for expansion relative to other areas?
- Should my company adjust the merchandise mix for purchases of women's, men's and children's clothing based on trade area spending patterns?