

# Guidelines for Quality Adjustment of New Vehicle Prices

(Revised May 2014)

## Introduction

This material defines and describes the concepts and procedures followed by the U.S. Bureau of Labor Statistics (BLS or the Bureau) in adjusting quoted prices of new vehicles for changes in quality. These adjusted prices are used in the compilation of the following official BLS price indexes: the Consumer Price Index (CPI), the Producer Price Index (PPI), and the U.S. Import and Export Price Indexes (IPP).

The purposes of these guidelines are to:

1. Specify the basic information needed to make adjustments.
2. Indicate how data will be used.
3. Aid users of price indexes in interpreting adjustments.

The descriptive categories the Bureau uses to adjust for quality changes in a vehicle can be thought of in terms of reliability, durability, safety, fuel economy, maneuverability, speed, acceleration/deceleration, carrying capacity, and comfort or convenience. Some physical characteristics included in these categories are not susceptible to precise, direct measurement. However, many descriptive categories either do have, or are related to, a characteristic that has a discrete measurement that can be evaluated and compared to the previous year's model.

In the process of determining quality improvement and/or deterioration, BLS seeks answers to such questions as:

- How is the functionality of the feature or related components different?
- How is the warranty affected by the change?
- How is the reliability of the feature or related components different?
- How is the performance of the feature or related components different?

(These questions are examples and not the complete criteria for quality adjustment evaluation.)

When examination shows that a quality change has occurred, BLS determines the value of the embodied change in terms of resource costs so reported prices can be adjusted to reflect a constant quality index. BLS defines resource costs as all direct and indirect costs, including:

- Research and development incurred in the manufacture or purchase of components,
- Plus assembly and installation associated with an equipment change,
- Plus the manufacturer's established mark-up,
- Plus the retail margin (CPI Only).

BLS requests that model changeover information be provided so it may be evaluated for immediate use in the indexes. Traditionally, this would be early in September each year, when new models are often introduced, for inclusion into the October PPI index. For purposes of the CPI, the information will be included in the index when the sales for the new model year vehicle exceed the sales of the prior year model. Dollar values for changes are requested no later than October 15th for public introductions made from mid-September to early October. All information for model changeovers will be used in the compilation of figures for the annual press release entitled *Report on Quality Changes for [year] Model Vehicles*.

## Criteria for Quality Adjustments

BLS adjusts for structural and engineering quality changes such as:

- Changes that affect the safety of occupants of the vehicle as mandated by legislated federal or state standards, and for purposes of IPP export items, applicable foreign market standards. Changes in safety features not required by legislated standards will be evaluated on a case-by-case basis.
- Changes in mechanical or electrical features that affect the overall operation or efficiency of the vehicle, or the ability of a component to perform its function, such as changes affecting steering, braking, stability, engine horsepower, traction control, transmission, battery life, and fuel systems and/or electrical systems.
- Changes in design or materials that affect the length of service, durability, need for repairs, or strength or performance of the item, such as stronger bumpers, HID headlamps, flexible body panels, platinum-tipped spark plugs, or warranty changes.
- Changes that affect comfort or convenience, if supported by evidence of a functional or software improvement, such as redesigned seat belts, remote door locks, theft deterrent systems, navigation and communication systems, satellite radio hardware, drive assist systems, backup cameras, sensors or changes in storage capacity.
- For purposes of the PPI and IPP, changes that affect the healthfulness of the outside environment as required by legislated federal or state standards, and for purposes of IPP export items, applicable foreign market standards. Changes to meet emission standards will be allowed prior to the effective date of the standard.

### Manufacturer changes for which adjustments will not be made are:

- Style or changes in appearance designed solely to make the product seem new or different, such as trim, wheel design, colored bumpers, etc.
- Physical changes in separate components or parts that do not affect functionality or the performance of the component, such as simplification of components for assembly purposes or serviceability
- For purposes of the CPI, changes made solely to meet air pollution standards on models introduced in January 1999 or thereafter, that do not otherwise provide direct value to the consumer. Price increases associated with such modifications are treated as increases in the index. (For a detailed economic rationale for this treatment, see “The Treatment of Mandated Pollution Control Measures in the CPI” on the Internet at [www.bls.gov/cpi/cpitreat.htm](http://www.bls.gov/cpi/cpitreat.htm). The PPI and IPP will continue to make these adjustments.)

## Pricing and Adjustment Procedures

### Selection of Model

Models and associated optional equipment priced for BLS are originally selected through probability sampling. These models continue to be tracked through the life of the sample providing the vehicle is produced and delivered by the same manufacturer.

When a model no longer meets these criteria, a new model must be selected that most closely resembles the previous model based on the criteria above, in the listed order of importance. Optional equipment selected during the sampling process will continue to be tracked on the models priced by BLS, subject to availability.

### Grouping Related Changes

Related changes should be grouped together. Related changes and/or additional parts required to accommodate the principal change in a component assembly are considered part of the overall quality change when improvement can occur only in combination. This procedure provides a better basis for deciding when changes in one component are offset by changes in another. Redesigned parts necessitated by the principal change in a particular component may result in savings that offset part of the cost of the principal change.

### Requested Data

To facilitate evaluation, resource cost data provided by the manufacturers that include mark-up cost, are divided into separate categories: federal or state safety standards, federal or state emissions standards, fuel economy, warranty changes, and other changes. "Other changes" can be further separated into categories for standard equipment made optional and optional equipment made standard. Furthermore, manufacturers are requested to submit figures for miles per gallon (mpg), curb weight, interior volume, horsepower (hp), wheelbase (wb), overall length, and fuel tank capacity from one model year to the next. In addition, manufacturers are asked to include a brief explanation of the changes.

### Application of Value

- If BLS determines an entirely new standard feature or untracked option that becomes standard meets the criteria for quality adjustment, resource costs associated with the feature are applied as the value of adjustment to the price.
- When a change involves modification or replacement of an existing standard feature or tracked option, and BLS determines the modification or replacement meets the criteria for quality adjustment, the incremental resource costs from one model year to the next are applied as the value of adjustment.
- When a previously standard feature is made optional-at-extra-cost, the optional feature is added to the tracked vehicle's product specification and its price added to the new model total price with no quality adjustment.
- If a standard feature or tracked option is completely removed from the vehicle, the resource costs are applied as a negative value of adjustment to the previous model price – Effectively, in terms of the index, resulting in a price increase.

### Mark-up to Retail

For purposes of the CPI, the retail quality adjustment value is estimated by marking up the resource cost quality adjustment value by the ratio of the manufacturer's suggested retail delivered price for the equipped vehicle to the price charged by the manufacturer to the dealer for the identical vehicle. The value applied by the IPP and PPI is the actual resource cost that is provided by the manufacturer. This

value is not marked up to retail price levels.

### **Warranties**

Extensions in either coverage or duration of a warranty are considered quality improvement. Following the same principle, any reduction in warranties are applied as the basis for quality deterioration. Manufacturers are requested to provide details of warranty changes and changes in components covered by the warranties along with the value of these changes. One adjustment to the claim may be allowed based on a better estimate following one year of actual warranty pay-out experience. The value applied by the IPP and PPI would be the resource cost that is provided by the manufacturer. The CPI would take this resource cost and mark it up to a retail cost.

### **Other Services**

Other services such as free maintenance, satellite radio subscriptions, and navigation assistance over a particular time period or mileage limits are considered quality improvements in the CPI and IPP programs. These are treated as discounts by the PPI. However, the PPI does quality adjust for hardware changes or additions. Manufacturers are requested to provide a resource cost for the entire free service program in addition to any hardware changes to the vehicle.

### **Essentially New Type of Vehicle**

Periodically, product lines are changed so radically that it is not feasible to establish comparability of a current model with any previous model. Such situations will be handled by treating the new model as if it were an entirely new product, i.e., linking it into the index (replacing the old model with the new model that results in no change in price index level for that series in the IPP and PPI, or by imputing the price change by other model changeovers in the CPI).

### **Changed Quality Not Proportional to Estimated Value**

Occasionally, new technology makes it possible to achieve recognizably better quality at no increase in cost—or possibly even at lower cost. While the values associated with these changes provide BLS with reference information, they are not reflected in BLS quality adjustment amounts.

### **Inadequate Information**

In some cases, manufacturers do not find it feasible to supply adequate information regarding costs involved in quality change. If the quality change is minor, and is in no way related to the ability of this product to perform its function, it will be ignored, and prices between pricing periods will be compared directly. However, if the quality change does impact on the product's ability to function differently, BLS will estimate its value from any pertinent information available.

### **Values Less than \$5.00**

Except for items required by a federal or state mandate, changes that have values less than \$5.00 will not be considered for quality adjustments, unless there is an accumulation of similar changes that might significantly affect the evaluation process.

### **Aerodynamics**

BLS will allow aerodynamic changes, when wind tunnel results—or other supporting evidence of a net overall improvement to the vehicle performance—are provided and cost data is available for each individual change.

### **Noise, Vibration and Harshness (NVH)**

BLS will allow interior noise changes provided consistent measures (at idle, full throttle acceleration, 70 mph cruising, or 70 mph coasting) show an improvement, measured in decibels (dB), from the previous year; and cost data associated with these changes are available. Changes in features resulting in adjustments to overall vibration and harshness will be allowed, when cost data are available and substantiated by measurements.

## Adjustment Example

Example Only									BLS Motor Company Summary OF 2013-2014 Model Quality Changes								
Model year	Mpg Hwy/city	Horse-power	Curb weight (lbs)	Height (in.)	Length	Width	Wheel base (in.)	Fuel tank (gal)									
2013	26/19	190	4,160	58.1	186.2	69.1	106.1	15.9									
2014	26/19	190	4,165	58.1	186.2	69.1	106.1	15.7									

Type of Change		Resource Cost
<b>Safety</b>	Center side impact air bags	\$180.00
	Brake assist	\$40.00
	Lane departure warning	\$120.00
	Front knee airbag	\$80.00
	Rear view camera (FMVSS 111)	\$120.00
<b>Emissions</b>	Changes made to the fuel tank to meet Low emissions Vehicle (LEV II) requirements. The tank was modified high/mid blow molded plastic; added 2 tank assemblies.	\$84.00
<b>Fuel economy</b>	New gear revision to reduce engine rpm and improve fuel economy by 0.1 mpg.	\$22.00
<b>Warranty changes</b>	3 year/36,000 miles to 4 years/70,000 miles bumper to bumper.	\$124.00
<b>Maintenance</b>	Free scheduled maintenance for 36,000 miles or 3 years	\$300.00
<b>Other changes</b>	HID headlamps added	\$120.00
<b>Untracked option made standard equipment</b>	Remote start	\$60.00
<b>Feature or option deleted</b>	6-disk cd player deleted	-\$30.00
<b>Standard equipment made optional</b>	Adding optional power adjustable pedals price	\$150.00