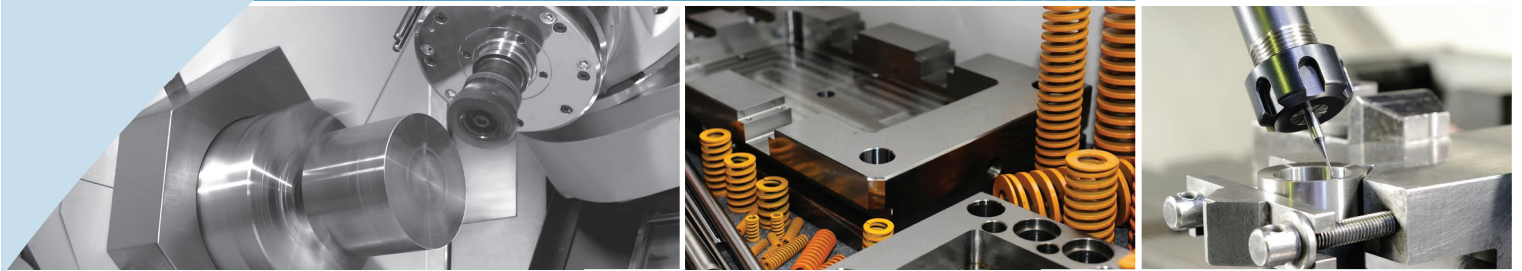




**GARDNER
RESEARCH**

2016

2016 CAPITAL SPENDING SURVEY



TOOLING & WORKHOLDING Executive Summary

\$6.177 Billion

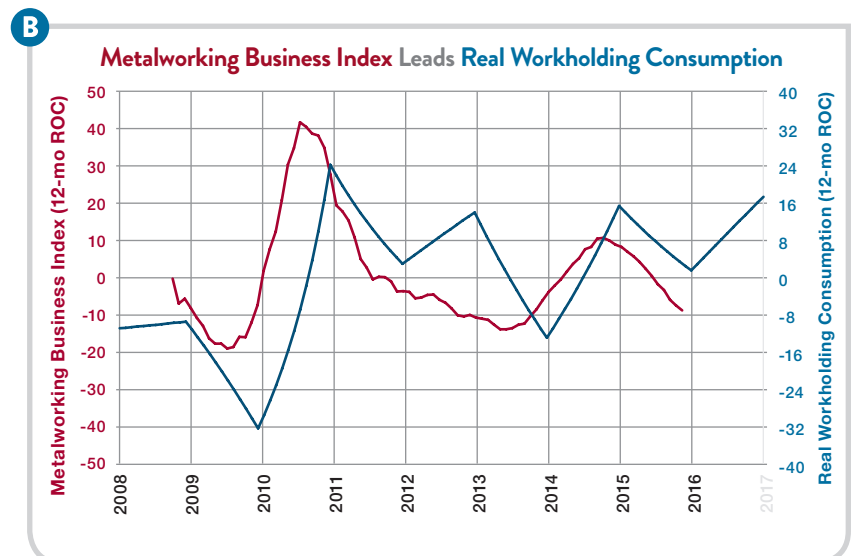
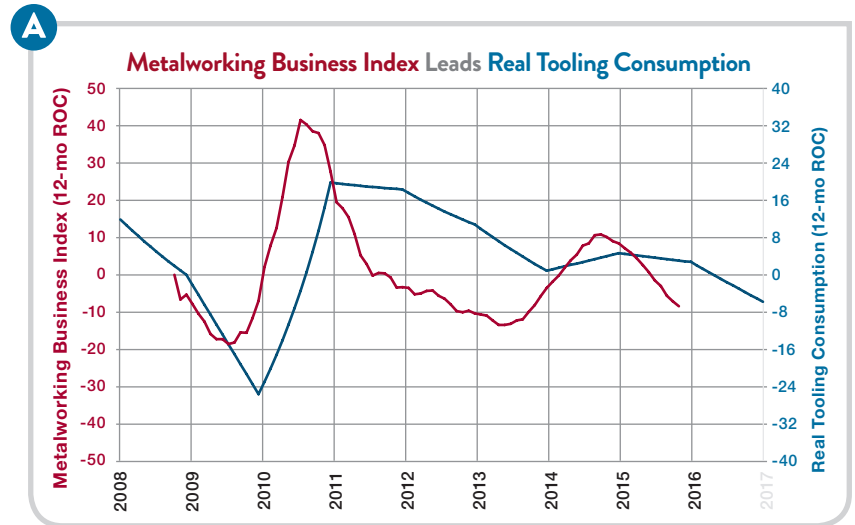
According to the 2016 Tooling & Workholding Capital Spending Survey by Gardner Research, U.S. metalworking facilities will spend \$6.177 billion on new tooling and workholding. Tooling spending is projected to be \$4.138 billion, a decrease of 7 percent. However, workholding spending is projected to increase 22 percent to \$2.038 billion.

METALWORKING BUSINESS INDEX LEADS TOOLING AND WORKHOLDING CONSUMPTION

There are a number of important leading indicators of capital equipment spending: money supply, capacity utilization, and industrial production. These same indicators can be used to forecast tooling and workholding spending. However, tooling and workholding act more like consumables, even though they are capital equipment. Therefore, current business conditions play an important role in forecasting the consumption of tooling and workholding. According to the Gardner Business Index, the metalworking industry started contracting in April 2015. The annual rate of change is contracting at an accelerating rate. Tooling spending responds faster to industry conditions while workholding spending can increase during the early part of a contraction as companies look to workholding to improve efficiency and productivity.

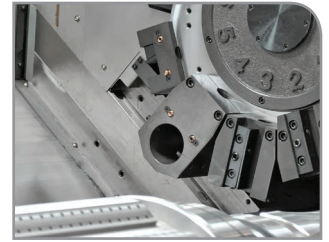
With the metalworking industry contracting at an accelerating rate, tooling spending will contract for the first time since 2009. However, the \$4.138 billion to be spent on tooling in 2016 is the third highest level of spending since at least 2002. SEE CHART A

While tooling is projected to contract, workholding spending is projected to increase in 2016. The increase in workholding is likely because shops are trying to improve productivity and process efficiency. In addition, more shops are practicing lights out machining, which requires the latest in workholding and automation equipment. SEE CHART B



Top Industries

Spending by Industry	2010	2015	2016
Job Shops	1,096.7	1,307.6	1,672.9
Aerospace	222.2	475.4	1,093.6
Industrial Motors/Hydraulics/Mechanical Components	234.7	245.5	1,092.1
Machinery/Equipment	565.6	905.4	398.6
Forming/Fabricating	196.5	426.4	393.4
Automotive	349.3	762.2	352.7
Pumps/Valves/Plumbing Products	166.7	194.3	278.4
Electronics/Computers/Telecommunications	192.4	375.0	206.7
Other Manufacturing	54.8	280.4	117.3
Petrochemical Processors	20.1	15.5	109.3
Hardware	151.6	27.5	102.8
Custom Processors	75.5	139.8	90.5
Non-Manufacturing	9.0	241.7	84.2
Plastic/Rubber Products	23.4	40.7	36.1
Oil/Gas-Field/Mining Machinery	215.8	35.1	32.0
Primary Metals	51.1	196.4	19.3
Medical	242.4	242.6	13.0
Construction Materials	-	-	11.9
Construction/Off-Road Machinery	128.1	107.3	8.1
Power Generation	31.0	44.1	8.0
Furniture	3.3	8.7	3.5
Ship Building	-	-	0.7





Tooling Spending (\$Millions)

	2010	2015	2016
Total Tooling	2,890.9	4,458.0	3929.1
Milling Tools	422.9	950.3	1,210.9
Milling, High-Speed Steel Cutters	65.2	152.7	457.7
Milling, Indexable Cutters	109.6	208.7	213.1
Milling, Solid Carbide Cutters	214.7	433.3	390.6
Milling, Other Cutters	33.4	155.6	149.5
Drills	302.6	865.7	710.8
Drills, High-Speed Steel	120.8	198.6	200.1
Drills, Solid Carbide	114.0	338.8	332.4
Drills, Spades	22.8	34.8	14.1
Drills, Indexable	35.5	128.0	100.4
Drills, Other	9.5	165.5	63.8
Stationary Tool Inserts	649.3	613.2	299.8
Stationary Tool Inserts, Carbide	507.0	520.4	234.6
Stationary Tool Inserts, CBN or Diamond Film	52.6	47.3	24.0
Stationary Tool Inserts, Ceramic	48.0	25.0	30.1
Stationary Tool Inserts, Cermet	26.2	17.5	6.6
Stationary Tool Inserts, Other	15.5	3.0	4.5
Turning Tools	178.8	417.8	365.3
Boring	52.1	148.7	153.1
Form/Special	45.6	158.9	45.1
OD/Facing	81.1	110.2	167.1
Rotary Tool Inserts	636.9	399.0	433.4
Rotary Tool Inserts, Carbide	541.1	289.6	278.4
Rotary Tool Inserts, CBN or Diamond Film	29.5	26.0	21.0
Rotary Tool Inserts, Ceramic	29.1	18.8	59.9
Rotary Tool Inserts, Cermet	17.3	25.8	48.5
Rotary Tool Inserts, Other	19.9	38.8	25.6
Grinding Wheels and Other Abrasives	193.2	208.0	193.2
Toolholders	164.0	189.4	209.1
Toolholders, HSK	14.9	48.6	69.5
Toolholders, Traditional V-Flange	137.1	86.0	85.0
Other Milling Toolholders	12.0	54.8	54.6
Tool Presetters	0.0	66.1	39.7
Other Tooling	343.2	748.5	676.0
Boring Tools	97.0	112.3	94.4
Broaches	3.6	22.7	6.8
Gearcutters	8.2	23.3	3.0
Saw Blades	78.5	169.4	164.9
Taps	140.4	353.4	165.8
Other Cutting Tools	15.5	67.4	241.1



Workholding Spending (\$Millions)

	2010	2015	2016
Total Workholding	1,329.1	1,666.7	2,038.9
Milling/Drilling Workholding	803.4	1,170.4	1,510.5
Automated Systems/Transfer Lines	51.5	320.0	218.7
Dedicated Fixtures	398.2	397.8	657.2
Flexible Fixtures	105.6	105.6	140.0
Indexing Devices	74.7	74.6	131.7
Pallet/Pallet-Handling Devices	36.5	124.0	160.5
Other	136.9	148.4	202.4
Turning Workholding	365.7	280.7	278.9
Bar Feeders	44.9	92.6	65.9
Chucks	143.0	96.7	144.4
Load/Unload Devices	62.4	19.0	16.2
Other Turning Workholding	115.4	72.4	52.4
Grinding Workholding	89.7	52	95.3
Grinding, Load/Unload Devices	17.3	18.8	46.7
Grinding, Rotating Chucks	20.9	17.8	23.4
Grinding, Other	51.5	15.4	25.2
EDM Workholding	13.6	30.1	72.0
Other Workholding	56.7	133.5	82.2





Growth Areas

REGION

Spending is projected to increase dramatically in the West region because of the aerospace industry. The oil and gas industry is holding spending down in the South Central region.

Spending by Region	2010	2015	2016
North Central-West	1,258.6	1,416.9	1,846.9
North Central-East	1,206.5	1,854.4	1,598.7
West	317.2	603.5	1,505.0
Northeast	820.8	1,079.1	891.1
Southeast	438.6	846.3	175.0
South Central	178.1	324.6	160.4
All (+)	4,219.8	6,124.8	6,177.1

North Central - East

IN, KY, MI, OH, TN

North Central - West

IA, IL, KS, MN, MO, ND, NE, SD, WI

Northeast

CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV

Southeast

AL, DC, FL, GA, MS, NC, SC, VA

South Central

AR, LA, NM, OK, TX

West

AK, AZ, CA, CO, HI, ID, NV, OR, UT, WA, WY

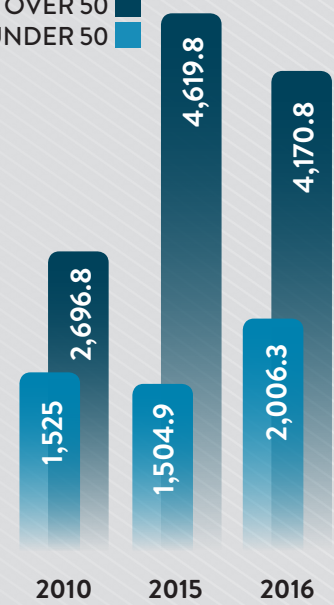
PLANT SIZE

According to the Gardner Business Index, metalworking facilities with fewer than 50 employees have seen weaker business conditions in 2015 than facilities with more than employees. In contrast to the responses to the survey, this would indicate that spending at smaller facilities should be down in 2016.

Spending by Plant Size	2010	2015	2016
1-19	1,036.0	783.6	936.5
20-49	487.0	721.3	1,069.8
50-99	855.2	747.9	765.1
100-249	1,038.5	1,525.5	1,365.0
250+	803.1	2,346.4	2,040.7
All	4,219.8	6,124.7	6,177.1

PLANT SIZE

OVER 50
UNDER 50



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Methodology

Gardner Research's 2016 Capital Spending Survey for tooling and workholding was sent to 10,000 subscribers of *Modern Machine Shop*, *Production Machining*, *Moldmaking Technology*, and *Automotive Design & Production* magazines. The survey was conducted in the month of August. Respondents were asked to answer detailed questions about their budgeted spending on tooling and workholding equipment. The responses are projected across the metalworking industry based on plant size. The survey has an error factor of +/- \$1,000,000 at a 95% confidence level for the total spending projection.

Other Gardner Research

Capital Spending Survey for Machine Tools
World Machine Tool Survey
Capital Spending Survey for Plastics Processing
Media Usage in Manufacturing Facilities
Gardner Business Index
Top Shops Benchmarking Survey

View these and other Gardner Research reports at gardnerweb.com

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