# COVER PAGE FOR CHANGES TO ACADEMIC ORGANIZATION OR STRUCTURE OF AN EDUCATIONAL UNIT

The Senate's Academic Organization and Structure Committee (SAOSC) is tasked by the University Senate with the review of proposals to change academic organization or structure. The information needed by the SAOSC for the review of such proposals is set forth in *Senate Rules 3.4.2.A.5*[1].

The SAOSC has developed a set of guidelines (from the *Senate Rules*) that are intended to ease the task of proposal submission (available at http://www.uky.edu/Faculty/Senate/forms.htm). As proposal omissions usually cause a delay in the review process, the individual(s) responsible for the proposal is (are) urged to familiarize themselves with these guidelines before submitting their proposals for review. In particular, the individual responsible for the proposal must fill out Sections I, II and III of this form, as well as include statements and documentation that provide a full accounting of the items a - i, below.

a. Disposition of faculty, staff and resources (financial and physical);
b. Willingness of the donating units to release faculty lines for transfer to a different educational unit;
c. Consultation with the faculty of the unit to which the faculty lines are proposed to be transferred;
d. Consultation with the faculty of educational unit that will be significantly reduced;
e. Summary of votes and viewpoints (including dissents) of unit faculty and department/college committees;
f. Ballots, votes expressing support for or against the proposal by unit faculty and staff and committees;
g. Letters of support or opposition from appropriate faculty and/or administrators; and
h. Letters of support from outside the University.

## Section I – General Information about Proposal

| | | | | | |
|---|---|---|---|---|---|
| One- to two-sentence description of change: | The College of Engineering seeks to name the "Department of Engineering Technology" to the "Fujio Cho Department of Engineering Technology". | | | | |
| Contact person name: | Rudy Buchheit | Phone: | 614 404-1041 | Email: | rgbu225@uky.edu |
| Administrative position (dean, chair, director, etc.): | Dean, College of Engineering | | | | |

## Section II – Educational Unit(s) Potentially Impacted by Proposal

| Check all that apply and name the specific unit(s). | | |
|---|---|---|
| ☒ | Department of: | Engineering Technology |
| ☐ | School of: | |
| ☒ | College of: | Engineering |
| ☐ | Graduate Center for: | |
| ☐ | Interdisciplinary Instructional Program: | |
| ☐ | Multidisciplinary Research Center/Institute: | |

## Section III – Type of Proposal

| Check all that apply. |
|---|

[1] Items a-i are derived from *Senate Rules 3.4.2.A.5*. The Senate Rules in their entirety are available at http://www.uky.edu/Faculty/Senate/rules_regulations/index.htm.)

## COVER PAGE FOR CHANGES TO ACADEMIC ORGANIZATION OR STRUCTURE OF AN EDUCATIONAL UNIT

| | |
|---|---|
| *A. Changes* | |
| ☒ | Change to the name of an educational unit. |
| | |
| ☐ | Change to the type of educational unit (e.g., from department to school). |
| | |
| *B. Other types of proposals* | |
| ☐ | Creation of a new educational unit. |
| | |
| ☐ | Consolidation of multiple educational units. |
| | |
| ☐ | Transfer of an academic program to a different educational unit. |
| | |
| ☐ | Transfer of an educational unit to a different reporting unit. |
| | |
| ☐ | Significant reduction of an educational unit. |
| | |
| ☐ | Discontinuation, suspension or closure of an educational unit. |
| | |
| ☐ | Other (Give a one- or two-sentence description below; a complete description will be in the proposal. |
| | |
| | |

**Section IV is for internal use/guidance.**

### Section IV – Guidance for SAOSC, Senate Council and University Senate

***SAOSC Review of Type A Proposals (Changes to Type of, or to Name of, an Educational Unit)***

- ✓ SAOSC review of proposal.
- ✓ SAOSC recommendation for an additional or joint review by other Senate committee(s) (e.g. Senate's Academic Programs Committee).

***SAOSC Review of Type B Proposals (All Other Changes)***

- ✓ SAOSC review of proposal.
- ✓ SAOSC recommendation for an additional or joint review by other Senate committee(s) (e.g. Senate's Academic Programs Committee).
- ✓ SAOSC review of proposals for creation, consolidation, transfer, closure, discontinuation, or significant reduction and educational unit, or transfer of an academic program to a different educational unit (attach documentation).
- ✓ Program review in past three years (attach documentation).
- ✓ Request to Provost for new program review (attach documentation).
- ✓ Open hearing (attach documentation).
    - SAOSC information must be shared with unit 10 days prior to hearing.
    - Open hearing procedures disseminated.

***Voting by SAOSC, Senate Council and University Senate***

- ✓ Endorse (or do not endorse) the academic organization, reporting, infrastructure, etc.
    - This vote is taken by the SAOSC, SC and Senate <u>for every SAOSC proposal</u>.
- ✓ Approve (or do not approve) the academic status or content of academic program.
    - This vote is taken by the SAOSC, SC and Senate <u>only when the review involves an MDRC</u>.

**Proposal to Name the Department of Engineering Technology the "Fujio Cho Department of Engineering Technology"**

**January 12, 2023**

**1) What is the impetus for the proposed change?**

The College of Engineering seeks to name the Department of Engineering Technology in honor of Mr. Fujio Cho, the inaugural Executive Director of Toyota Motors Manufacturing Kentucky (TMMK). Under this proposed action the department would be known as the **Fujio Cho Department of Engineering Technology**.

This is an honorific naming, and the President has approved a waiver of requirement V.C.2 in AR 8: "Endowment Policies for Colleges, Departments, Centers, Institutes, Units, Programs, and Research and other Scholarly Activity", which requires a private gift of $5 million or more to name an academic department. A copy of the approved waiver is attached as **Exhibit 1.**

**2) What are the benefits and weaknesses of the proposed unit with specific emphasis on the academic merits for the proposed change?**

This naming affords the university an opportunity to honor Mr. Cho's vision for robust collaborative partnership between Toyota and the University of Kentucky. This naming also affords an opportunity to recognize the economic impact of Toyota in Kentucky and nationally (**Appendix I**). The Cho name is prestigious and will bring distinction to the Department, its program, graduates, and collective accomplishments. It also expresses gratitude for Toyota's longstanding material support of Engineering and more recently the creation of the Engineering Technology Department. Since 1988, Toyota has provided $14.4 million in support for Engineering programs at UK (**Appendix II**).

**3) Describe the organization of the current structure and how the proposed structure will be different and better. Current and proposed organizational charts are often helpful in illustrating reporting lines.**

There is no structural or organizational change for the Department of Engineering Technology, or the College of Engineering associated with this action. The organizational chart for the Department of Engineering Technology is attached (**Exhibit 2 and 3**).

**4) How does the change fit with department, college, and/or university objectives and priorities?**

This naming aligns with our institutional land grant mission to provide a practical education to the industrial classes and reminds us of the importance of our relationship with business and industry for sustaining the economic well-being of the Commonwealth.

**5) How does this change better position the proposers relative to state and national peers, as well as University Benchmark Institutions? How does the change help UK meet the goals of its strategic plan?**

This change is a public signal of the strength, vibrancy, importance, and uniqueness of the Toyota-UK relationship that will be recognized by our national peers and stakeholders across the Commonwealth.

**6) Who are the key personnel associated with the proposed unit? Provide qualifications of these personnel in a brief form. A complete curriculum vitae for each person is not needed, although pertinent information in tabular format is helpful.**

The faculty and staff roster for the Department of Engineering Technology is appended to this proposal (**Exhibit 4**).

**7) Discuss leadership and selection process for appointing a chair, a director, or interim leader and search process, etc.**

The Department is led by Dr. Nelson Akafuah who serves as Department Chair. Dr. Akafuah was appointed to this position previously and leadership selection is not a component of this proposed action.

**8) What is the function of the faculty/staff associated with the proposed change and how is that relationship defined? Discuss DOE, adjunct, full-time, voting rights, etc.**

The faculty and staff in the department fulfill typical roles required to sustain success of an educational unit at the university. Roles and responsibilities can be understood in the context of organizational chart shown in **Exhibits 2 and 3**.

**9) Will the proposed change involve multiple schools or colleges?**

No.

**10) If the proposed change will involve transferring personnel from one unit to another, provide evidence that the donor unit is willing and able to release the personnel.**

There are no personnel transfers associated with this proposed action.

**11) What is the arrangement of faculty associated with the proposed change and how is that relationship defined? Discuss faculty DOE and status as adjunct, tenure track, or tenured. Describe the level of faculty input in the policy-making process including voting rights and advisory.**

There is no change in arrangement of faculty, their relationship to one another, nor is there any change in faculty reporting lines or other aspect of faculty status. No objections have been raised by the faculty concerning the proposed name change for the Department.

**12) Discuss any implications of the proposal for accreditation by SACS and/or other organizations.**

This honorific naming creates no impacts related to accreditation processes involving the department.

**13) What is the timeline for key events in the proposed change? Student enrollments, graduates, moved programs, closed courses, new faculty and staff hires, etc.**

There are no key administrative events or timeline except for those associated with the Senate and Board of Trustees review and approval process.

**14) If the proposal involves degree changes*, describe how the proposed structure will enhance students' education and make them more competitive. Discuss the impact on current and future students. State assumptions underlying student enrollment growth and describe the plans for student recruitment.**

The proposed action does not involve degree changes.

**15) Include evidence that adequate financial resources exist for the proposed unit to be viable. A general description of the new costs and funding should be provided. A letter from the Provost, Dean, or other relevant administrators may affirm commitment to provide financial resources as appropriate. An exhaustive budget is not expected.**

There are no new operational, or payroll expenses associated with this proposed action. In FY23 the combined budget for the department and the embedded Institute of Research for Technology Development (IR4TD) is approximately $1.3 million with forecast for a stable to increasing budget position over the next several years due to projected increases is student enrollment.

**16) The proposal should document any faculty votes and departmental or school committee votes as appropriate leading up to this point in the process. The SAOSC recommends that faculty votes be by secret ballot. Include in your documentation of each vote taken the total number of eligible voters and the number that actually voted along with the break-down of the vote into numbers for, against and abstaining. A Chair or Dean may appropriately summarize supporting and opposing viewpoints expressed during faculty discussions.**

This action does not involve administrative reorganization, changes in governance or allocation/reallocation of resources, no formal votes were taken. Letters from the department chair (**Exhibit 5**) and college dean (**Exhibit 6**) articulate support at those respective levels. The presidential waiver of AR 8.4.V.C.2 articulates support for the naming action at the institutional level (**Exhibit 1)**.

**17) The committee will want to see evidence of academic merit and support from key parties. Letters of support (or opposition) are encouraged from the relevant senior faculty and administrators. Relevant faculty and administrators include those in units directly involved in the proposed change (including existing units from which a new unit may be formed.)**

Relevant letters are provided in **Exhibits 5, 6 and 1**.

**18) Indicate how the new structure will be evaluated as to whether it is meeting the objectives for its formation. Timing of key events is helpful.**

There is no change in the structure of the department associated with this proposed action and the unit will continue to be evaluated as described in applicable department, college, and university policy.

**19) Letters of support from outside the University may be helpful in understanding why this change helps people beyond the University.**

A formal letter of support has been with Toyota. Toyota corporate leadership is aware of and supportive of this proposed naming action, and if this naming action proceeds, Toyota has expressed its preference for a trailing agreement between Toyota and UK with the following provisions:

- UK names the Engineering Technology Department for Mr. Cho to recognize his contributions and Toyota's contributions to Engineering, the University, and the Commonwealth
- Either party may dissolve the agreement at its discretion.
- The department would cease to bear Mr. Cho's name if the agreement was dissolved.
- There is no financial obligation to Toyota associated with the naming action.

# EXHIBIT 1

University of Kentucky
College of Engineering
Office of the Dean
353 Ralph G. Anderson Bldg.
Lexington, KY 40506
P: 859-257-1687
F: 859-257-5727
www.uky.edu

Approved gladly!
Eli Capilouto 2/24/22

Date: February 24, 2022

To: Eli Capilouto, President

From: Rudy Buchheit, Dean, College of Engineering

RG Buchheit

Subject: Request to waive Administrative Regulation 8:4.V.C for naming the Department of Engineering Technology

The College of Engineering seeks to name the newly created department of Engineering Technology in honor of Mr. Fujio Cho, the inaugural Executive Director of Toyota Motors Manufacturing Kentucky (TMMK). Under this proposed action the department would be known as the **Fujio Cho Department of Engineering Technology**.

This naming affords the university an opportunity to honor Mr. Cho's vision for robust collaborative partnership between Toyota and the University of Kentucky. From 1987 to 1994 Mr. Cho (biography attached) and Professor Kozo Saito from the Department of Mechanical Engineering worked together to layout the foundation of the now well-established Toyota-University of Kentucky relationship on R&D, True Lean Systems, and production engineering. Through this relationship Toyota has invested $14.3 million in gifts and R&D support at the University. The Lean Systems Program that was developed as part of the Toyota-UK collaboration has generated approximately $28 million in direct and indirect program support.

This naming also affords an opportunity to recognize the economic impact of Toyota in Kentucky. A 2015 study by the Center for Automotive Research (CAR) found that Toyota and its suppliers supported 29,700 jobs in Kentucky with an aggregate payroll of $1.8 billion, much of that concentrated in Central Kentucky. The company is a leader in environmental sustainability in its products and its manufacturing facilities. It is also generous corporate citizen reporting nearly $7 million in philanthropic activity in Kentucky in 2015. The positive impact Toyota's operations have had on the people and the economy of the state of Kentucky is clear and most worthy of recognition through this honorific naming.

In view of the foregoing, **I am requesting a waiver of requirement V.C.2 in AR 8: "Endowment Policies for Colleges, Departments, Centers, Institutes, Units, Programs, and Research and other Scholarly Activity"**, which requires a private gift of $5 million or more to name an academic department. If granted, this waiver would be submitted as part of an organizational name change request to the University Senate and the Board of Trustees.

**EXHIBIT 2**

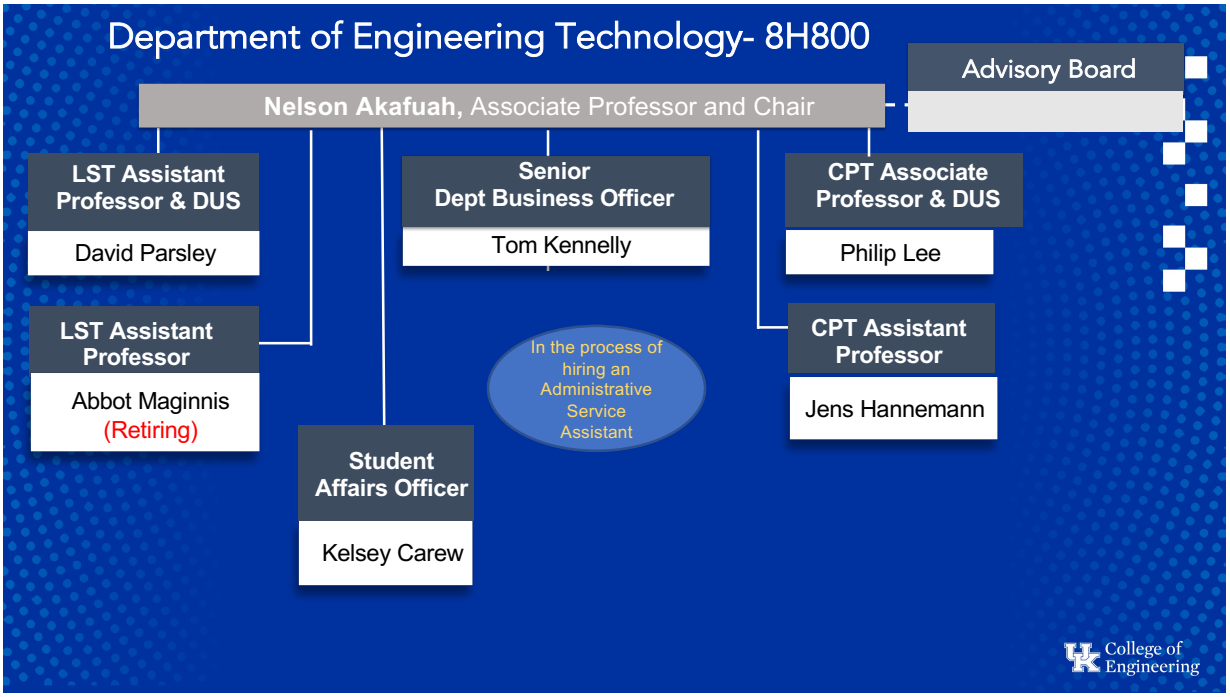
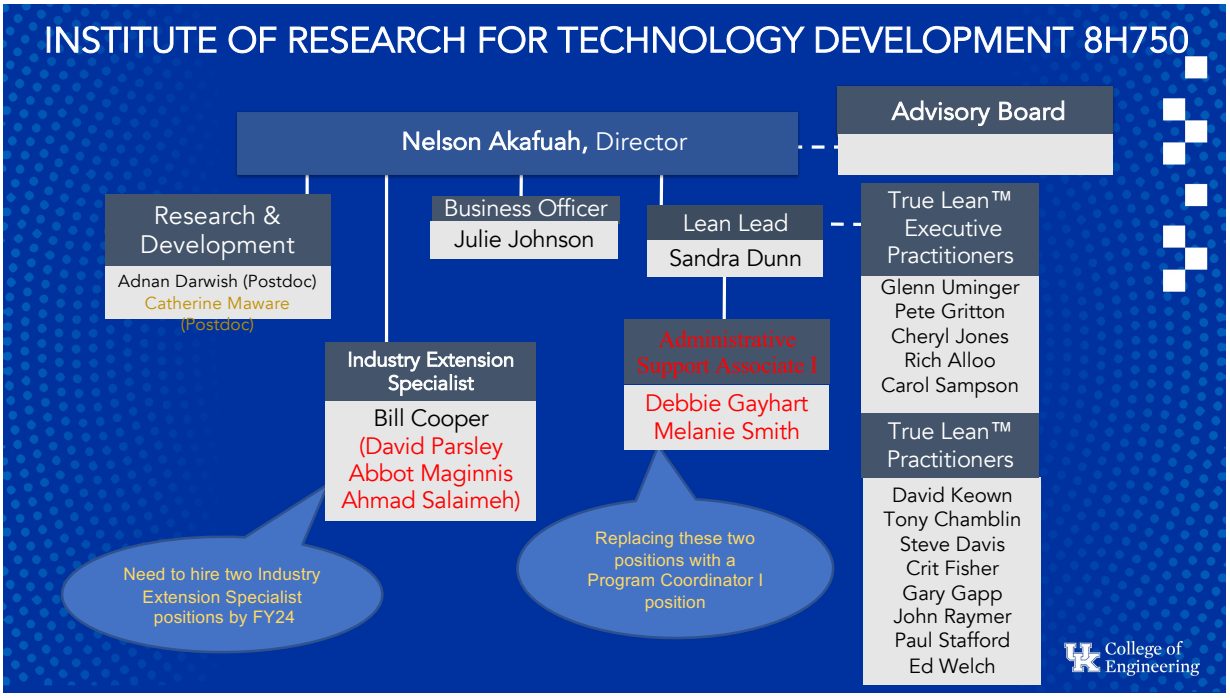

Department of Engineering Technology- 8H800
Advisory Board
Nelson Akafuah, Associate Professor and Chair
LST Assistant Professor & DUS
David Parsley
LST Assistant Professor
Abbot Maginnis (Retiring)
Student Affairs Officer
Kelsey Carew
Senior Dept Business Officer
Tom Kennelly
In the process of hiring an Administrative Service Assistant
CPT Associate Professor & DUS
Philip Lee
CPT Assistant Professor
Jens Hannemann
College of Engineering

**EXHIBIT 3**


INSTITUTE OF RESEARCH FOR TECHNOLOGY DEVELOPMENT 8H750
Nelson Akafuah, Director
Advisory Board
Research & Development
Adnan Darwish (Postdoc)
Catherine Maware (Postdoc)
Business Officer
Julie Johnson
Lean Lead
Sandra Dunn
True Lean™ Executive Practitioners
Glenn Uminger
Pete Gritton
Cheryl Jones
Rich Alloo
Carol Sampson
Industry Extension Specialist
Bill Cooper
(David Parsley
Abbot Maginnis
Ahmad Salaimeh)
Administrative Support Associate I
Debbie Gayhart
Melanie Smith
True Lean™ Practitioners
David Keown
Tony Chamblin
Steve Davis
Crit Fisher
Gary Gapp
John Raymer
Paul Stafford
Ed Welch
Need to hire two Industry Extension Specialist positions by FY24
Replacing these two positions with a Program Coordinator I position
College of Engineering

## EXHIBIT 4

**Key Personnel**

| Name | Role | Background |
|---|---|---|
| Nelson Akafuah | Chair and Associate Professor | PhD, University of Kentucky |
| David Parsley | Assistant Professor | PhD, University of Kentucky |
| Abbot Maginnis | Assistant Professor | PhD, University of Kentucky |
| Phillip Lee | Assistant Professor | PhD, NC State University |
| Jens Hanneman | Assistant Professor | PhD, University of Kiel |
| Tom Kennelly | Business Analyst Lead | |
| Kelsey Carew | Student Affairs Officer | |
| Sandra Dunn | True Lean Manager | |

# EXHIBIT 5

University of Kentucky
College of Engineering
Department of Engineering Technology
143 Graham Avenue
Lexington, KY 40506
P: 859-218-0702
www.engr.uky.edu/et

Rudolph G. Buchheit
Dean, College of Engineering
351 Ralph G. Anderson Building
Lexington, KY 40506

November 22, 2021

Dear Dean Buchheit,

Re: Departmental letter of support for the honorific naming of the Department of Engineering Technology

This letter demonstrates my full support for the change in the name of the Department of Engineering Technology to the **Fujio Cho Department of Engineering Technology**. Mr. Cho's vision sowed the seed for a long and mutually beneficial relationship between Toyota and the University of Kentucky, leading to creating the Department of Engineering Technology and the two new undergraduate degree programs housed in the Department.

The relationship between Toyota and the University of Kentucky started in 1994, focusing on R&D, True Lean Systems program, and production engineering. Through this relationship, Toyota has invested $14.3 million in gifts and R&D support at the University, including $3.38 million in direct support for creating the Department of Engineering Technology. The Lean Systems Program developed as part of the Toyota-UK collaboration has generated approximately $28 million in direct and indirect program support.

By naming the Engineering Technology Department, we will recognize Mr. Cho and Toyota's contributions to Engineering, the University, and the Commonwealth.

Sincerely

Nelson Akafuah, MBA, Ph.D
Associate Professor and Chair, Department of Engineering Technology

# EXHIBIT 6

University of Kentucky
College of Engineering
351 Ralph G. Anderson Building
Lexington, KY 40506
859-257-1687
www.engr.uky.edu

Date: August 20, 2021

From: Rudolph G. Buchheit, Dean, College of Engineering

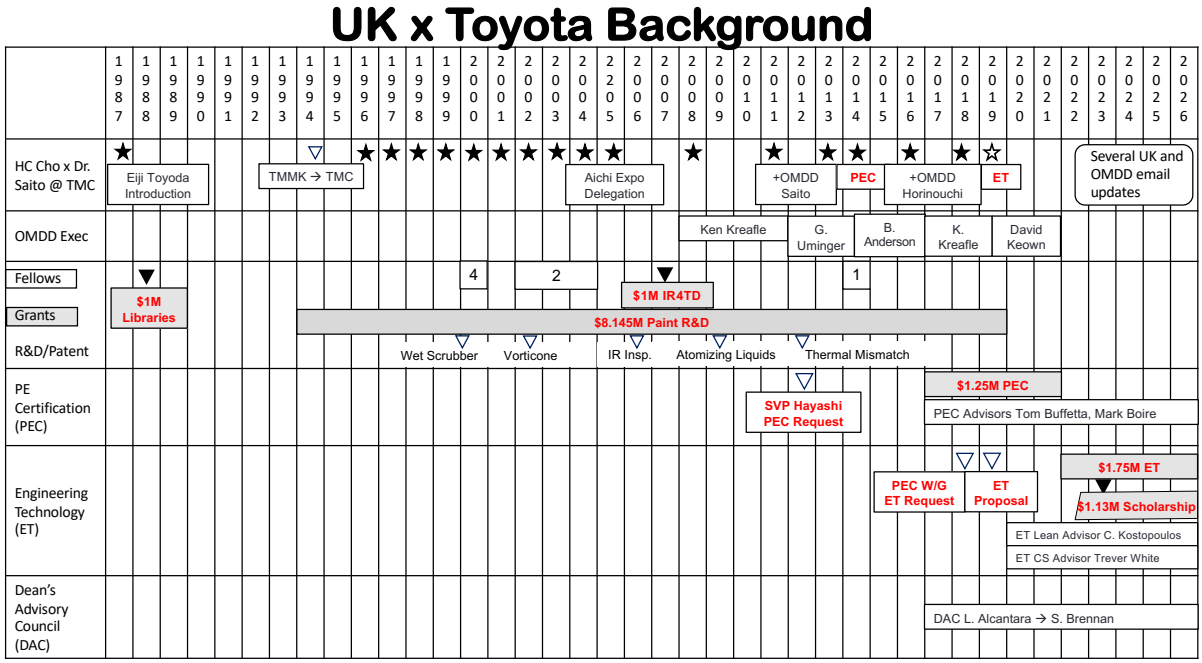
Re: Letter of support for the honorific naming of the Department of Engineering Technology

I am pleased to support the change in name of the Department of Engineering Technology to the Fujio Cho Department of Engineering Technology. Mr. Cho's vision has been the foundation of a long and mutually beneficial relationship for Toyota Motors Manufacturing Kentucky and the University of Kentucky, the most recent manifestation of which has been the creation of the Department and two new undergraduate degree programs poised to boost the manufacturing economy in Kentucky.

I look forward to the contributions this department and its programs will make for the betterment of the University and the Commonwealth.

# APPENDIX I





**APPENDIX II**

DECEMBER
**2016**

# Contribution of Toyota Motor North America to the Economies of Nineteen States and the United States in 2015


Kristin Dziczek

Yen Chen

Bernard Swiecki

Michael Schultz

Deb Menk

Juliana Patterson

DECEMBER
**2016**

# Contribution of Toyota Motor North America to the Economies of Nineteen States and the United States in 2015


Kristin Dziczek

Yen Chen

Bernard Swiecki

Michael Schultz

Deb Menk

Juliana Patterson

# TABLE OF CONTENTS

## List of Tables

## List of Figures

## ACKNOWLEDGEMENTS

This study is the result of a group effort. The authors would like to thank our colleagues at the Center for Automotive Research, Terni Fiorelli, and our former colleague, Deb Menk, for their assistance with this study. Additional assistance was provided by Diana Douglass, who coordinated the production of this document.

Also, we would like to thank Toyota Motor North America, Inc. for the opportunity to carry out this research.

Kristin Dziczek

Yen Chen

Bernard Swiecki

Michael Schultz

Juliana Patterson

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*The Center for Automotive Research, a nonprofit automotive research center, has performed detailed studies of the contribution of the automotive industry and its value chain in the U.S. economy for more than 35 years.*

*CAR's mission is to conduct independent research and analysis to educate, inform and advise stakeholders, policy makers, and the general public on critical issues facing the automotive industry, and the industry's impact on the U.S. economy and society.*

## EXECUTIVE SUMMARY

This study estimates the employment and economic contribution of Toyota Motor North America's operations and activities to the United States economy, and the economies of the nineteen states in which Toyota has significant manufacturing or other operations in 2015. The Center for Automotive Research (CAR) used a regional model of the U.S. and state economies to estimate that Toyota's 135,900 direct employees in manufacturing, supporting operations, and dealerships generate another 108,400 jobs in companies that supply Toyota (intermediate impacts), and 225,800 jobs that are supported by the direct and indirect employees spending their paychecks in the economy (spin-off or expenditure-induced impacts)—for a total employment impact of 470,100. These results yield an employment multiplier of 3.5 for Toyota's overall U.S. operations. Toyota's U.S. employment also supports $32.3 billion in private non-farm payroll income, which is $23.6 billion after taxes, social insurance payments, and government transfer receipts. Toyota's estimated employment contribution totals 0.29 percent of total U.S. private economy employment, and 0.35 percent of total U.S. private compensation—which means that Toyota employees are higher paid on average in the context of the overall U.S. economy.

Focusing solely on Toyota Motor North America's U.S. manufacturing-related operations, Toyota's 30,700 direct U.S. jobs generate another 62,800 supplier jobs, and 124,200 spin-off jobs—for a total manufacturing-related employment impact of 217,700 jobs in the United States. Based on the company's manufacturing results alone, Toyota's employment multiplier is 7.1—which means that there are an additional 6.1 jobs in the U.S. economy that are supported by every one employee in Toyota's U.S. manufacturing-related operations. Nearly half of the total Toyota U.S. payroll and personal disposable income contribution is generated by manufacturing-related operations—with the remainder comprised of new vehicle dealerships and manufacturing-support operations which include research and development, engineering, and technical centers.

CAR's estimates confirm that Toyota Motor North America makes significant economic contributions to the U.S. economy, as well as to the economies of the states in which Toyota's major operations are located. Toyota builds 70 percent of the vehicles it sells in the United States in this country. Toyota's commitment to the United States is also demonstrated in the company's investments in U.S. plants, equipment and facilities, and its corporate operations, as well as its corporate philanthropic giving. Over the past 20 years, two out of every three dollars Toyota has invested in North America have been spent on U.S. facilities, and the company's charitable giving totals $700 million to U.S. non-profit organizations.

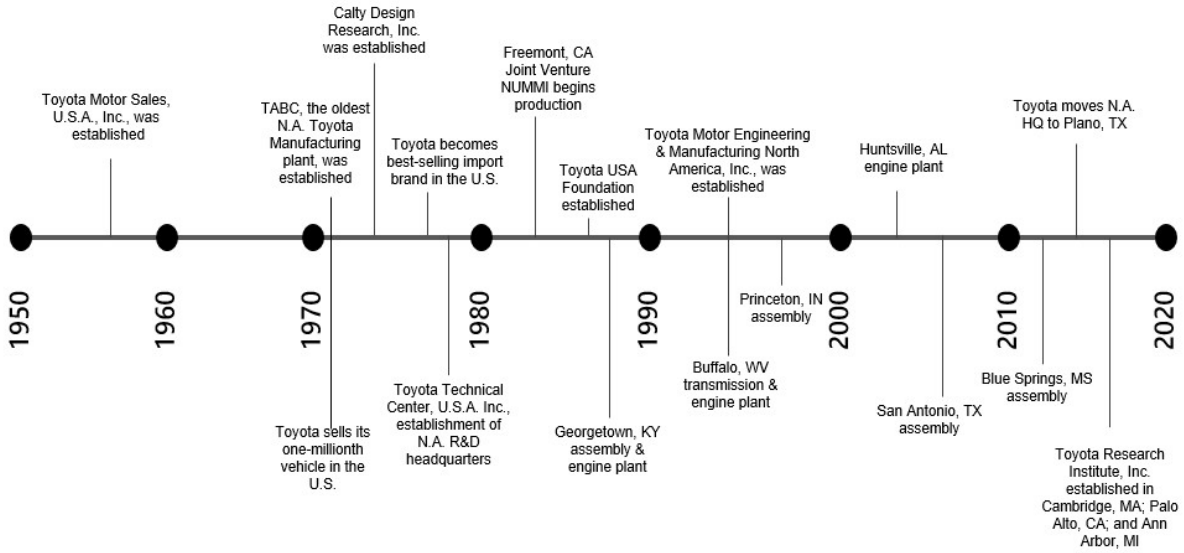
This report is presented in four sections: first is a presentation of Toyota's history in the United States and overview of the company's U.S. operations and activities; second is a review of CAR's estimates of the economic contribution of those operations and activities to the United States economy—as well as to the economies of the nineteen states included in this analysis; the third section contains concluding remarks; and finally, the fourth section is an appendix that includes a section on detailed research methodology, complete tables of the industry breakdown of intermediate and spin-off employment supported by Toyota's direct employment, a comparison of current results to previous Toyota economic contribution study estimates produced by CAR, and the bibliography.

## SECTION I: A BRIEF HISTORY OF TOYOTA IN THE UNITED STATES

Toyota's presence in the United States began when Toyota Motor Sales, U.S.A., Inc. was established in 1957, with its headquarters based in Torrance, California (Toyota Motors Sales, U.S.A., Inc., 2012). In 1958, which was the automaker's first sales year, just a few hundred vehicles were sold. Within a decade, however, Toyota was selling over 20,000 vehicles a year, and was ranked the third best-selling import brand in the United States, and by 1975, Toyota was the top selling import brand in the nation.

Toyota began producing vehicles in the United States in 1986 when it opened the New United Motor Manufacturing, Inc. (NUMMI) plant, a joint venture with General Motors (Toyota Motors Sales, U.S.A., Inc., 2012). Though NUMMI ceased operations in 2010, Toyota continues to produce vehicles in four vehicle assembly plants in the United States, two in Canada, and currently, one in Mexico. In addition, a new plant was announced for Mexico in 2015; this plant is expected to begin operations in Guanajuato, Mexico by 2019 and is projected to employ approximately 2,000 workers. Figure 1 depicts a timeline outlining Toyota's administration and manufacturing milestones and growth throughout the years.

*Figure 1: A Timeline of Toyota Operations in the United States, 1957-2016*



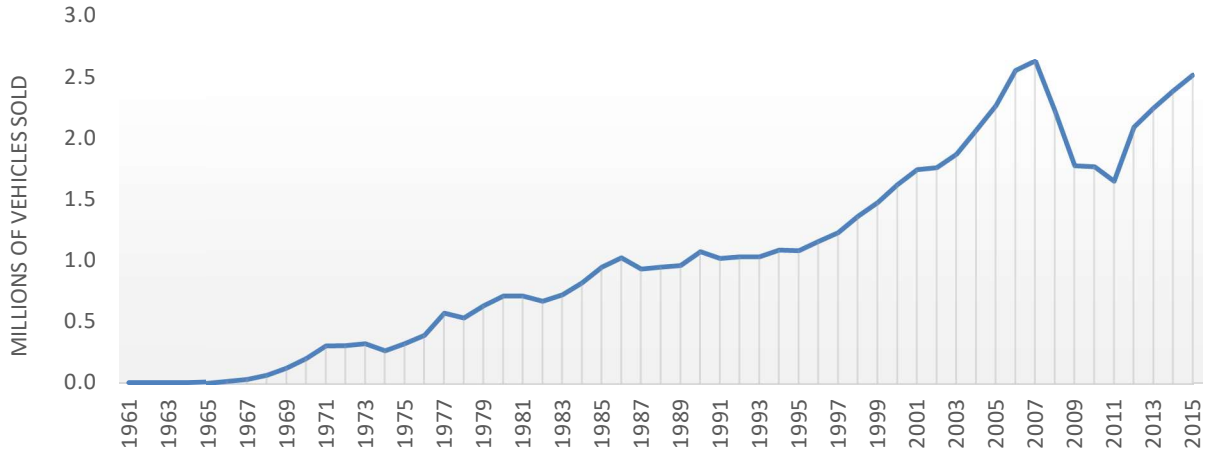

*Source: Toyota*

Over time, Toyota has expanded its U.S. product offerings with the additions of Lexus and Scion brands, and has added to its production capacity with new engine and assembly plants across the continent. The company decided to absorb and dissolve Scion in 2016, since newer Toyota-branded models were fulfilling the market niche for younger buyers (Durbin, 2016). Not only has Toyota made several changes to its production facilities but in 2015, the company announced that they would be consolidating their North American operations to Plano, Texas.

### *Toyota U.S. Sales*

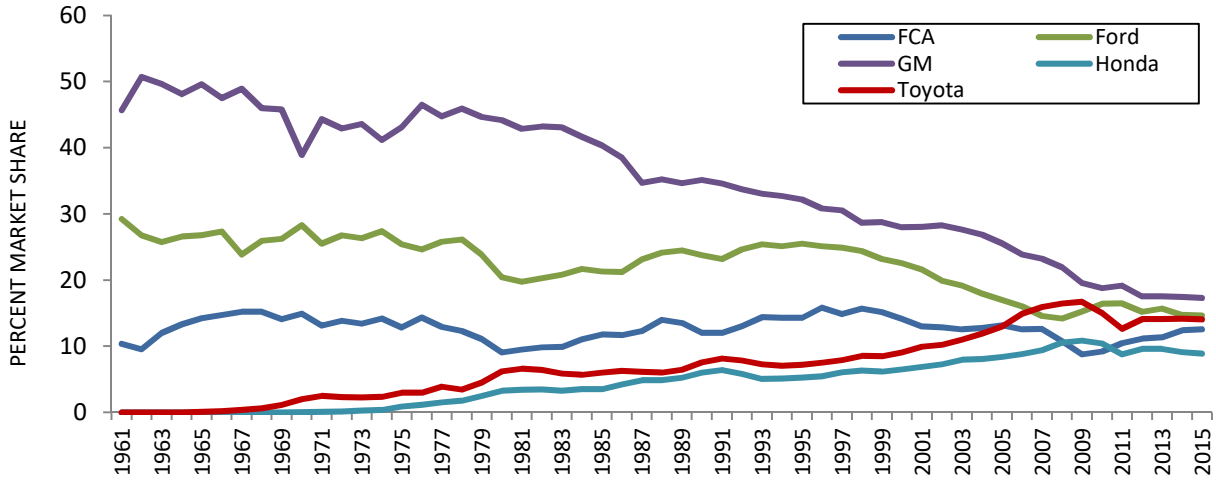
Toyota's U.S. sales have risen steadily since the company entered the U.S. market in 1958. Figure 2 shows the growth of Toyota's U.S. light vehicle sales through 2015. By the mid 1980's, sales surpassed the million-unit mark, and Toyota's U.S. sales exceeded 2.5 million units in 2015. Toyota was the third-best selling automaker in the United States in 2015 with 14.3 percent of the market—behind only Ford Motor Company and General Motors, as shown in Figure 3.

*Figure 2: Toyota Total Light Vehicle Sales in the U.S., 1961-2015*




*Source: Ward's Auto Data*

*Figure 3: U.S. Total Vehicle Sales Market Share by Company, 1961-2015*

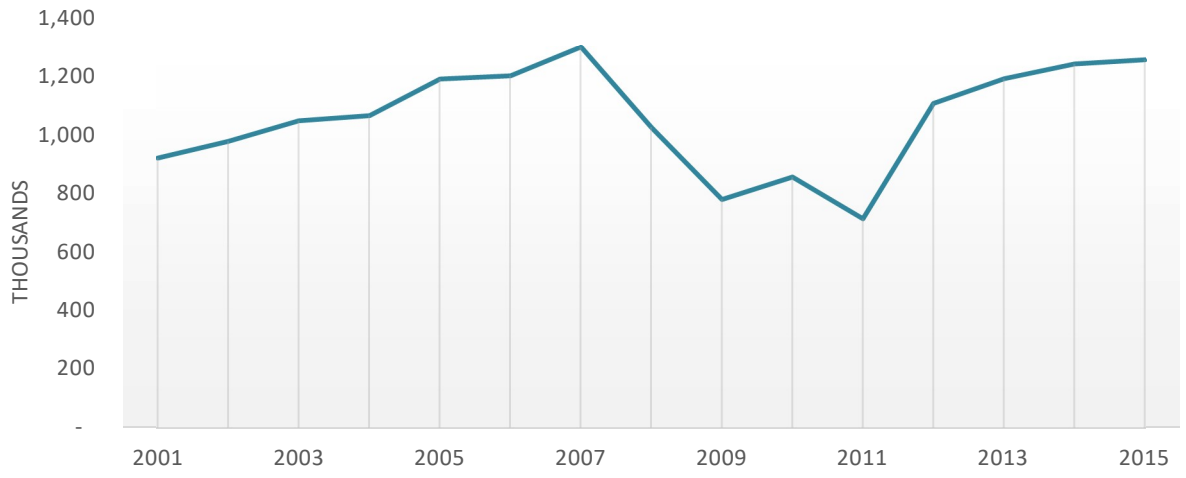



*Source: Ward's Auto Data*

### *Toyota U.S. Vehicle, Engine, and Transmission Production*

Toyota cars and light trucks are currently assembled in four plants across the United States. The company also builds engines in three plants, and transmissions in a single, dedicated transmission plant—some of these powertrain operations are co-located with an assembly facility. Toyota produced 1.3 million motor vehicles in 2015 in its U.S. light vehicle assembly plants, making the company the fifth largest vehicle producer in the United States. Figure 4 shows Toyota's U.S. production rose rapidly through 2007, when all U.S. production declined during the recession. Toyota's U.S. production has since recovered to pre-recession levels.

*Figure 4: Toyota U.S. Vehicle Production, 2001-2015*




*Sources: Ward's Auto and LMC Automotive*

Toyota's vehicle assembly plants are located in Kentucky, Indiana, Texas, and Mississippi. The vehicles produced in the United States include the Camry, Avalon, Venza, Sequoia, Highlander, Sienna, Tundra, Tacoma, Lexus ES 350, and the Corolla.

*Figure 5: Toyota U.S. Manufacturing Locations, 2016*

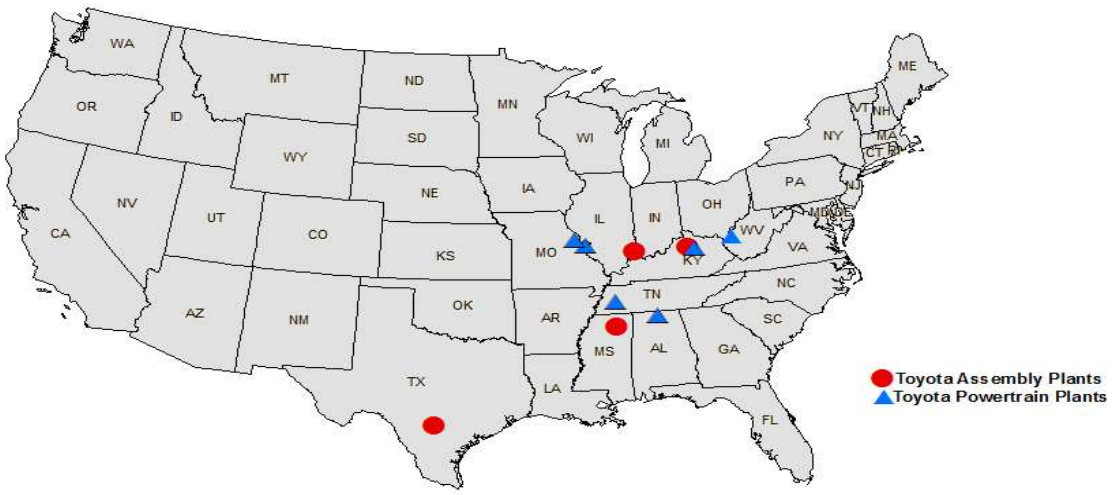


Table 1 depicts the locations of Toyota's light vehicle assembly operations in the United States, and includes a description of what is produced at each location and the plants' 2015 production volumes.

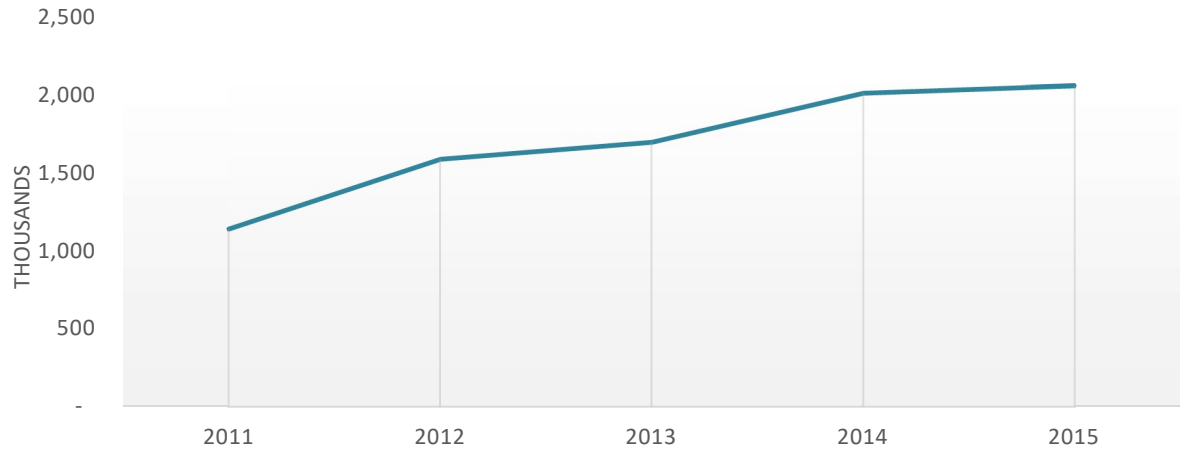
*Table 1: Toyota Manufacturing Plants in the United States, 2015*

| Plant | Facility Location | Products | 2015 Production |
|---|---|---|---|
| Toyota Motor Manufacturing, Kentucky, Inc. (TMMK) | Georgetown, KY | Camry, Camry Hybrid, Avalon, Avalon Hybrid, Venza, Lexus ES 350 | 457,668 |
| Toyota Motor Manufacturing, Indiana, Inc. (TMMI) | Princeton, IN | Sequoia, Highlander, Sienna | 375,647 |
| Toyota Motor Manufacturing, Texas, Inc. (TMMTX) | San Antonio, TX | Tundra, Tacoma | 232,910 |
| Toyota Motor Manufacturing, Mississippi, Inc. (TMMMS) | Blue Springs, MS | Corolla | 190,514 |
| Toyota Motor Manufacturing, West Virginia, Inc. (TMMVW) | Buffalo, WV | 4-cylinder & V6 engines, and 5-6- and 8-speed transmissions | 697,755 engines<br>537,594 transmissions |
| Toyota Motor Manufacturing Alabama, Inc. (TMMAL) | Huntsville, AL | 4-cylinder, V6 & V8 engines | 731,539 |
| Toyota Motor Manufacturing, Kentucky, Inc. (TMMK) | Georgetown, KY | 4-cylinder & V6 engines | 570,830 |
| Bodine Aluminum, Inc. | St. Louis, MO | Engine brackets and carrier covers | |
| Bodine Aluminum, Inc. | Troy, MO | Engine brackets and carrier covers, cylinder heads and cylinder blocks | |
| Bodine Aluminum, Inc. | Jackson, TN | aluminum cylinder blocks and automatic transmission parts | |

*Source: Toyota, Ward's Automotive Data, LMC Automotive*

Toyota's United States engine plants are located in Alabama, Kentucky, and West Virginia. The capacity of these is roughly two million engines annually. Figure 6 shows Toyota's United States engine production from 2011 through 2015. Toyota produced over two million engines in the United States in 2015, making it the fourth largest engine producer that year. Given that Toyota produced only 1.3 million vehicles in the U.S. during the same year, Toyota was a net exporter of its U.S.-produced engines in 2015.

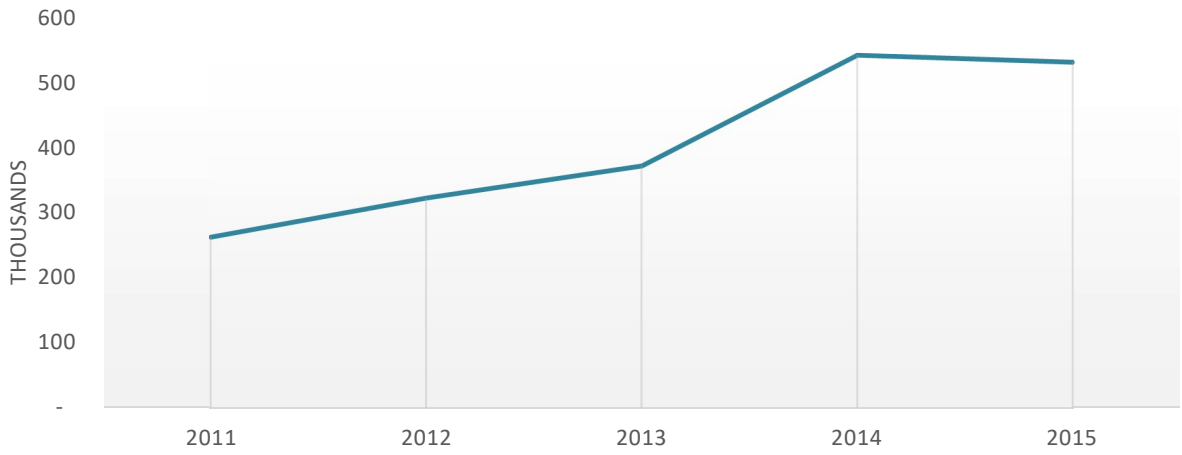
*Figure 6: Toyota U.S. Engine Production, 2011-2015*




*Source: LMC Automotive*

Figure 7 provides a history of Toyota U.S. transmission production from 2011 through 2015. Toyota Motor Manufacturing, West Virginia, Inc. is Toyota's sole U.S. transmission facility, and the plant has produced transmissions at an annual volume exceeding a half million units in each of the last two years.

*Figure 7: Toyota U.S. Transmission Production, 2011-2015*

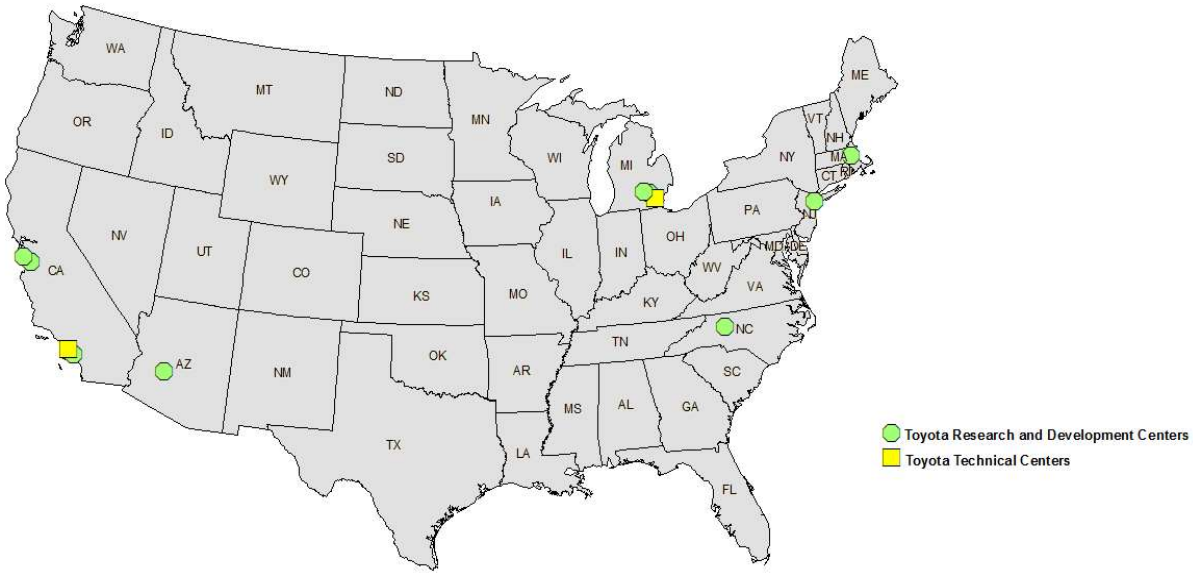



*Source: LMC Automotive*

## *Toyota U.S. Research, Development, and Technical Centers*

Toyota's operations in the United States also include a number of research and development facilities located in Michigan, Massachusetts, California, Arizona, and Washington, D.C. These facilities house groups that include vehicle design, product planning, basic research, and vehicle engineering and evaluation.

*Figure 8: Toyota U.S. Research, Development, and Technical Center Locations, 2016*




In November 2015, Toyota announced a $1 billion investment to establish the Toyota Research Institute (TRI) in the United States. In addition, Toyota pledged $50 million towards creating research labs near the TRI locations (Greimel, 2015). The Toyota Research Institute locations in Cambridge, Massachusetts and Palo Alto, California work closely with the Massachusetts Institute of Technology and Stanford University. In April 2016, Toyota selected Ann Arbor, Michigan to be the home of its third TRI, joining the Palo Alto and Cambridge locations. The new center will be near the University of Michigan campus, where it will specialize in research in materials science, robotics, and artificial intelligence. The three TRI facilities are each meant to have a broad focus: the Ann Arbor TRI will focus primarily on fully autonomous driving; the Palo Alto location is focusing on partially-autonomous driver assist programs, and the Cambridge TRI is focused on simulation and deep learning (Muller, 2016).

Table 2 details the location and areas of focus for each of Toyota's North American research and development groups.

*Table 2: Toyota Research, Development, and Technical Centers, 2016*

| Facility Name | Focus | Location |
|---|---|---|
| **Arizona Proving Ground** | Vehicle Test Track | Wittmann, AZ |
| **Calty Design Research** | Vehicle Design Center | Ann Arbor, MI |
| **Calty Design Research** | Vehicle Design Center | Newport Beach, CA |
| **Toyota Info Technology Center** | Technology Research and Development Center | Mountain View, CA |
| **Toyota Info Technology Center** | Technology Research and Development Center | New York City, NY |
| **Toyota Research Institute** | Autonomous Driving Research Institute | Ann Arbor, MI |
| **Toyota Research Institute** | Simulation and Deep Learning Research Institute | Cambridge, MA |
| **Toyota Research Institute** | Semi-Autonomous Driving Research Institute | Palo Alto, CA |
| **Toyota Technical Center** | Engineering Design and Development Center | Gardena, CA |
| **Toyota Technical Center** | Engineering, Research and Development Headquarters | Saline, MI |
| **TRD, U.S.A., Inc.** | Race vehicle engineering and trackside technical service to support Toyota's NHRA and NASCAR programs | Salisbury, NC |

*Source: Toyota, Automotive News*

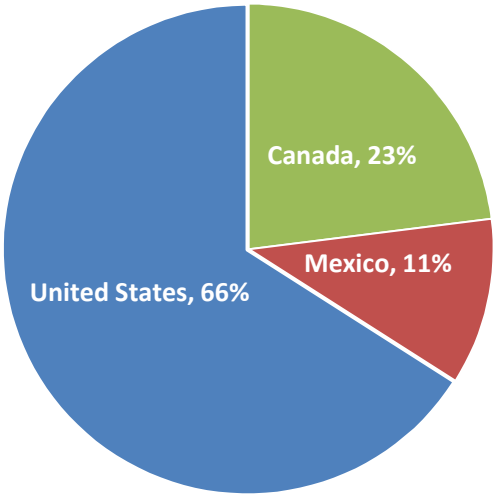
## *Toyota Dealerships*

Toyota has nearly 1,500 new vehicle dealerships located throughout the United States, and these businesses employ 97,100 in their new vehicle sales and service operations. Roughly 70 percent of all vehicles Toyota sells in the United States were assembled in the company's U.S. manufacturing plants.

## *Toyota's U.S. Investment Trends*

Since 1996, Toyota has announced over $10.8 billion of investments into its North American operations, this includes; 20 investments for new facilities, 36 investments for expansion, and 8 investments to retool existing facilities. With many automakers beginning to open manufacturing operations in Mexico, investment in the country has risen to unprecedented levels. However, over the last two decades, Toyota has invested the majority of this $10.8 billion total in the United States. Figure 9 shows the distribution of Toyota's North American investments in the United States, Canada, and Mexico between 1996 and 2016.

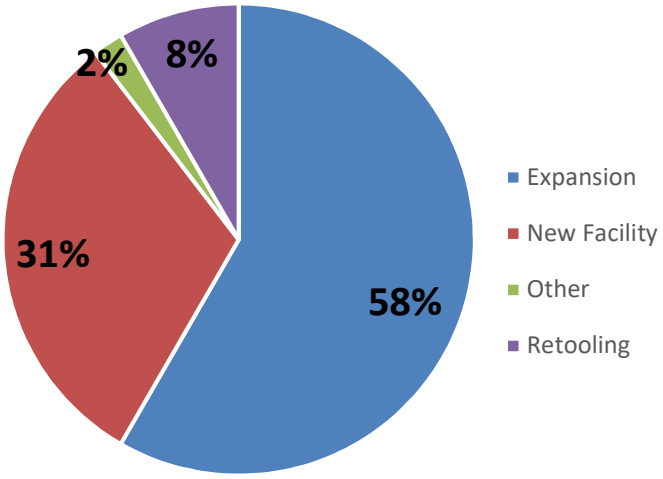
*Figure 9: Toyota Facility Investments, Percentage of North America by Country, 1996-2016*




*Source: Center for Automotive Research Book of Deals*

Figure 10 provides a visual breakdown of Toyota's $7.1 billion investment in U.S. operations over the past 20 years.

*Figure 10: Percent of Toyota Investments in the United States by Type, 1996-2016*




*Source: Center for Automotive Research Book of Deals*

Other notable Toyota investment announcements include a $126 million expansion of the Toyota Technical Center in Ann Arbor, Michigan (announced December 2014), and a $100 million expansion of its assembly plant in Princeton, Indiana to boost production of the Toyota Highlander (announced August 2014). The Princeton expansion was projected to create 300 jobs at the Indiana plant.

Figure 11 shows Toyota's investments in expanding facilities, building new facilities, and retooling existing facilities over the past 20 years.

*Figure 11: Known Toyota Investments in the United States by Type, 1996-2016*


*Source: Center for Automotive Research Book of Deals*

### *Environmental Sustainability*

As a company, Toyota has set a goal to minimize their environmental impact and promote positive environmental change. The company plans to reduce the carbon footprint of their vehicles and company operations, conserve and protect water sources, improve recycling and reuse opportunities, improve biodiversity on and near Toyota facilities, and promote and enhance dealer environmental initiatives. The company released an environmental report in 2015 that details each of its environmental sustainability goals, which are summarized in Table 3.

*Table 3: Toyota North American Environmental Action Plan*

| | Objective | Progress |
|---|---|---|
| Carbon | Reduce the carbon footprint of vehicles and operations by expanding Toyota's hybrid line-up in North America | On Track: Launched the 2015 Lexus NX 300h; announced the 2016 RAV4 Hybrid |
| | Reduce energy consumption per new vehicle produced by 12%, compared to FY2010 vehicles | Target Exceeded: Reduced energy use 16.6% |
| | Reduce GHG emissions per new vehicle produced by 12%, compared to FY2010 vehicles | Target Exceeded: Reduced GHGs by 16% |
| Water | Conserve water and protect water sources by reducing water withdrawal by 6% per vehicle produced by FY 2016, compared to FY2010 vehicles | Target Exceeded: Reduced water withdrawal per vehicle by 8% |
| Materials | Eliminate waste and improve recycling and reuse opportunities | On Track: Developing a new target for waste by defining the 3R rate, and completed data collection for all North American-produced vehicles |
| Biodiversity | Improve biodiversity on and near Toyota facilities by achieving Wildlife Habitat Council certification at 9 sites by the end of 2016 | Target Achieved: 9 sites were certified |
| Dealerships | Promote and enhance dealer environmental incentives by having 53 dealerships by LEED certified | On Track: 47 dealerships have been certified so far |

*Source: Toyota North American Environmental Report 2015*

In addition to Toyota's green corporate initiatives, the company is committed to producing vehicles that use advanced technologies to reduce the environmental impact of driving—such as the Mirai, launched in 2016. The Mirai is a hydrogen fuel-cell vehicle, which combines hydrogen and oxygen to generate electricity while emitting only water vapor. The Mirai is only available in certain U.S. markets, but the vehicle was named the 2016 World Green Car at the New York International Auto Show. Toyota is not new to the World Car Awards Program. The Toyota Prius 2010 earned 'Top Three in the World' status in both the World Green Car and the overall World Car of the Year categories. The Toyota Harrier Hybrid was a finalist for the title of World Green Car in 2006.

Toyota has also been a leader in both developing new vehicle technologies and in bringing them to market at high volumes. Thanks in large part to its Prius family of products, which include hybrid and

plug-in powertrain options, Toyota has sold more than 9 million hybrid vehicles since the Prius debuted in 1997.

### *Philanthropy*

To date, Toyota has donated over $700 million to non-profit organizations in the United States—including $69 million in 2015 alone. In general, Toyota's philanthropic efforts are divided into three main areas of focus: conservation, education outreach, and safety incentives.

- **Conservation:** Toyota's goals of conservationism are met through organizations such as Toyota TogetherGreen, which was founded in 2008 with the aim to engage citizens in conservation efforts across the United States. TogetherGreen has three major components. First, LeadGreen is a conservation fellowship program to recognize diverse individuals who have the potential to become environmental leaders and help them to become role models in the community. Second, GrowGreen allots innovation grants to support creative projects that contribute to significant gains in conservation efforts and engage diverse communities. Third, GoGreen organizes volunteer projects at sites across the United States to start a dialogue about real conservation impact in diverse communities (Toyota Motor North America, Inc., 2016).
- **Education:** Toyota's philanthropic efforts in education advancement are met by the Toyota USA Foundation, which has awarded more than $52 million to non-profit organizations in the United States since 1987. The organizations supported by the Foundation share a common goal of enhancing the quality of education by supporting innovative programs and building partnerships with organizations that are dedicated to improving the teaching and learning of science, technology, engineering, and mathematics (Toyota Motors North America, Inc., 2016). The Toyota USA Foundation funds these programs through a grant system. Examples of these grants include a $750,000 grant to The Johns Hopkins University Center for Talented Youth to expand opportunities for academically talented, low-income students in STEM fields, and a $210,000 grant to the Red Cloud Indian School on the Pine Ridge Reservation in South Dakota to enhance the science education of Lakota students to help them compete and succeed in scientific fields (Toyota Motors North America, Inc., 2016).
- **Safety:** In order to advance safety education and outreach, Toyota has partnered with groups like AARP, the National Safety Council, Students Against Destructive Decisions, and Discovery Education to create programs that both provide vehicle safety education, and also donates resources to make people safer in their vehicles. An example of these efforts is the Buckle Up for Life program, a joint-effort of the Cincinnati Children's Hospital and Toyota which was established in 2004 to educate entire families on critical safety behaviors and provide free child car seats to families in need. The program originated in Cincinnati, but with Toyota's funding has expanded; Buckle Up for Life now operates in 14 cities including Chicago, Houston, Boston, New York, and Los Angeles. Since its establishment, the Buckle Up for Life program has nearly tripled the number of children buckled up among families participating in one pilot city. To date, the group has donated over 40,000 car seats to families in need (Buckle Up for Life, 2013).

### *Diversity Efforts*

Toyota's philosophy is that "a diverse and inclusive workforce brings a broad spectrum of ideas and voices to our company that enriches every product we create." Toyota aims to actively encourage respect, trust, and understanding among their employees with the hope of better serving their company, customers, and community. These efforts have been recognized by numerous outside organizations. The most recent diversity award was given in November 2015 at the 59th annual Equal Opportunity Dinner (EOD), where Toyota was honored for being at the forefront of empowering underserved communities and its dedication to corporate diversity (Toyota Motor North America, Inc., 2015).

In addition to the 2015 EOD award, Toyota was the only automaker named in Diversity Inc.'s "Top 50 Companies for Diversity" in 2015. According to a press release from Toyota, "The Diversity Inc. list recognizes businesses for their ongoing commitments to diversity in four primary areas: Talent Pipeline, Equitable Talent Development, CEO/Leadership Commitment, and Supplier Diversity," (Toyota Motor North America, Inc., 2014). Toyota conducts over one billion dollars of business with minority-and women-owned suppliers each year. The following list represents Toyota's recent corporate diversity and inclusion improvements:

- Percentage of employees participating in mentoring programs has doubled since 2013
- A commitment to devote more than 40 percent of all of the company's philanthropic endeavors to supporting ethnic, LGBT, veterans, and disability nonprofit groups
- 99.99 percent diverse supplier retention rate
- More than $100 million in contracts with minority business enterprises generated since 2009 through the Toyota-hosted Opportunity Exchange for Minority Owned Businesses, which is in its 27th year
- Diversity Inc.'s "Top Company for Employee Engagement" in October 2013
- One of Diversity Inc.'s "Top 10 Companies for LGBT Employees" in 2013
- A Best Place to work for LGBT equality, according to Human Rights Campaign in 2015
- Member of The Billion Dollar Roundtable, an organization that recognizes corporations that have spent at least $1 billion with minority and woman-owned suppliers
- Corporation of the Year from US Hispanic Chamber of Commerce in 2015

## SECTION II: ECONOMIC CONTRIBUTION OF TOYOTA IN THE UNITED STATES

Toyota's economic contribution is interpreted by evaluating its direct employment and dealership operations in two scenarios. The first half of this analysis focuses on Toyota's economic contribution to the U.S. economy, and the second half discusses Toyota's economic contribution in the following nineteen states: Alabama, Arkansas, California, Florida, Georgia, Illinois, Indiana, Kentucky, Maryland, Michigan, Missouri, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, Texas, Virginia, and West Virginia. These states are home to all Toyota operations throughout the United States, including but not limited to, assembly plants, dealerships, supplier service and parts distribution centers, sales regional offices, and engineering and design offices.

CAR's employment and income estimates are derived from a regional economic model, supplied by Regional Economic Models, Inc. (REMI) (the model is further explained in Section IV, Appendix I: Methodology). The model inputs—direct employment, income and compensation data—were provided by Toyota Motor North America. The intermediate and spin-off employment and earnings estimates were generated by the model. This study estimates the total number of workers related to Toyota's U.S. manufacturing operations, supporting operations, and new vehicle dealerships by analyzing Toyota's employment and income contributions to the private sector. Throughout this section, factors such as personal income generated, tax revenue generated, indirect employment created or supported, and expenditure-induced employment created or supported will depict Toyota's economic contribution to the U.S. economy.

Throughout this study, Toyota's estimated employment contribution is divided into three categories direct, intermediate, and spin-off. Direct employment is defined as all Toyota employees from the following areas: engineering and design, finance, headquarters, manufacturing parts, manufacturing vehicle assembly, and port service and logistics. Intermediate employment is the number of supplier jobs directly related to Toyota—in all sectors of the economy. Finally, all employment resulting from spending by both direct and indirect employees is referred to as spin-off employment or expenditure-induced employment.

### *Toyota's Total Economic Contribution to the U.S. Economy*

Toyota directly employs 135,900 persons in its U.S. manufacturing, corporate, and dealership operations. These 135,900 jobs generate an intermediate employment contribution of 108,400, and spin-off employment of 225,800—which totals 470,100 jobs that Toyota has directly provided or supported in 2015, as shown in Table 4. Comparing total employment to direct employment produces an overall employment multiplier of 3.5—meaning there are 2.5 additional jobs in the U.S. economy for every one job at Toyota. The total earnings by place of work in the private sector for all 470,100 jobs is about $32 billion, which represents about 0.35 percent of the private sector compensation in the U.S. economy. Based on this compensation, CAR estimates that more than $4 billion is paid for personal income taxes, more than $3 billion is paid for contributions to the government, and more than $1 billion is paid for personal current transfer receipts. The total net disposable income for individuals is nearly $23.6 billion.

*Table 4: Contribution of Toyota's Operations to the Economy in the United States, 2015*

| Economic Impact | Toyota U.S. Manufacturing-Related | Supporting Operations | Subtotal: Toyota U.S. Operations | Toyota New Vehicle Dealerships | Grand Total* |
|---|---|---|---|---|---|
| **Employment** | | | | | |
| **Direct** | 30,700 | 8,100 | 38,800 | 97,100 | 135,900 |
| **Intermediate** | 62,800 | 7,800 | 70,600 | 37,800 | 108,400 |
| **Total (Direct + Intermediate)** | 93,500 | 15,900 | 109,400 | 134,900 | 244,300 |
| **Spin-Off** | 124,200 | 13,300 | 137,500 | 91,000 | 225,800* |
| **Total (Direct + Intermediate + Spin-off)** | 217,700 | 29,200 | 246,900 | 225,900 | 470,100* |
| **Multiplier: (Direct + Intermediate + Spin-off)/ Direct** | 7.1 | 3.6 | 6.4 | 2.3 | 3.5 |
| **Total Earnings by Place of Work, Private Non-Farm ($ Billions Nominal)** | $15.46 | $1.98 | $17.44 | $14.95 | $32.25 |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $2.23 | $0.29 | $2.52 | $2.16 | $4.66 |
| **Less: Personal Income Taxes** | $1.93 | $0.25 | $2.18 | $1.95 | $4.11 |
| **Equals Private Disposable Personal Income ($ Billions Nominal)** | $11.30 | $1.44 | $12.74 | $10.84 | $23.58 |
| **Contribution as Percent of U.S. Total Private Economy** | | | | | |
| **Employment** | 0.13% | 0.02% | 0.15% | 0.14% | 0.29% |
| **Compensation** | 0.17% | 0.02% | 0.19% | 0.16% | 0.35% |

**Numbers are rounded and adjusted for double counting in motor vehicle and parts retail industry.*

## Contribution Analysis of Toyota Manufacturing-Related and Supporting Operations to the U.S. Economy

The total sum of U.S. manufacturing-related and supporting operations employment that Toyota has contributed to the United States equals a total of 246,900 jobs. For total Toyota U.S. manufacturing and supporting operations, the ratio of total jobs created to direct employment produces an employment multiplier of 6.4 (246,900 ÷ 38,800)—which means for every one job in Toyota's manufacturing-related and supporting operations, there are an additional 5.4 jobs supported in the U.S. economy. Toyota U.S. manufacturing-related jobs produce an employment multiplier of 7.1 (217,700 ÷ 30,700), or 6.1 additional jobs for every one manufacturing-related job at Toyota. When CAR conducted a similar study for Toyota based on the company's 2010 operations, the multiplier for manufacturing-related and supporting operations was 6.2 (177,700 ÷ 28,700). Therefore, the economic contribution of Toyota's manufacturing-related and supporting operations grew between 2010 and 2015 by an additional 0.9 jobs supported in the U.S. economy.

Total earnings in the private sector for all 246,900 manufacturing-related and supporting operations jobs contributed is more than $17 billion, which represents about 0.19 percent of the private sector compensation in the U.S. economy. From this amount, more than $2 billion is paid for personal income taxes, almost $2 billion is paid for contributions to the federal, state and local governments, and $0.67 billion is paid for personal current transfer receipts. The U.S. total net disposable income for individuals supported by Toyota manufacturing-related and supporting operations is estimated at more than $12 billion.

Intermediate and spin-off employment contributions supported by Toyota's U.S. manufacturing-related and supporting operations include 70,600 intermediate (supplier) jobs and 137,500 spin-off jobs. Of these 208,100 jobs, roughly 32 thousand are from the manufacturing industry and just fewer than 6 thousand are in the motor vehicles, bodies and trailers, and parts manufacturing subindustry. The other industries that are heavily represented in terms of intermediate and spin-off employment contributions are the construction industry (26,819), administrative and waste services (16,132), retail trade (15,944), and professional and technical services (15,653), as shown in Table 5. The complete industry sector breakdown of intermediate and spin-off employment supported by Toyota Motor North America's U.S. operations can be found in Appendix II.

*Table 5: Top Five Industry Sectors Supported by Toyota's U.S. Manufacturing-Related and Supporting Operations, 2015*

| Industries<br>(Sub-industries are indented and listed below the main job category) | Employment Contributions |
|---|---|
| **Manufacturing** | 32,674 |
| **Motor vehicles, bodies and trailers, and parts manufacturing*** | 5,708* |
| **Construction** | 26,819 |
| **Administrative and Waste Services** | 16,132 |
| **Retail Trade** | 15,944 |
| **Professional and Technical Services** | 15,653 |

*Included in Manufacturing employment

## Contribution Analysis of Toyota Dealership Operations to the U.S. Economy

The following employment information is based on Toyota's new vehicle dealerships in the United States. Using data only for operations related to new (as opposed to used and certified used) vehicle operations provides a more accurate representation of the contribution of new motor vehicle sales. There were 97,100 employees in Toyota's U.S. automotive dealerships for both new vehicle sales and services. CAR estimates that roughly 37,800 indirect (supplier) jobs were supported by the direct dealership employment. Those jobs associated with direct and intermediate employees' spending, or spin-off employment, added another 91,000 jobs. Combined, the total U.S. employment contribution of employment for Toyota's new vehicle dealerships in the United States was 225,900 jobs. The ratio of total jobs by direct employment equals a multiplier of 2.3, in other words, for every job that Toyota has at its dealerships about 1.3 additional jobs were added to the U.S. economy.

Toyota dealership employment supports total earnings in the private sector of just under $15 billion. Roughly $2 billion is attributed to personal income taxes for employees at Toyota's U.S. new vehicle dealerships. To put it in perspective, Toyota's new vehicle dealerships accounted for 0.14 percent of all employment and 0.16 percent of all compensation in the private sector of the U.S. economy in 2015. In 2010, Toyota's new vehicle dealerships accounted for 0.10 percent of all employment and 0.09 percent of all compensation in the private sector of the U.S. economy. Appendix IV, V, and VI in this document contain the economic contribution results tables for three additional CAR studies conducted for Toyota based on 2003, 2007, and 2010 employment data.

Looking specifically at intermediate and spin-off employment associated with dealership operations, CAR estimates the employment contribution equals roughly 128,800 jobs. Of these 128,800 jobs, 6,880 are specifically in the manufacturing industry and only 489 are in the subindustry related to motor vehicles, bodies and trailers, and parts manufacturing. Other industries that play a vital role in the indirect jobs contributed by new vehicle dealerships in the U.S. for Toyota are construction at 20,817 jobs, retail trade at 13,157 jobs, health care and social assistance at 12,726 jobs, administrative and waste services at 10,686 jobs, and other services, including public administration at 10,122 jobs. Each of the industries listed provides more employment than the manufacturing industry when it comes to new dealerships. This is a common result because in general, manufacturing industries demand the most from underlying intermediate and supplying industries.

*Table 6: Top Five Industry Sectors Supported by Toyota's U.S. New Vehicle Dealerships, 2015*

| Industries<br>(Sub-industries are indented and listed below the main job category) | Employment Contributions |
|---|---|
| **Manufacturing** | 6,880 |
| **Motor vehicles, bodies and trailers, and parts manufacturing*** | 489* |
| **Construction** | 20,817 |
| **Retail Trade** | 13,157 |
| **Health Care and Social Assistance** | 12,726 |
| **Administrative and Waste Services** | 10,686 |
| **Other Services, including Public Administration** | 10,122 |

*Included in Manufacturing employment

## *Toyota's Total Economic Contribution for Nineteen States and the Rest of the U.S. Economy*

### Alabama

Toyota broke ground on the Huntsville Engine Plant in 2001. From its initial construction through to the present, Toyota Motor Manufacturing Alabama, Inc. (TMMAL) has captured $864 million in investment. TMMAL produced 731,539 4-cylinder, V6, and V8 engines in 2015, making it Toyota's largest North American engine production facility. In addition to its manufacturing operations, Toyota boasts 25 dealerships throughout the state. Between the jobs created by TMMAL and at its dealerships, Toyota is responsible for 2,500 jobs in Alabama. During 2015, Toyota's charitable donations and sponsorships in Alabama exceeded $800,000. Overall employment in 2015 for Alabama was 2,015,200, of which, Toyota's statewide employment contribution measured 9,700, or just below 0.5 percent.

*Table 7: Employment Contribution of Toyota's Operations to the Alabama Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 1,100 | 1,400 |
| **Intermediate** | 1,900 | 400 |
| **Spin-off** | 3,500 | 1,400 |
| **Subtotal** | 6,500 | 3,200 |
| **Total Statewide Employment Contribution:** | 9,700 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $401 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $53 | |
| **Less: Personal Income Taxes** | $44 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $304 | |

## Arkansas

The state of Arkansas does not have any direct Toyota manufacturing operations, but it is home to Toyota subsidiary, Hino Motors Manufacturing, USA. Hino is a Japanese manufacturer of commercial vehicles and diesel engines, which started production of components for Toyota vehicles like the Tundra and Sequoia in October 2006. Since then the facility has received $55 million in investment for expansion projects, and currently employs around 400 workers in the manufacturing facility. In addition to the Hino Stamping and Component facility, Toyota has 17 dealerships in Arkansas, which employ 700 people. Overall, Toyota is responsible for employing 1,100 people throughout the state. During 2015, Toyota's philanthropic activity in Arkansas totaled $22,000. The state's total employment level was 1,260,600 in 2015, with Toyota contributed 4,300, a bit more than 0.3 percent.

*Table 8: Employment Contribution of Toyota's Operations to the Arkansas Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 400 | 700 |
| **Intermediate** | 600 | 200 |
| **Spin-off** | 1,600 | 800 |
| **Subtotal** | 2,600 | 1,700 |
| **Total Statewide Employment Contribution:** | 4,300 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $152 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $24 | |
| **Less: Personal Income Taxes** | $18 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $110 | |

## California

California is home to research and development operations for almost every major automaker in North America. Toyota is no exception, with four R&D centers in Newport Beach, Palo Alto, Gardena, and Mountain View. These institutes, Calty Design Research, the Toyota Research Institute, the Toyota Technical Center, and the Toyota Info Technology Center, focus on vehicle design, semi-autonomous driving research, engineering and development, and technology research and development respectively. In addition to these R&D offices, Toyota manufactures parts in Long Beach, at the Toyota Auto Body California plant, which has received $300 million in cumulative investments and also hosts multiple Toyota Financial Services offices. Between R&D facilities, 172 dealerships, and other various operations, Toyota employs 20,700 workers in California. Toyota's charitable giving throughout the state amounted to nearly $13 million during 2015. Total employment in 2015 was 17,798,600 with Toyota's total employment contribution at 50,990. The company's impact provided just below 0.3 percent of all employment in the state.

*Table 9: Employment Contribution of Toyota's Operations to the California Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 5,300 | 15,400 |
| **Intermediate** | 5,500 | 5,900 |
| **Spin-off** | 7,300 | 11,500 |
| **Subtotal** | 18,100 | 32,800 |
| **Total Statewide Employment Contribution:** | 50,990 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $1,447 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $226 | |
| **Less: Personal Income Taxes** | $208 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $1,013 | |

## Florida

Florida is home to Southeast Toyota Distributors in Jacksonville, as well as, 76 dealerships throughout the state. These dealerships are responsible for directly employing 8,000 people. Through the sales and service operations in the state, Toyota directly employs 1,000 Florida residents, and indirectly employs 5,200 others through intermediate and spin-off operations. Charitable activity by Toyota exceeded $730,000 in Florida, during 2015. In 2015, total employment throughout the state was 9,153,300, with Toyota contributing 23,500, or a bit below 0.3 percent.

*Table 10: Employment Contribution of Toyota's Operations to the Florida Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 1,000 | 8,000 |
| **Intermediate** | 1,400 | 3,000 |
| **Spin-off** | 3,800 | 6,300 |
| **Subtotal** | 6,200 | 17,300 |
| **Total Statewide Employment Contribution:** | 23,500 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $344 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $79 | |
| **Less: Personal Income Taxes** | $36 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $229 | |

## Georgia

Toyota's presence in the state of Georgia includes a Lexus office and a Financial Service Office, along with 43 dealerships statewide. Despite a lack of direct manufacturing presence in the state, Toyota still contributes to the state's economy via dealerships, philanthropic efforts, and indirect employment. The automaker has donated more than $15 million in Georgia, as of December 2015. Roughly $3.5 million, was used for Toyota's philanthropic activity. Toyota employs 3,200 workers directly at Toyota dealerships and service offices in the state. Georgia's total employment level was 4,490,900 in 2015, with Toyota's impact providing 13,100 jobs, or 0.3 percent.

*Table 11: Employment Contribution of Toyota's Operations to the Georgia Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 100 | 3,100 |
| **Intermediate** | 1,400 | 1,100 |
| **Spin-off** | 4,300 | 3,100 |
| **Subtotal** | 5,800 | 7,300 |
| **Total Statewide Employment Contribution:** | 13,100 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $368 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $57 | |
| **Less: Personal Income Taxes** | $43 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $268 | |

## Illinois

Toyota operates sales and financial service offices in the state of Illinois that assist with the processing of auto lease and finance payments. According to recent estimates, these offices directly employ 200 workers. In addition to the financial services related jobs, Toyota also employs 3,200 people at its 57 dealerships throughout the state. The combined employment of the finance and insurance handling and new vehicle dealership employment in Illinois, along with the activities of other Toyota employees through the U.S., provides employment opportunities for 3,400 workers in Illinois. Toyota's impact within the state extends well beyond direct employment, with 34 tier one suppliers located in Illinois. Donations and sponsorships in Illinois exceeded $900,000 in 2015. Total employment in the state was 6,126,300 in 2015, with Toyota contributing 18,400, or 0.3 percent.

*Table 12: Employment Contribution of Toyota's Operations to the Illinois Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 200 | 3,200 |
| **Intermediate** | 2,900 | 1,300 |
| **Spin-off** | 7,700 | 3,100 |
| **Subtotal** | 10,800 | 7,600 |
| **Total Statewide Employment Contribution:** | 18,400 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $815 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $110 | |
| **Less: Personal Income Taxes** | $112 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $593 | |

## Indiana

Indiana is home to two Toyota manufacturing operations. The largest is Toyota Motor Manufacturing Indiana, Inc. (TMMI) in Princeton, which produced 375,647 Sequoia, Highlander, and Sienna vehicles during 2015. In addition to TMMI, Subaru of Indiana Automotive, Inc. (SIA) began producing the Toyota Camry in 2007 under contract with Toyota. In 2015, SIA produced 79,843 Camrys for Toyota, however, the Camry production contract between the two automakers ended in May 2016. The economic contribution of the partnership with SIA is not included in the study results, and represents an additional benefit to the U.S. economy. To date, there are 5,300 workers employed directly by Toyota's Indiana facilities, including Toyota Logistics Services, and 1,300 employees working in 31 Toyota dealerships throughout the state. In total, Toyota has invested $4.6 billion in Indiana, with $4.3 billion invested in TMMI, and nearly $300 million directed to SIA. Additionally, during 2015, philanthropic activity in Indiana exceeded of $2.1 million. Indiana's total employment level was 3,109,200 in 2015. The overall jobs impact of Toyota was 27,500, or 0.9 percent of all jobs in the state.

*Table 13: Employment Contribution of Toyota's Operations to the Indiana Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 5,300 | 1,300 |
| **Intermediate** | 7,800 | 500 |
| **Spin-off** | 10,900 | 1,700 |
| **Subtotal** | 24,000 | 3,500 |
| **Total Statewide Employment Contribution:** | 27,500 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $1,621 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $200 | |
| **Less: Personal Income Taxes** | $203 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $1,218 | |

## Kentucky

Kentucky is home to Toyota Motor Manufacturing Kentucky, Inc. (TMMK), which currently produces the Camry/Camry Hybrid, Avalon/Avalon Hybrid, Venza, and the Lexus ES 350. The plant is Toyota's largest manufacturing facility outside of Japan, and produced over 450,000 vehicles in 2015. Georgetown also produced over 570,000 4-cylinder and V6 engines during 2015. Overall, TMMK represents investments totaling $6 billion. Toyota has invested a further $670 million to headquarter their senior management of engineering, design, development, R&D, and North American manufacturing operations in Erlanger. Additionally, Toyota has a parts distribution center located in Hebron. Between these facilities, Toyota employs 9,400 people in the state of Kentucky. Toyota's charitable activities reached nearly $7 million in Kentucky during 2015. The total employment level throughout the state was 1,847,900, with the total impact of Toyota's operations providing 29,700 jobs, or 1.6 percent.

*Table 14: Employment Contribution of Toyota's Operations to the Kentucky Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 9,400 | 1,100 |
| **Intermediate** | 8,200 | 300 |
| **Spin-off** | 9,500 | 1,200 |
| **Subtotal** | 27,100 | 2,600 |
| **Total Statewide Employment Contribution:** | 29,700 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $1,814 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $209 | |
| **Less: Personal Income Taxes** | $210 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $1,395 | |

## Maryland

Maryland is home to a Toyota Motor Sales, U.S.A. regional sales office, which helps coordinate Toyota vehicle sales, parts, and service for dealers in Maryland and surrounding states. Toyota Financial Services operates a customer service center in Maryland that provides finance and insurance products and services to the Toyota family of brands. Toyota operates a parts distribution center in Glen Burnie, as well. These facilities directly employ 700 Maryland residents. In addition, throughout the state 31 new vehicle dealers directly employ 2,600 residents. Almost $2.6 million in donations and sponsorships were placed in the state during 2015. Total employment in Maryland was 2,988,100 in 2015, with Toyota contributing 8,800, or 0.3 percent.

*Table 15: Employment Contribution of Toyota's Operations to the Maryland Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 700 | 2,600 |
| **Intermediate** | 700 | 600 |
| **Spin-off** | 1,900 | 2,300 |
| **Subtotal** | 3,300 | 5,500 |
| **Total Statewide Employment Contribution:** | 8,800 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $250 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $36 | |
| **Less: Personal Income Taxes** | $37 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $177 | |

## Michigan

Toyota supports 1,400 jobs in Michigan due to direct employment at Toyota Technical Center (TTC), Calty Design Research Facility, a Toyota Financial Services office, and the Hino Motors Manufacturing, U.S.A. headquarters, a Toyota Group subsidiary. In total, Toyota has invested $1.2 billion in its Michigan facilities. Jobs are also being created at the new Toyota Research Institute in Ann Arbor, with a focus on autonomous driving. The TTC has been in Michigan for over 30 years, and oversees the design and development of vehicles. Launched in 2011, the Collaborative Safety Research Center is based out of TTC. Calty Design Research Facility in Ann Arbor focuses on production development, and the Hino headquarters performs administrative, sales, purchasing, and quality assurance activities for the company. Additionally, in 2015 alone, Toyota's donations and sponsorship activity in Michigan exceeded $2.3 million. The overall employment level was 4,493,000 in 2015. The total employment impact of Toyota's operations was 13,500, providing 0.3 percent of all Michigan employment.

*Table 16: Employment Contribution of Toyota's Operations to the Michigan Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 1,400 | 1,200 |
| **Intermediate** | 2,500 | 600 |
| **Spin-off** | 6,000 | 1,800 |
| **Subtotal** | 9,900 | 3,600 |
| **Total Statewide Employment Contribution:** | 13,500 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $660 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $96 | |
| **Less: Personal Income Taxes** | $91 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $473 | |

## Mississippi

Toyota Motor Manufacturing Mississippi, Inc. (TMMMS) is located in Blue Springs and began operations in 2011 and by 2015, TMMMS was responsible for the production of 190,514 Toyota Corollas. Total investments in the facility exceed $960 million. Due to the opening of TMMMS, Toyota's direct employment in Mississippi has increased dramatically in the last five years from 65 workers in 2010 to 1,500 in 2015. In addition to the direct employment provided by manufacturing operations, Toyota has 18 dealerships throughout the state, which provide 600 jobs for Mississippi residents. In 2015, Toyota's charitable contributions in Mississippi totaled $5.6 million. Mississippi's total employment level was 1,189,600 in 2015, of which Toyota contributed 6,700 jobs, or 0.6 percent.

*Table 17: Employment Contribution of Toyota's Operations to the Mississippi Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 1,500 | 600 |
| **Intermediate** | 1,300 | 200 |
| **Spin-off** | 2,300 | 800 |
| **Subtotal** | 5,100 | 1,600 |
| **Total Statewide Employment Contribution:** | 6,700 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $307 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $40 | |
| **Less: Personal Income Taxes** | $32 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $235 | |

## Missouri

Bodine Aluminum was acquired by Toyota in 1990 and has expanded from the original facility in St. Louis to an additional facility in Troy. These two plants are responsible for the manufacture of engine components. As of December 2015, $345 million was invested in Bodine Aluminum's Troy location and about $19 million was invested in its St. Louis facility making total investment for both facilities around $365 million. In addition to Bodine operations, Missouri is home to a Toyota Motor Sales, U.S.A. regional sales office, which helps coordinate Toyota vehicle sales, parts, and service for 27 dealers in Missouri and others in surrounding states. Toyota Financial Services operates an office in Missouri that provides finance and insurance products and services to the Toyota family of brands. These facilities combined directly employ 1,000 individuals in the state. Toyota donated approximately $500,000 in the state, during 2015. Missouri had an overall employment level of 2,958,200 in 2015. With 10,000 jobs resulting from Toyota's activities, the company provided more than 0.3 percent of state employment.

*Table 18: Employment Contribution of Toyota's Operations to the Missouri Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| Direct Employment | 1,000 | 1,200 |
| **Intermediate** | 2,000 | 500 |
| **Spin-off** | 3,700 | 1,600 |
| **Subtotal** | 6,700 | 3,300 |
| **Total Statewide Employment Contribution:** | 10,000 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $476 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $66 | |
| **Less: Personal Income Taxes** | $54 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $356 | |

## North Carolina

Toyota's TMS Motorsports Marketing promotes its brand in NASCAR and other U.S. racing series. TRD, U.S.A., a division of TMS, develops and assembles engines in North Carolina to drive Toyota's racing programs. TRD U.S.A. is also responsible for providing trackside technical service to support Toyota's NHRA and NASCAR programs. Toyota directly employs 5,200 North Carolina residents. Of these direct employees, 40.4 percent work in manufacturing, while the remaining, 59.6 percent are employed at 46 statewide dealerships. Toyota's philanthropic support in North Carolina during 2015 was almost $200,000. North Carolina had an overall employment level of 4,495,500 in 2015, with Toyota providing a total of 18,600 across direct, indirect, and spin-off jobs, making the company responsible for 0.4 percent.

*Table 19: Employment Contribution of Toyota's Operations to the North Carolina Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 2,100 | 3,100 |
| **Intermediate** | 3,600 | 1,000 |
| **Spin-off** | 5,800 | 3,000 |
| **Subtotal** | 11,500 | 7,100 |
| **Total Statewide Employment Contribution:** | 18,600 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $769 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $107 | |
| **Less: Personal Income Taxes** | $94 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $568 | |

## Ohio

The state of Ohio is home to one of Toyota's U.S. regional sales offices, a Toyota Financial Services office, and a Toyota Parts Distribution Center. Ohio is also home to 55 dealerships throughout the state, which directly employ 2,500 people. The total statewide employment contribution of Toyota to Ohio is 2,700 employees. Toyota's donations and sponsorships in Ohio exceeded $4.5 million in 2015. Total employment in Ohio was 5,423,000 in 2015, with the overall contribution of Toyota being 19,300 jobs, or 0.4 percent.

*Table 20: Employment Contribution of Toyota's Operations to the Ohio Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 200 | 2,500 |
| **Intermediate** | 3,200 | 1,000 |
| **Spin-off** | 9,500 | 2,900 |
| **Subtotal** | 12,900 | 6,400 |
| **Total Statewide Employment Contribution:** | 19,300 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $879 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $119 | |
| **Less: Personal Income Taxes** | $119 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $641 | |

## South Carolina

Toyota does not have direct manufacturing-related employment in the state of South Carolina. The automaker does, however, support 1,400 jobs through a dealership network, boasting 24 locations throughout the state. In addition, Toyota indirectly supports 2,900 South Carolina jobs through the presence of tier one suppliers in the state, and through operations in other states, and has donated over $3 million to philanthropic efforts in South Carolina since December 2015. Toyota directed nearly $600,000 in charitable contributions to South Carolina in 2015. In 2015, total employment in South Carolina was 2,122,600. The statewide employment contribution from Toyota's operations, even without direct employment, was 6,100, or 0.3 percent.

*Table 21: Employment Contribution of Toyota's Operations to the South Carolina Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 0 | 1,400 |
| **Intermediate** | 600 | 400 |
| **Spin-off** | 2,300 | 1,400 |
| **Subtotal** | 2,900 | 3,200 |
| **Total Statewide Employment Contribution:** | 6,100 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $168 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $28 | |
| **Less: Personal Income Taxes** | $19 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $121 | |

## Tennessee

Toyota's Bodine Aluminum Inc. produces aluminum cylinder blocks and automatic transmission parts in Tennessee. As of December 2015, total investment in Bodine Aluminum's Jackson facility equaled about $284 million. Tennessee also hosts a Toyota Financial Services office. Additionally, Toyota is a customer of other Tennessee companies that produce display products, engine sensors, exhaust systems, alternators, and more. Toyota employs 2,300 workers in Tennessee and approximately 87.0 percent of these employees work in Toyota's 31 Tennessee dealerships. During 2015, Tennessee received more than $300,000 in donations and sponsorships from Toyota. Tennessee's overall employment level was 2,886,000 in 2015, thus Toyota's total employment contribution of 13,000 represents 0.5 percent of all jobs in the state.

*Table 22: Employment Contribution of Toyota's Operations to the Tennessee Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 300 | 2,000 |
| **Intermediate** | 1,800 | 700 |
| **Spin-off** | 5,900 | 2,300 |
| **Subtotal** | 8,000 | 5,000 |
| **Total Statewide Employment Contribution:** | 13,000 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $517 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $67 | |
| **Less: Personal Income Taxes** | $52 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $398 | |

## Texas

Texas is home to the Toyota Motor Manufacturing Texas, Inc. (TMMTX) assembly plant in San Antonio, multiple Toyota Financial Services offices, and the distributor Gulf States Toyota (GST). Headquartered in Houston, GST is an independent distributorship operating a total of 154 dealerships in 5 states. TMMTX was established in 2003 and represents a total investment of $2.6 billion. In 2015, the assembly facility was responsible for the production of 232,910 Toyota Tundra and Tacoma pickup trucks. The automaker also employs 9,000 Texas residents at their 101 statewide dealerships. In 2015, Toyota announced plans to invest $350 million to relocate their North American headquarters from Torrance, California to Plano, Texas. This move will effect Toyota Motor Sales U.S.A. and Toyota Financial Services, in Torrance, California; Toyota Motor Engineering & Manufacturing North America in Erlanger, Kentucky.; and some employees from Toyota Motor North America in New York. As of April 2016, the automaker has about 500 employees working in temporary offices in Plano, with plans to spend close to $1 billion to relocate nearly 3,500 others. Toyota's calendar year 2015 philanthropic activities in Texas totaled approximately $3.2 million. The overall employment contribution from Toyota's operation was 50,000, or 0.4 percent of the 12,494,400 jobs in Texas in 2015.

*Table 23: Employment Contribution of Toyota's Operations to the Texas Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 5,200 | 9,000 |
| **Intermediate** | 8,300 | 4,300 |
| **Spin-off** | 13,300 | 9,900 |
| **Subtotal** | 26,800 | 23,200 |
| **Total Statewide Employment Contribution:** | 50,000 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $1,920 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $230 | |
| **Less: Personal Income Taxes** | $207 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $1,483 | |

## Virginia

The state of Virginia is home to 41 Toyota dealerships, which directly employ 3,300 people. Despite having no direct manufacturing employment in Virginia, Toyota supports the state's economy indirectly with 3,800 intermediate and spin-off jobs through their operations in other states. The company has also donated more than $48 million to the state through various philanthropic efforts as of December 2015, with more than $700,000 in 2015. Virginia had a total employment level of 4,051,900 in 2015, of which Toyota's employment contribution of 10,700 represents 0.3 percent.

*Table 24: Employment Contribution of Toyota's Operations to the Virginia Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 0 | 3,300 |
| **Intermediate** | 700 | 800 |
| **Spin-off** | 3,100 | 2,800 |
| **Subtotal** | 3,800 | 6,900 |
| **Total Statewide Employment Contribution:** | 10,700 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $288 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $45 | |
| **Less: Personal Income Taxes** | $38 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $205 | |

## West Virginia

Buffalo is home to Toyota Motor Manufacturing West Virginia, Inc. (TMMWV), one of Toyota's three engine and transmission operations in North America. In 2015, the facility was responsible for the production of 697,755 engines and 537,594 transmissions. Total investment in TMMWV was $1.2 billion at the end of 2015. West Virginia is also home to Toyota's Hino Motors Manufacturing U.S.A., Inc., which assembles trucks in the state. Toyota directly employs 1,900 West Virginians, 1,300 manufacturing-related and the state's 13 dealerships directly employs the remaining 600 individuals. Toyota's charitable activities contributed nearly $900,000 to West Virginia during 2015. The 2015 employment level in West Virginia was 732,100, with Toyota contributing 5,000 jobs, or 0.7 percent.

*Table 25: Employment Contribution of Toyota's Operations to the West Virginia Economy, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 1,300 | 600 |
| **Intermediate** | 800 | 100 |
| **Spin-off** | 1,700 | 500 |
| **Subtotal** | 3,800 | 1,200 |
| **Total Statewide Employment Contribution:** | 5,000 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $271 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $34 | |
| **Less: Personal Income Taxes** | $31 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $206 | |

## Rest of United States

Toyota conducts a number of operations in the rest of the United States, which include engineering and design, financial services, sales offices, and dealership operations. These operations take place at places such as the Toyota Financial Savings Bank in Nevada, as well as in offices in Arizona, New York, Washington D.C., and more. Throughout the rest of the U.S., Toyota employs 37,600 people, 35,300 of whom are employed through Toyota's network of 614 dealerships. Dealership employment represents approximately 94 percent of Toyota's total direct employment in the rest of the U.S. While Toyota's direct giving is largely concentrated in the states where its facilities are located, the remainder of the United States nonetheless received a substantial amount - $19.5 million - during 2015. Throughout the remainder of the United States, 2015 total employment was 52,228,600, and Toyota's total employment contribution was 134,100 – 0.3 percent.

*Table 26: Employment Contribution of Toyota's Operations to the Remaining U.S. States' Economies Combined, 2015*

| | Manufacturing Related | New Vehicle Dealers |
|---|---|---|
| **Direct Employment** | 2,300 | 35,300 |
| **Intermediate** | 15,500 | 15,000 |
| **Spin-off** | 33,200 | 32,800 |
| **Subtotal** | 51,000 | 83,100 |
| **Total Statewide Employment Contribution:** | 134,100 | |
| **Total Private Non-Farm Earnings by Place of Work ($ Millions Nominal)** | $3,972 | |
| **Less: Contributions for Government Social Insurance and Personal Current Transfer Receipts** | $698 | |
| **Less: Personal Income Taxes** | $529 | |
| **Equals Private Disposable Personal Income By Place of Work ($ Millions Nominal)** | $2,745 | |

## SECTION III: CONCLUDING REMARKS

Toyota Motor North America makes significant economic contributions to the U.S. economy, as well as to the economies of the states in which Toyota's major operations are located. Toyota's four U.S.-based assembly locations produce 70 percent of the Toyota and Lexus vehicles sold in the United States. Toyota's sales have grown steadily since the company first arrived in the United States in 1958, and in 2015, Toyota ranked third in U.S. sales. Toyota's employment and estimated economic contributions to the U.S. economy have also grown. Since 2003, overall Toyota U.S. employment has increased by nearly a third to 135,900 direct employees; since 2010, Toyota's total U.S. employment has grown 20 percent.

Toyota's commitment to the United States is also demonstrated in the company's investments in U.S. plants, equipment and facilities, and its corporate operations. Over the past 20 years, two out of every three dollars Toyota has invested in North America have been spent on U.S. facilities—including 15 new facilities, 28 expansions, and 4 other investments. The company's philosophy drives its environmental stewardship, diversity, and community involvement efforts, as well. Toyota's philanthropic activities have resulted in $700 million in charitable giving to U.S. non-profit organizations that focus on conservation, education, and safety.

CAR's economic contribution estimate for 2015 Toyota's overall U.S. operations, including dealerships, results in an employment multiplier of 3.5—which is 0.3 jobs higher than what was estimated in 2010. The company's manufacturing multiplier has grown even more—from an estimated 6.2 in 2010 to 7.1 in this study of 2015 operations. That means for every Toyota manufacturing job in the United States, there are now 0.9 more jobs in the U.S. economy in 2015 than the same job produced in 2010. While these 2015 estimates are similar to those produced in CAR's first study of Toyota's economic contribution in 2003—CAR cautions against comparing the current results to those produced based on 2003 data. Since that time, there have been several economic and methodological changes that have affected the economic estimates—including industry-wide increased offshoring of automotive parts production, and updates to the way the model handles population migration, investment, and compensation.

Toyota's direct manufacturing-related and supporting operations employment supports jobs in just about every other sector of the U.S. economy. When thinking of Toyota suppliers, manufacturers of steel, parts, components, and assemblies might come to mind. However, Toyota's overall employment supports over 208,000 jobs in the economy, and just 16 percent (32,674) of these were in manufacturing—and of those jobs, just 17 percent of the over 32,000 manufacturing jobs were in the motor vehicles, bodies and trailers, and parts manufacturing industry sector. Toyota buys directly from construction to build their factories, transportation and warehousing to move its component purchases into plants and products to market, and professional and technical services to engineer and advertise their products, to name but a few. Automotive manufacturing has a deep and broad supply chain, and Toyota's contribution to the United States economy demonstrates the reach and the impact of U.S.-based light vehicle manufacturing in the United States.

## SECTION IV: APPENDICES

### *Appendix I: Methodology*

In order to conduct the analyses detailed in this study, a regional economic impact model was specially constructed, and Toyota-specific data (employment, payroll, philanthropy) was inputted. This model then generated estimates of the economic contribution associated with Toyota's U.S. operations. This study is the fourth economic contribution study for Toyota researched and conducted by CAR. The prior studies have been:

- Contribution of Toyota to the Economies of Fourteen States and the United States in 2003, released June, 2005
- Contribution of Toyota Motor North America to the Economies of Sixteen States and the United States in 2006, released October, 2007
- Contribution of Toyota Motor North America to the Economies of Sixteen States and the United States in 2010, released December, 2010

### Macroeconomic Model

The estimates generated in this study are derived from analyses using a regional economic model, supplied by Regional Economic Models, Inc. (REMI), of Amherst, Massachusetts. The REMI model is a computable general equilibrium (CGE) model, which is a computer model that maps how an economy works and how it responds to policy or economic changes. These models present data on dozens of economic sectors and reflect how the various sectors interact with each other. In this economic contribution study, the REMI model is used to estimate the number of jobs supported or created by Toyota, as well as the subsequent personal income generated and personal income taxes paid because of Toyota's U.S. operations and U.S. dealerships. The REMI model, which has been fully documented and peer-reviewed, was designed for the type of analysis employed in this current study, and has been used by CAR and other organizations for over two decades for policy and industrial development analysis.

The version of the model used in this study represents the economies of 19 states—Alabama, Arkansas, California, Florida, Georgia, Illinois, Indiana, Kentucky, Maryland, Michigan, Missouri, Mississippi, North Carolina, Ohio, South Carolina, Tennessee, Texas, Virginia, West Virginia—and the rest of the United States, which was analyzed as one region. The model simulates the interaction between the aforementioned regional economies and the rest of the nation, which accounts for interregional trade and migration. Trade flows, migration patterns and commuter flows connect each state economy, allowing for dynamic multi-regional analysis. Therefore, the model can simulate economic impacts in any one region that may result from a change in Toyota's activities in any or all of the regions. Toyota provided data on their company's employment and compensation in each state during 2015.

The approach for this study was to use a specially constructed REMI model and then to input Toyota's employment and wage data into the model, which then generated estimates of the economic contributions (employment, income, taxes, GDP changes) associated with Toyota's operations for each of 19 states and the rest of the country. To start, the calibrated model is first run to establish a baseline economy. Next, various economic scenarios—by state or for all of Toyota's operations across the country—were input into the model and simulations based on the new data were calculated. In these

scenarios, Toyota's employment and compensation were subtracted to "shock" the economy. Simulation results were interpreted as the new economic equilibrium and were the product of multiple structural equation iterations across the state economies. The difference between the simulation scenario and the baseline model represents Toyota's economic significance to an individual state's economy and to the U.S. economy as a whole. The model then reported the economic changes from the baseline in a number of variables, with the most easily understood being employment. This technique allows for the separation of economic activity influenced by the operations of suppliers, assemblers, and dealers from the aggregate economy and permits the capture of economic contributions from continued employment in the sectors of interest for any given time period.

The REMI model also simulates interactions between U.S. states and the rest of the world, which accounts for interregional trade and migration. For this reason, the model can simulate economic impacts that occur within a given area but are the result of changes in other regions of the economy. Types of changes that could impact other regions include variations in the level of industrial activities, as well as macroeconomic or microeconomic policy changes.

Within the framework of the REMI model, there is an inter-industry, input-output (I-O) table that calculates demand for intermediate inputs used in the production of a finished good. For this reason, it is possible to double-count the contributions between suppliers, dealerships and other Toyota operations. However, the CAR research team made adjustments to avoid double-counting between Toyota-specific suppliers and the downstream employment results calculated by the model.

## Study and Results Variations

CAR has conducted studies for Toyota that present jobs multiplier results from 2003 through 2015. Results can change from study to study due to fluctuating macroeconomic conditions in the U.S. and variations in the REMI model. There is also the potential for inconsistencies in study methodologies.

## Model Structure

The REMI model has changed considerably over time, with new equations added and existing equations modified as the program has moved from one edition to another. For every new economic contribution study that CAR undertakes, the model used in the most recent previous study is compared to the current model and the two are examined for potential impact on results and study-to-study consistency. These changes are often the greatest contributor to the changes in the results of the studies since the construction of impact models plays a major role in their results.

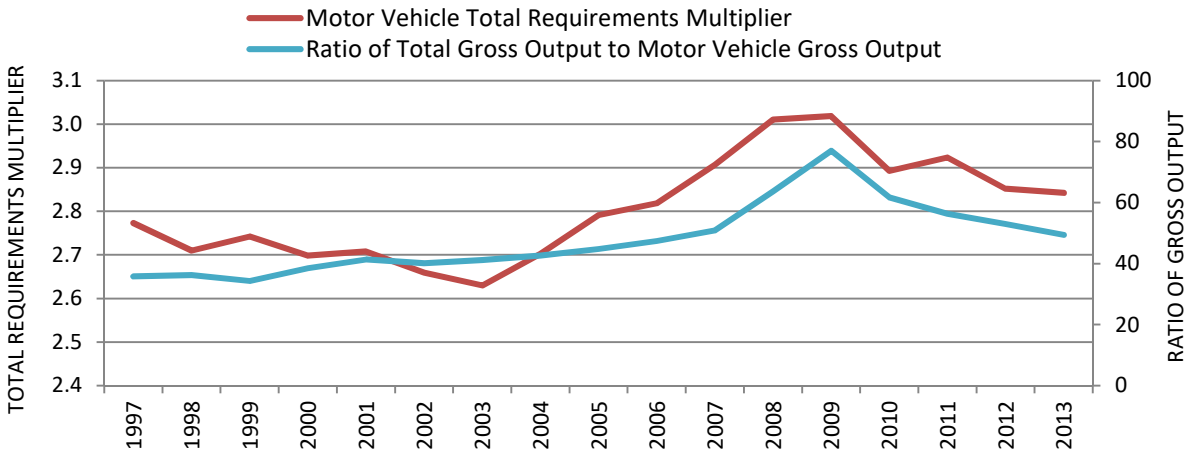
## Industry Structure

Virtually all impact models and multipliers are based upon input-output tables (U.S. Bureau of Economic Analysis, 2015). As a result, certain assumptions are present in study conclusions. Primary among these is the assumption of fixed inputs or "recipe" based production. There is only one way in which a given output can be created (Leontief production functions); changes to the input requirements result from changes in production technology. In other words, the material, machinery and labor needed to build a car do not change when demand is weak, only the number of cars made will change. Consequently, multipliers should be invariant to macroeconomic context. However, persistent changes which lead to making cars in a different way will change the multipliers. For example, the new CAFE standards have

resulted in a shift from steel towards aluminum, and, insofar as the labor requirements of the steel and aluminum industries differ, the amount of indirect employment created by the automobile industry will change.

In practice, multipliers are largely representations of the ratio of spending by one industry to spending across all industries. If industry-specific and total spending grow at different rates, the multipliers will change. This appears to explain the vast majority of the fluctuation in the motor vehicle sector's total requirements multiplier, as described in the US input-output table. This relationship is depicted in Figure 12, which shows the motor vehicle total requirements multiplier moving with the ratio of total gross output to motor vehicle gross output.

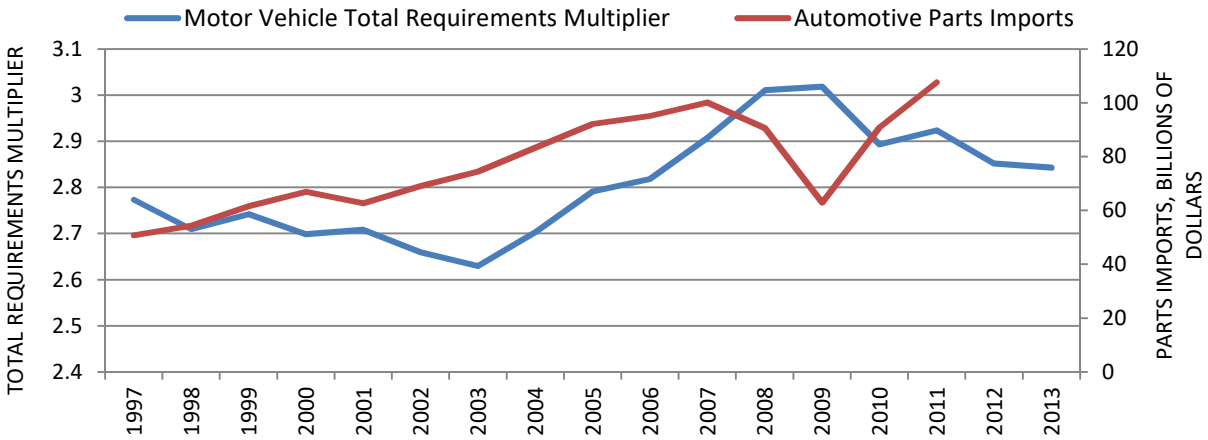
*Figure 12: Motor Vehicle Total Requirements Multiplier and Motor Vehicle Manufacturing Share of Total Gross Product*




*Source: Bureau of Economic Analysis*

Trade is handled by a given set of input-output tables or impact models that will also play an important role in the determination of multipliers and impact estimates. If imports are treated as an exogenous source, shifting sources of intermediate inputs across domestic and foreign sources will change the impact, with increased imports yielding a smaller multiplier. In the U.S. input-output tables, imported intermediate inputs are attributed to their respective industry, so an increased use of imported intermediate parts will not have a dramatic impact on the multiplier. However, at the state level, the impact models rework this so that trade does have an impact on the results; so that increasing imports decreases the multipliers and impact estimates. This accounts for much of the differences in state-level results over the years. Figure 13 shows how the total requirements multiplier has varied over time in relationship to the volume of U.S. automotive parts imports.

*Figure 13: The Evolution of the Motor Vehicle Total Requirements Multiplier and Auto Parts Imports: 1997-2013*




*Source: Bureau of Economic Analysis and the International Trade Administration*

Note that the direction of the correlation between the total requirements multiplier and the level of imports is inconsistent: From 2003 through 2007, they largely have a positive correlation—the series move together in the same direction—but both prior to 2003 and after 2007, the correlation is negative: As stated, imports do not drive the multiplier from the U.S. input-output tables because they have been attributed to their respective industries, rather than as exogenous inputs. Imports can, however, impact state-level results.

Since CAR's first study for Toyota in 2003, several economic changes have affected study results.

- One example of economic change is the movement of jobs that require high amounts labor and low amounts of technology to offshore facilities. Products created from this type of labor are now sourced from overseas production facilities.
- Another change that has occurred within the REMI model is that migration equations, which are the movement of population from area to area due to economic pulls or pushes, have been updated to more accurately reflect the mobility of the population. Investment equations, which represent a second change within REMI, have been modified to reflect the age structure of existing facilities by area. The results of these changes are that investment demand forecasts more accurately reflect a given area's need to replace capital structures.
- Yet another change to the REMI model occurred in the compensation module, in which transfer payment categories and variables have changed. Overall transfer payments continue to reflect actual economic activity. However, detailed categories within transfer payments (social insurance payments, transfer receipts, other miscellaneous categories) are not comparable between newer and older versions of the model.

CAR and its predecessor organization have been the leading institutions nationwide for research regarding the economic contributions on the local, regional or national levels of the automotive industry, automotive and supplier manufacturing and services, R&D and infrastructure investment. CAR uses the latest practices in economic forecasting and the studies reflect current industry trends,

challenges, and company practices. CAR's economic contribution studies are used by manufacturers, policymakers, and economic developers to inform decisions and better understand the industry. Importantly, these economic contribution studies have proven to be quite valuable in contributing to the dialogue between automakers and federal and state government representatives.

## *Appendix II: Intermediate and Spin-off Employment Contribution of Toyota's Operations and Dealership in the United States, 2015*

| Industries (Sub-industries are indented and listed below the main job category) | Employment Contributions | |
|---|---|---|
| | Manufacturing-related and Supporting Operations | Dealerships |
| **Forestry, Fishing, Related Activities, and Other** | 349 | 200 |
| **Mining** | 4,264 | 1,973 |
| **Utilities** | 798 | 353 |
| **Construction** | 26,819 | 20,817 |
| **Manufacturing** | 32,674 | 6,880 |
| **Wood product manufacturing** | 1,108 | 486 |
| **Nonmetallic mineral product manufacturing** | 1,511 | 486 |
| **Primary metal manufacturing** | 2,715 | 221 |
| **Fabricated metal product manufacturing** | 8,439 | 1,108 |
| **Machinery manufacturing** | 2,628 | 438 |
| **Computer and electronic product manufacturing** | 1,225 | 107 |
| **Electrical equipment and appliance manufacturing** | 596 | 186 |
| **Motor vehicles, bodies and trailers, and parts manufacturing** | 5,708 | 489 |
| **Other transportation equipment manufacturing** | 339 | 144 |
| **Furniture and related product manufacturing** | 484 | 334 |
| **Miscellaneous manufacturing** | 827 | 319 |
| **Food manufacturing** | 714 | 822 |
| **Beverage and tobacco product manufacturing** | 150 | 96 |
| **Textile mills; Textile product mills** | 614 | 134 |
| **Apparel manufacturing; Leather and allied product manufacturing** | (155) | (160) |
| **Paper manufacturing** | 636 | 208 |
| **Printing and related support activities** | 678 | 484 |
| **Petroleum and coal products manufacturing** | 134 | 59 |
| **Chemical manufacturing** | 1,323 | 451 |
| **Plastics and rubber product manufacturing** | 3,000 | 468 |
| **Wholesale Trade** | 12,365 | 4,140 |
| **Retail Trade** | 15,944 | 13,157 |
| **Transportation and Warehousing** | 9,108 | 5,895 |
| **Information** | 3,488 | 2,632 |
| **Finance and Insurance** | 13,703 | 8,589 |
| **Real Estate and Rental and Leasing** | 6,714 | 5,939 |
| **Professional and Technical Services** | 15,653 | 9,188 |
| **Management of Companies and Enterprises** | 5,799 | 1,429 |
| **Administrative and Waste Services** | 16,132 | 10,686 |
| **Educational Services** | 3,475 | 3,208 |
| **Health Care and Social Assistance** | 14,218 | 12,726 |
| **Arts, Entertainment, and Recreation** | 5,151 | 4,168 |
| **Accommodation and Food Services** | 8,947 | 6,704 |
| **Other Services, including Public Administration** | 12,427 | 10,122 |
| **Subtotal** | **208,028** | **128,806** |
| **Grand Total** | **334,124*** | |

**TOTAL number is adjusted for double counting in motor vehicle and parts retail industry.*

## *Appendix III: Intermediate and Spin-off Employment Contribution of Toyota's Operations and Dealership in the United States, 2010*

| Industries (Sub-industries are indented and listed below the main job category) | Employment Contributions | |
|---|---|---|
| | Manufacturing-related and Supporting Operations | Dealerships |
| **Forestry, Fishing, Related Activities, and Other** | 306 | 268 |
| **Mining** | 626 | 382 |
| **Utilities** | 377 | 314 |
| **Construction** | 5,766 | 6,198 |
| **Manufacturing** | 30,862 | 5,592 |
| **Wood product manufacturing** | 1,150 | 332 |
| **Nonmetallic mineral product manufacturing** | - | - |
| **Primary metal manufacturing** | 2,973 | 909 |
| **Fabricated metal product manufacturing** | 1,220 | 211 |
| **Machinery manufacturing** | 589 | 150 |
| **Computer and electronic product manufacturing** | 486 | 139 |
| **Electrical equipment and appliance manufacturing** | 18,501 | 439 |
| **Motor vehicles, bodies and trailers, and parts manufacturing** | - | - |
| **Other transportation equipment manufacturing** | 428 | 350 |
| **Furniture and related product manufacturing** | 236 | 204 |
| **Miscellaneous manufacturing** | 521 | 485 |
| **Food manufacturing** | - | - |
| **Beverage and tobacco product manufacturing** | 926 | 132 |
| **Textile mills; Textile product mills** | - | - |
| **Apparel manufacturing; Leather and allied product manufacturing** | 846 | 821 |
| **Paper manufacturing** | - | - |
| **Printing and related support activities** | 1,089 | 503 |
| **Petroleum and coal products manufacturing** | - | - |
| **Chemical manufacturing** | 1,915 | 917 |
| **Plastics and rubber product manufacturing** | 1,150 | 332 |
| **Wholesale Trade** | 8,115 | 2,833 |
| **Retail Trade** | 10,852 | 8,733 |
| **Transportation and Warehousing** | 7,026 | 3,766 |
| **Information** | 2,585 | 2,200 |
| **Finance and Insurance** | 9,702 | 6,271 |
| **Real Estate and Rental and Leasing** | 5,264 | 4,292 |
| **Professional and Technical Services** | 13,126 | 8,811 |
| **Management of Companies and Enterprises** | 2,212 | 1,225 |
| **Administrative and Waste Services** | 10,926 | 8,944 |
| **Educational Services** | 2,688 | 1,180 |
| **Health Care and Social Assistance** | 11,762 | 8,367 |
| **Arts, Entertainment, and Recreation** | 2,674 | 1,884 |
| **Accommodation and Food Services** | 6,694 | 4,153 |
| **Other Services, including Public Administration** | 17,492 | 12,648 |
| **Subtotal** | **149,055** | **88,061** |
| **Grand Total** | **237,116** | |

**TOTAL number is adjusted for double counting in motor vehicle and parts retail industry.*

## *Appendix IV: 2010 Toyota Economic Contribution Study Results*

| Economic Impact | Toyota U.S. Manufacturing-Related | Supporting Operations | Subtotal: Toyota U.S. Operations | Toyota New Vehicle Dealerships | Grand Total* |
|---|---|---|---|---|---|
| **Employment** | | | | | |
| **Direct** | 28,700 | 5,700 | 34,400 | 79,700 | **114,100** |
| **Intermediate** | 55,400 | 4,600 | 60,000 | 33,400 | **93,400** |
| **Total (Direct + Intermediate)** | 84,100 | 10,300 | 94,400 | 113,000 | **207,400** |
| **Spin-Off** | 93,600 | 9,400 | 103,000 | 54,700 | **157,700** |
| **Total (Direct + Intermediate + Spin-off)** | 177,700 | 19,700 | 197,400 | 167,700 | **365,100** |
| **Multiplier: (Direct + Intermediate + Spin-off) / Direct** | 6.2 | 3.5 | 5.7 | 2.1 | **3.2** |
| **Total Earnings by Place of Work, Private Non-Farm ($ Billions Nominal)** | $11.65 | $1.19 | $12.84 | $8.56 | **$21.39** |
| **Less: Contributions for Government Social Insurance** | $2.17 | $0.28 | $2.44 | $1.70 | **$4.15** |
| **Less: Personal Income Taxes** | $1.28 | $0.14 | $1.42 | $1.00 | **$2.42** |
| **Equals Private Disposable Personal Income ($ Billions Nominal)** | $8.20 | $0.77 | $8.98 | $5.86 | **$14.83** |
| **Contribution as Percent of U.S. Total Private Economy** | | | | | |
| **Employment** | 0.10% | | | 0.10% | **0.20%** |
| **Compensation** | **0.08%** | | | **0.09%** | **0.20%** |

**Numbers are rounded and adjusted for double counting in motor vehicle and parts retail industry.*

*Source: Center for Automotive Research, 2010*

*Appendix V: 2007 Toyota Economic Contribution Study Results*

| | Manufacturer-related | New Vehicle Dealer-related | Total |
|---|---|---|---|
| **Direct** | 33,187 | 85,040 | **118,227** |
| **Intermediate** | 58,930 | 31,590 | **90,520** |
| **Total (Direct + Intermediate)** | 92,117 | 116,630 | **208,747** |
| | | | |
| **Spin-off** | 106,551 | 66,100 | **172,651** |
| **Total (Direct + Intermediate + Spin-off)** | 198,668 | 182,730 | **381,398** |
| **Multiplier: (Direct + Intermediate + Spin-off)/Direct** | 6.0 | 2.1 | **3.2** |
| | | | |
| **Compensation ($billions nominal)** | $13.72 | $10.76 | **$24.48** |
| **Less: transfer payments, social contributions** | ($2.46) | ($1.91) | **($4.37)** |
| **Less: personal income taxes** | ($1.76) | ($1.42) | **($3.19)** |
| **Equals private disposable personal income ($billions nominal)** | $9.49 | $7.44 | **$16.92** |
| | | | |
| **Contribution as % of total private economy** | | | |
| **Employment** | 0.11% | 0.10% | **0.21%** |
| **Compensation** | **0.10%** | **0.08%** | **0.18%** |

*Note: Due to rounding, columns or rows may not sum exactly*
*Source: Center for Automotive Research 2007*

*Appendix VI: 2003 Toyota Economic Contribution Study Results*

| | Manufacturer-related | New Vehicle Dealer-related | Total |
|---|---|---|---|
| **Direct** | 29,135 | 74,060 | **103,195** |
| **Intermediate** | 74,660 | 38,990 | **113,650** |
| **Total (Direct + Intermediate)** | 103,795 | 113,050 | **216,845** |
| | | | |
| **Spin-off** | 107,205 | 62,250 | **169,455** |
| **Total (Direct + Intermediate + Spin-off)** | 211,000 | 175,300 | **386,300** |
| **Multiplier: (Direct + Intermediate + Spin-off)/Direct** | 7.2 | 2.4 | **3.7** |
| | | | |
| **Compensation ($billions nominal)** | $8.27 | $6.13 | **$14.39** |
| **Less: transfer payments** | ($0.75) | ($0.63) | **($1.38)** |
| **Less: social insurance contributions** | ($0.65) | ($0.48) | **($1.12)** |
| **Less: personal income taxes** | ($1.23) | ($0.90) | **($2.13)** |
| **Equals private disposable personal income ($billions nominal)** | $5.64 | $4.12 | **$9.76** |
| | | | |
| **Contribution as % of total private economy** | | | |
| **Employment** | 0.13% | 0.10% | **0.23%** |
| **Compensation** | **0.09%** | **0.07%** | **0.16%** |

*Note: Due to rounding, columns or rows may not sum exactly*
*Source: Center for Automotive Research 2003*

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## Brothers, Sheila C.

**From:** Collett, DeShana
**Sent:** Thursday, April 13, 2023 6:39 PM
**To:** Brothers, Sheila C.; Rentfrow, Gregg K.
**Subject:** Fwd: New Cmte Item (SAOSC)_Proposed Name Change of Dept of Engr Tech to Fujio Cho Dept of Engr Tech
**Attachments:** Summary of ET Faculty Vote.pdf; Fujio Cho Department of Engineering Technology Final REPORT.pdf

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**From:** Buchheit, Rudolph G. <Rudolph.Buchheit@uky.edu>
**Sent:** Monday, March 6, 2023 7:58:42 PM
**To:** Rentfrow, Gregg K. <gkrent2@uky.edu>; Farrell, Herman D. <herman.farrell3@uky.edu>; Brothers, Sheila C. <sbrothers@uky.edu>
**Cc:** Campbell, Jennifer L. <jennifer.louise.campbell@uky.edu>; Hall, Gregory O. <gregory.hall24@uky.edu>; Salt, Elizabeth G. <elizabeth.salt@uky.edu>; Troske, Kenneth R. <ktroske@uky.edu>; Wilhelm, Jennifer <jennifer.wilhelm@uky.edu>; Guiton, Beth S. <beth.guiton@uky.edu>; Collett, DeShana <DCollettPAC@uky.edu>; Akafuah, Nelson K. <nelson.akafuah@uky.edu>; Morefield, Edwina "Robyn" <robyn.morefield@uky.edu>
**Subject:** Re: New Cmte Item (SAOSC)_Proposed Name Change of Dept of Engr Tech to Fujio Cho Dept of Engr Tech

Colleagues,

Votes on the honorific naming of Engineering Technology are in as follows:

Department: 5 in favor, 0 opposed, no abstentions. The motion passed. There are five eligible faculty in the department.

College: 59 in favor, 8 opposed, 3 abstentions. The motion passed. In the College of Engineering, participation by 30% of the Faculty shall constitute a quorum for the purposes of conducting a vote. The number of eligible faculty was 164, the 30% threshold was 49, and quorum requirements were met. No questions as to the motion were asked and no amendments were proposed.

If there are instructions for attaching these results to the proposal on an official basis, please let me know with a copy to Prof. Nelson Akafuah and Ms. Robyn Morefield copied here.

Regards,

Rudy Buchheit

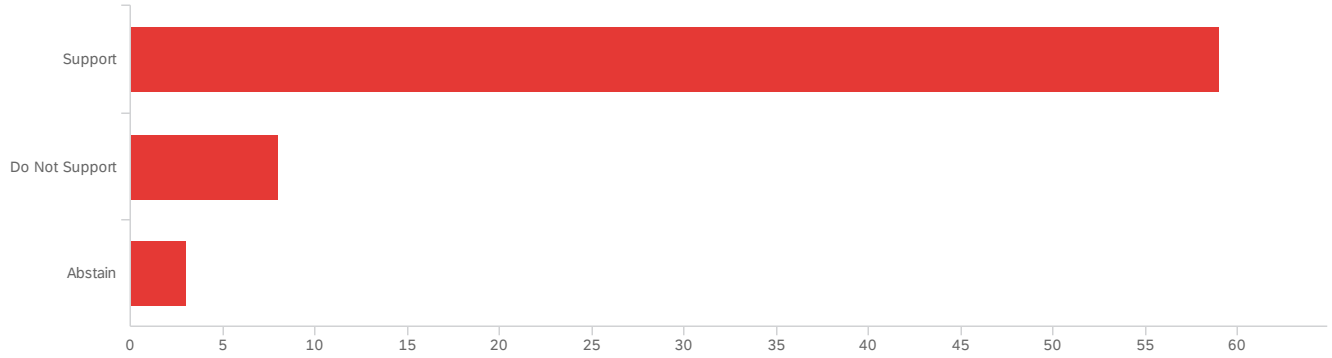
---

# Default Report

*Department Name Change*

March 6, 2023 3:03 PM MST

Q1 - Motion: In honor of Mr. Fujio Cho, the inaugural Executive Director of Toyota Motors Manufacturing Kentucky (TMMK), the Department of Engineering Technology will be known as the Fujio Cho Department of Engineering Technology.




| # | Field | Minimum | Maximum | Mean | Std Deviation | Variance | Count |
|---|---|---|---|---|---|---|---|
| 1 | Motion: In honor of Mr. Fujio Cho, the inaugural Executive Director of Toyota Motors Manufacturing Kentucky (TMMK), the Department of Engineering Technology will be known as the Fujio Cho Department of Engineering Technology. | 1.00 | 3.00 | 1.20 | 0.50 | 0.25 | 70 |

| # | Field | | Choice Count |
|---|---|---|---|
| 1 | Support | 84.29% | 59 |
| 2 | Do Not Support | 11.43% | 8 |
| 3 | Abstain | 4.29% | 3 |
| | | | 70 |

Showing rows 1 - 4 of 4

**End of Report**

**University of Kentucky**
**College of Engineering**
Department of Engineering Technology

143 Graham Avenue
Lexington, KY 40506
www.engr.uky.edu/ET
+1 859 218 0702

February 27, 2023

To whom it may concern,

Re: Summary of Engineering Technology Department Faculty Vote on the honorific naming of the department as Fujio Cho Department of Engineering Technology

The attached proposal to change the name of the Department of Engineering Technology to the Fujio Cho Department of Engineering Technology within the College of Engineering was approved by the departmental faculty as follows (5 in favor, 0 opposed, and 0 abstained). Quorum requirements were met, and based on the voting results, the motion has carried.

Attached are the email responses to the motion.

## Akafuah, Nelson K.

**From:** Lee, Philip
**Sent:** Monday, February 27, 2023 11:26 AM
**To:** Akafuah, Nelson K.; Parsley, David; Hannemann, Jens; Maginnis, M. Abbot
**Cc:** Muir, Laura K.; Carew, Kelsey L.
**Subject:** RE: Vote on Proposed Name Change of Department of Engineering Technology to the Fujio Cho Department of Engineering Technology

Hello All,

I voted for "yes"
Thank you,

Cordially,
Philip (Sanghyun) Lee, PhD

Associate Professor
Toyota Engineering Technology Distinguished Professor
Director of Undergraduate Study (Computer Engineering Technology)
Department of Engineering Technology
College of Engineering
University of Kentucky
Office) 210B CRMS (RMB), Lexington, KY 40506
Phone) 859-323-7575

---

**From:** Akafuah, Nelson K. <nelson.akafuah@uky.edu>
**Sent:** Monday, February 27, 2023 11:22 AM
**To:** Parsley, David <David.Parsley@uky.edu>; Lee, Philip <Philip.Lee@uky.edu>; Hannemann, Jens <jens.hannemann@uky.edu>; Maginnis, M. Abbot <amaginnis@uky.edu>
**Cc:** Muir, Laura K. <lkmuir2@uky.edu>; Carew, Kelsey L. <kelsey.carew@uky.edu>
**Subject:** Vote on Proposed Name Change of Department of Engineering Technology to the Fujio Cho Department of Engineering Technology
**Importance:** High

ET Faculty,
I will request an email vote on the motion below by March 1, 2023. The full proposal is attached for your reference. Should you have any questions or concerns, please let me know.
Thank you
Nelson

## The Motion for Vote:

I approve the motion to change the Name of the **Engineering Technology** to the **Fujio Cho Department of Engineering Technology** (Y Or N)

## Akafuah, Nelson K.

**From:** Maginnis, M. Abbot
**Sent:** Monday, February 27, 2023 2:15 PM
**To:** Hannemann, Jens; Parsley, David
**Cc:** Akafuah, Nelson K.; Lee, Philip; Muir, Laura K.; Carew, Kelsey L.
**Subject:** Re: Vote on Proposed Name Change of Department of Engineering Technology to the Fujio Cho Department of Engineering Technology

I also vote yes.
AM

*Dr. M. Abbot Maginnis*
*University of Kentucky*
*Assist. Professor Dept. of Engineering Technology*
*Adj. Assist. Prof., Dept. of Mechanical Engineering*
*Lean Systems Program Academic Coordinator*
*Institute of Research for Technology Development (IR4TD)*

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**From:** Hannemann, Jens <jens.hannemann@uky.edu>
**Sent:** Monday, February 27, 2023 13:25
**To:** Parsley, David <David.Parsley@uky.edu>
**Cc:** Akafuah, Nelson K. <nelson.akafuah@uky.edu>; Lee, Philip <Philip.Lee@uky.edu>; Maginnis, M. Abbot <amaginnis@uky.edu>; Muir, Laura K. <lkmuir2@uky.edu>; Carew, Kelsey L. <kelsey.carew@uky.edu>
**Subject:** Re: Vote on Proposed Name Change of Department of Engineering Technology to the Fujio Cho Department of Engineering Technology

Nelson,

Yes from me, also.

Best,

Jens

--
Dr.-Ing. Jens Hannemann - Assistant Professor
University of Kentucky - Computer Engineering Technology
j.hannemann@ieee.org - jens.hannemann@uky.edu

> On Feb 27, 2023, at 12:16, Parsley, David <David.Parsley@uky.edu> wrote:
>
> Hi Nelson,
> I vote yes on the motion. Thank you,
> David
> From: Akafuah, Nelson K. <nelson.akafuah@uky.edu>
> Sent: Monday, February 27, 2023 11:22 AM
> To: Parsley, David <David.Parsley@uky.edu>; Lee, Philip <Philip.Lee@uky.edu>; Hannemann, Jens

<jens.hannemann@uky.edu>; Maginnis, M. Abbot <amaginnis@uky.edu>
> Cc: Muir, Laura K. <lkmuir2@uky.edu>; Carew, Kelsey L. <kelsey.carew@uky.edu>
> Subject: Vote on Proposed Name Change of Department of Engineering Technology to the Fujio Cho Department of Engineering Technology
> Importance: High
> ET Faculty,
> I will request an email vote on the motion below by March 1, 2023. The full proposal is attached for your reference.
> Should you have any questions or concerns, please let me know.
> Thank you
> Nelson
> The Motion for Vote:
> I approve the motion to change the Name of the Engineering Technology to the Fujio Cho Department of Engineering Technology (Y Or N)