A Career in Toolmaking or Machining Technologies: The Right Choice for Students, Community & Country

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Importance to the Country

- **Manufacturing Supplies 47% of non-farm employment**
  - 16% Direct Manufacturing Jobs
  - 31% Secondary Jobs Generated by Manufacturing

- **A Manufacturing Job creates three to five times more Secondary Jobs than does a Service Job.**

- **World Class Production Requires and Follows World Class Tooling.**

Source: Employment Multipliers in the U.S. Economy by Dean Baker and Thea Lee (Working Paper No. 107, March, 1993. Economic Policy Institute with Support from Crafted with Pride in the U.S.A. Council, Inc.)

Quote - Peter Drucker, Business Guru

“THE ONLY COMPARATIVE ADVANTAGE OF THE DEVELOPED COUNTRIES IS IN THE SUPPLY OF KNOWLEDGE WORKERS”

Technology Requires Skill

REQUIREMENTS FOR BEING WORLD COMPETITIVE:

- **QUALITY**
- **COST**
- **DELIVERY**

NECESSARY CONDITIONS:

- **SKILLED LABOR**
- **TECHNOLOGY INVESTMENT**

PROBLEMS:

- **VERY SHORT SUPPLY**
- **40% OF COMPANIES CAN NOT MODERNIZE EQUIPMENT BECAUSE WORKERS LACK THE SKILLS**

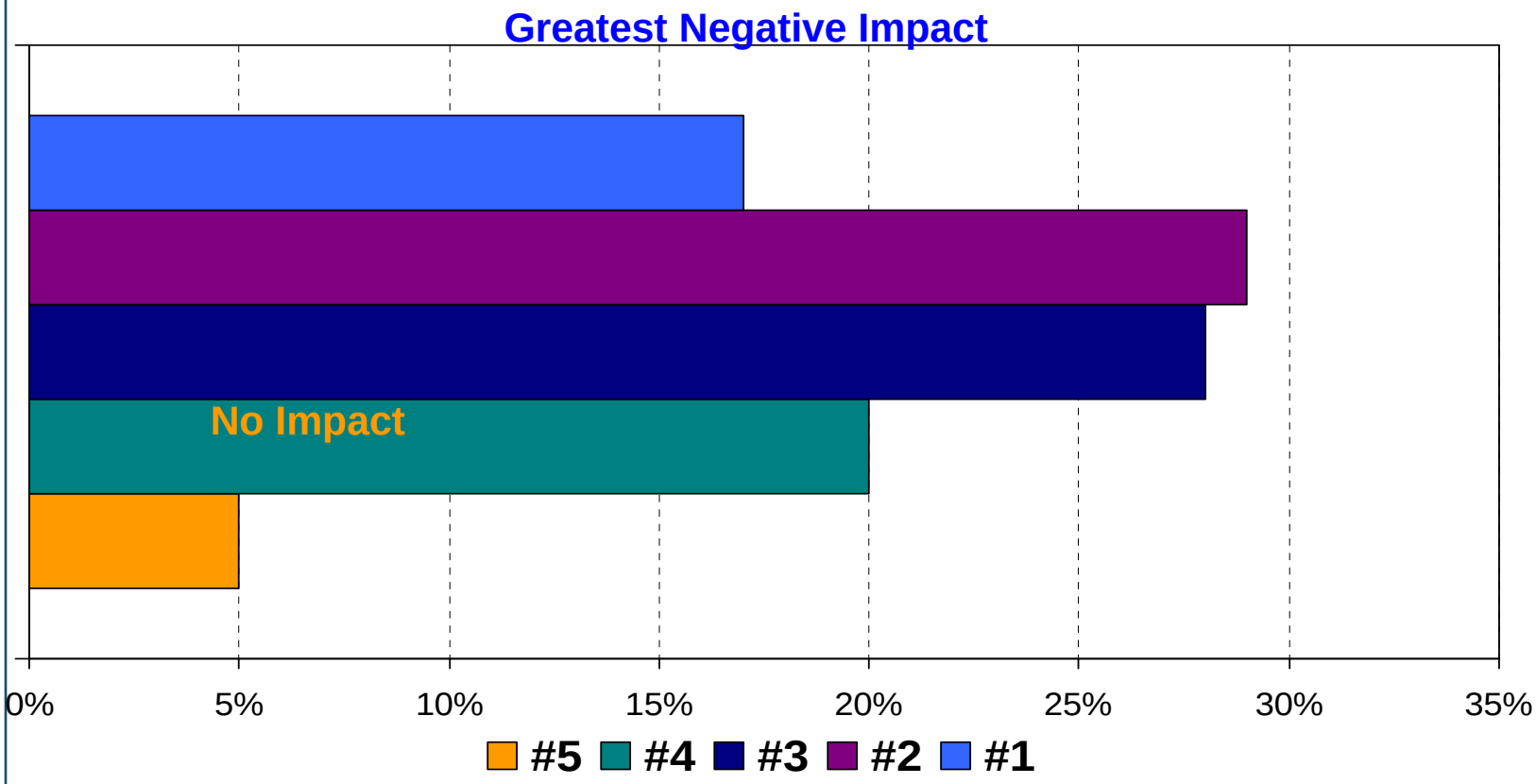
- INEFFECTIVE SKILLS AMONG EMPLOYEES HAVE PREVENTED ONE IN FIVE MANUFACTURERS FROM EXPANDING.*

CONCLUSION: A COMPETITIVE U.S. ECONOMY REQUIRES MORE SKILLED MANUFACTURING TRADESPEOPLE.

SOURCE: Competitiveness Policy Council
*SOURCE: National Association of Manufacturers

Manufacturing Skills Shortages are Impacting Business!

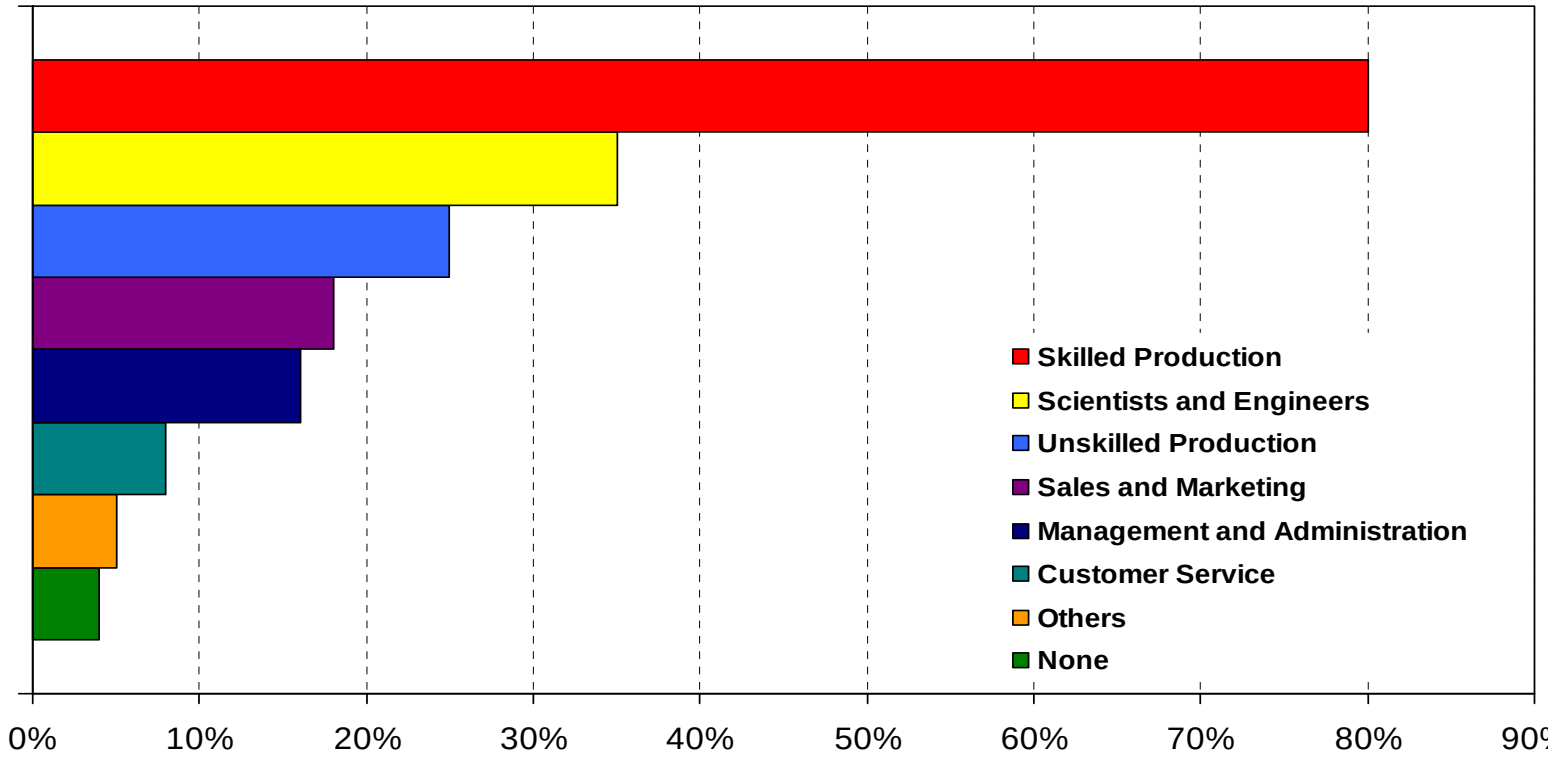
Figure 1: To Which Extent Does the Shortage of Available Skills Impact Your Company's Ability to Serve Customers (1=no impact; 5=greatest negative impact)



Source: NAM 2005 Skills Gap

Biggest Shortages: Skilled Production

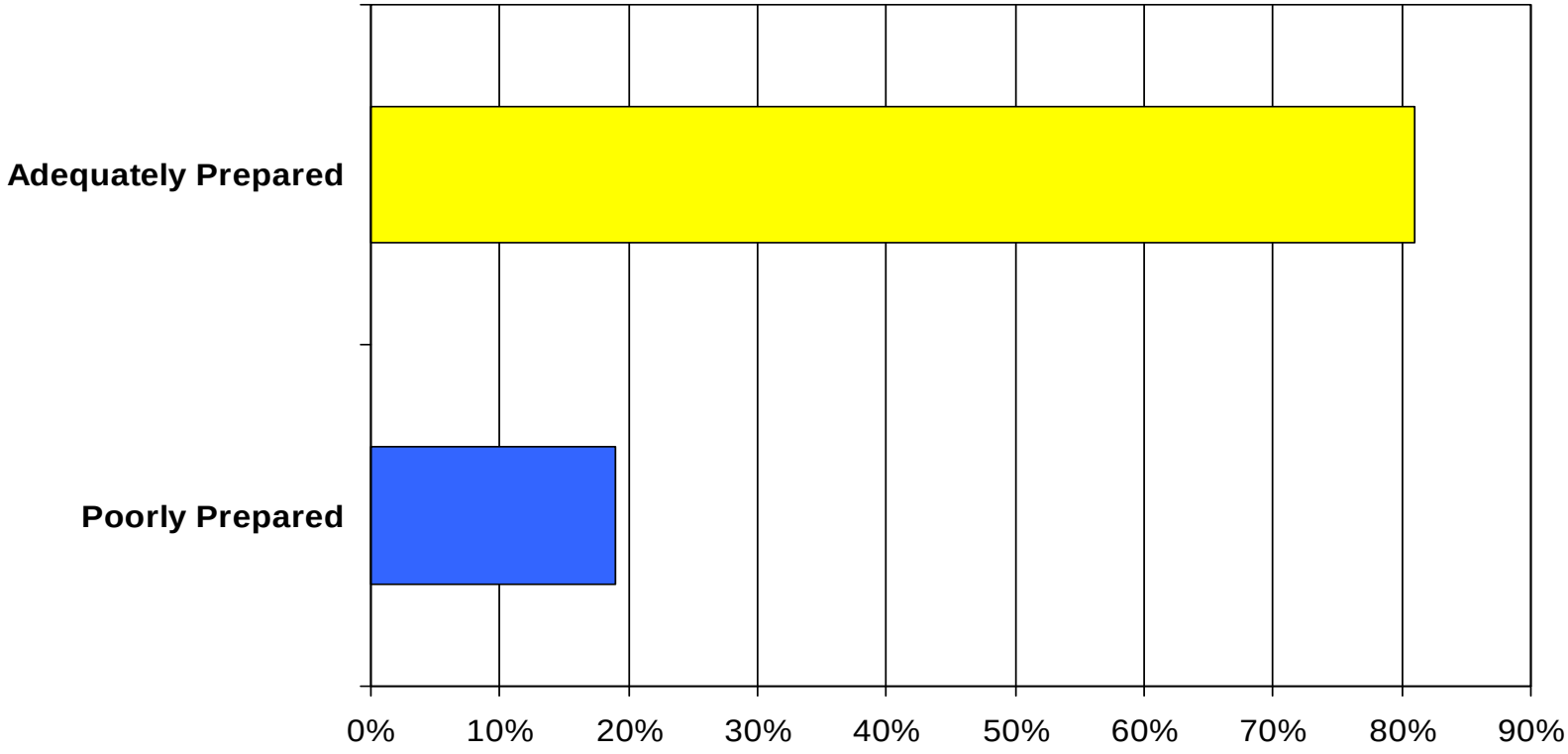
What Types of Employees are Expected to Be in Short Supply Over the Next Three Years? (Select All that Apply)



Source: NAM 2005 Skills Gap

Community Colleges Offer a Good Solution

How Prepared for a Typical Entry Level Job in Your Company Are Applicants with a Certificate from a 2-Year College?



Source: NAM 2005 Skills Gap

Should We Train Service Providers or Toolmakers?

Trainee	Work Importable/Exportable?	Impact on Employment
Beautician or Carpenter	No	U.S. Jack vs. U.S. Jill
Toolmaker	Yes	U.S. vs. Hong Kong

CONCLUSION: Our training resources should be directed to the kinds of work that are both highly paid and subject to import competition.

76,000 Job Openings

-OPENINGS, % OF WORKFORCE 10.1%*
-AVERAGE STARTING WAGE $16.82/HOUR
-AVERAGE ANNUAL INCOME
(to start, including Overtime) $42,000/year

U.S. PROJECTION:

-JOBS, ALL MACHINISTS 76,000
-TOTAL SALES $10 BILLION/YR
-IMPACT ON GDP @2.4 MULTIPLIER $24 BILLION/YR
-IMPACT ON U.S. BUDGET DEFICIT $6 BILLION/YR

SOURCE: NTMA/CHARMILLES MARCH 2006 SURVEY OF NTMA MEMBER SHOPS: 167 RESPONSES = 10%

*VS. 2.5% IN THE ENTIRE US WORKFORCE, ALL JOB CATEGORIES

CAREER OPPORTUNITIES IN TOOLING & MACHINING

Did You Know?

- Entry level toolmakers can average $35,000 a year during a four-year training program.
- Experienced precision metalworkers' earnings range from $40,000 to $75,000 annually.
- The U.S. Government projects 3 job openings for every new certified precision metalworker.
- Precision machining provides a practical basis for an engineering or business degree.
- The gloomy rooms and greasy machines of the past are replaced with computers and high technology.
- Many toolmakers eventually own their own shops. The typical shop brings in sales of $2 million per year and was founded by a 35-year old precision machinist.

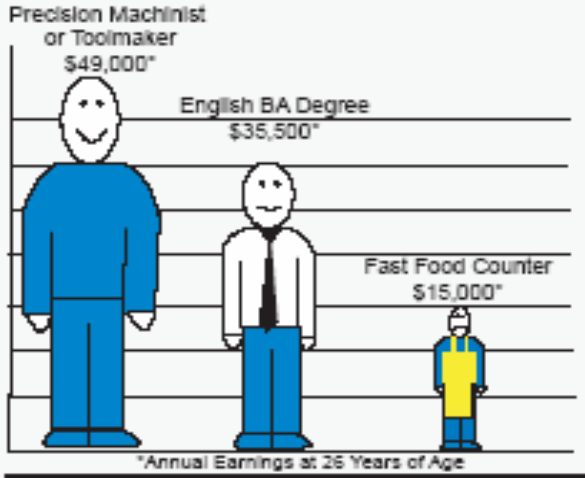
Note

The median incomes in all categories...

- Vary approx. +/- 35% based on location and skill level.
- Include overtime on a 50 hour workweek for the precision machinists/toolmakers. (Most workers in other high income categories work overtime but are not paid extra.)
- Are for 2003.

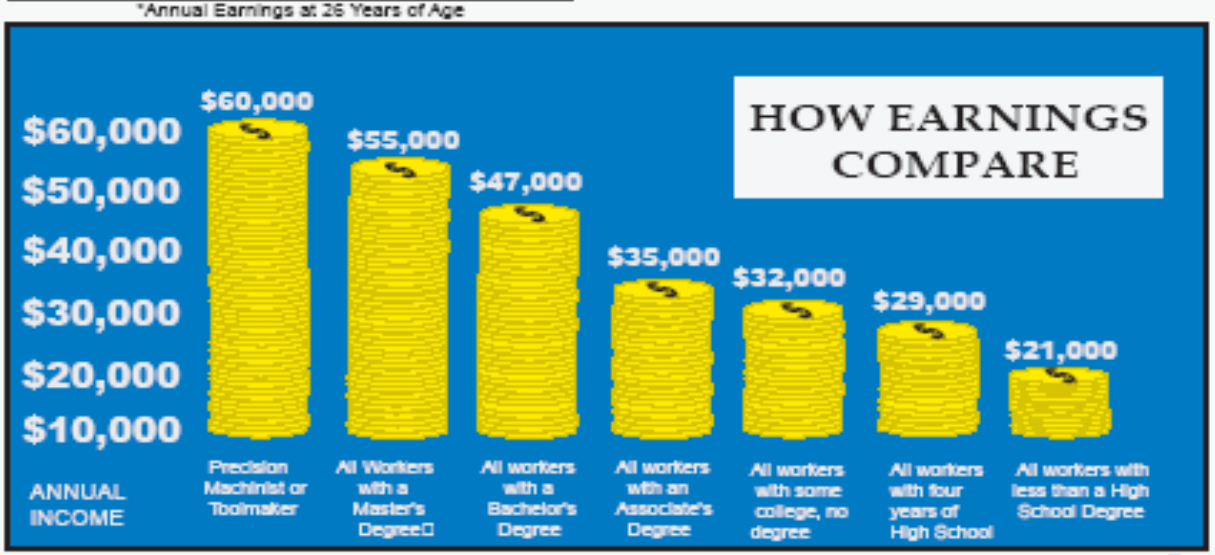
Sources

- U.S. Bureau of Labor Statistics
- NSF/SRS
- NTMA, TMA, AMBA, PMA



U.S. TOOLMAKING/ MACHINING INDUSTRY

# of Companies	12,000
# of Employees	240,000
Annual Sales	$26 Billion
# of Job Openings	5,000



For More Information
Contact associations listed on the back.

Provided by: CHARMILLES
NUMBER ONE IN EDM
1 (800) CTC-1EDM
www.charmillesus.com

Overtime: Toolmakers & Other Professions

EMPLOYEE GROUP	AVERAGE WEEKLY WORK HOURS
Toolmakers	**45-55 Hours**
Medical Residents, Investment Bankers, Corporate Lawyers and other Professionals	**70-80 Hours**
All Full Time Workers:	**50.8 Hours**

CONCLUSION: TOOLMAKERS WORK ABOUT AS MUCH OVERTIME AS OTHERS WITH HIGH INCOMES.

SOURCES: TMA, Labor Market Information 1995; Bureau of Labor Statistics, 1997

Work & Play Hard!

A TOOL & DIE MAKER WORKS HARD BUT CAN LEAVE WORK BEHIND. IN CONTRAST FOR BUSINESS EXECUTIVES ON VACATION:

26% CHECK OFFICE DAILY, 63% WEEKLY
18% TAKE WORK ALONG
36% DO WORK ON VACATION

SOURCE: AMERICAN MANAGEMENT ASSOCIATION, SURVEY OF 645 EXECUTIVES, 6/10/02
GLOBE & MAIL

Projected Average Annual Job Openings 1990-2005

	OPENINGS	NUMBER OF CREDENTIALS AWARDED	NET OPENINGS	OPENINGS PER CREDENTIALS AWARDED
Professional Managerial				
- Executive, Administration	436,000	506,830	-70,830	0.86
- Construction Managers	7,000	825	+6,175	8.48
- Marketing, Advertising, and Public Relations Managers	23,000	66,416	-43,416	0.35
Professional Specialty	623,000	1,120,063	-497,063	0.56
- Physical Scientists	8,000	35,163	-27,163	0.23
- Lawyers	28,006	44,314	-16,308	0.63
Technical				
- Technicians	183,000	212,767	-29,767	0.86
- Health	79,000	71,804	+7,196	1.10
- Engineering	52,000	85,611	-33,611	0.61
Blue-Collar Technical				
- Craft, Precision Metal, and Specialized Repair	455,000	133,057	+321,943	3.42
- Mechanics, Installers, Repairers	160,000	91,758	+68,242	1.74
Service Occupation	882,000	237,062	+644,938	3.72
Operators, Laborers	477,000	41,504	+435,496	11.49
Farming, Forestry, Fishing	90,000	14,547	+75,453	6.19

SOURCE: DATA COMPILED FROM "JOB-RELATED EDUCATION AND TRAINING: THEIR IMPACT ON EARNINGS," BY A. ECK, 1993, *MONTHLY LABOR REVIEW*, WASHINGTON, DC: U.S. DEPT. OF LABOR, "*OTHER WAYS TO WIN, CREATING ALTERNATIVES FOR HIGH SCHOOL GRADUATES*," BY KENNETH C. GRAY AND EDWIN L. HERR.

CONCLUSION: PRECISION MACHINING IS ONE OF THE FEW CAREERS WITH BOTH A HIGH RATIO OF DEMAND TO SUPPLY AND A HIGH INCOME.

ROI on Skilled Workforce Training

PERSPECTIVE	MFG. TECH, ASSOCIATES DEGREE	TOOL&DIE APPRENTICE	ENGLISH, BACHELOR'S DEGREE
WORKER	39%	125%	6%
UNITED STATES	163%	233%	30%

Modern Machine Shop, May 2005

High School Graduation Rates

THE LOWEST RISK OF DROPPING OUT OF HIGH SCHOOL IS FOR STUDENTS WITH:

3 CAREER & TECHNICAL EDUCATION UNITS PER 4 ACADEMIC UNITS

CONCLUSION: TAKING SOME HIGH SCHOOL CAREER AND TECH COURSES ENHANCES EDUCATIONAL CONTINUITY.

Source: The CTE/Academic Balance and Three Secondary Outcomes in

Brief: Fast Facts for Policy & Practice No. 18 by Michael Wonacott (2002) (http://nccte.org/publications/infosynthesis/in-brief/in-brief18/indix.asp.)

Contextual Learning

60% of students learn best in context

Schools should offer:

- **Career focus for all students (reason to remain in school and continue education)**
- **Contextual teaching strategy (enables students to master high levels of academics)**
- **Real world, open ended problems**

SOURCE: Education and Career Preparation for the New Millennium 10/2000. Daniel Hull, CEO, Cord.

Www.cord.org/news.cfm?headline=12

Income, Workers Age 20-34in March of 1996

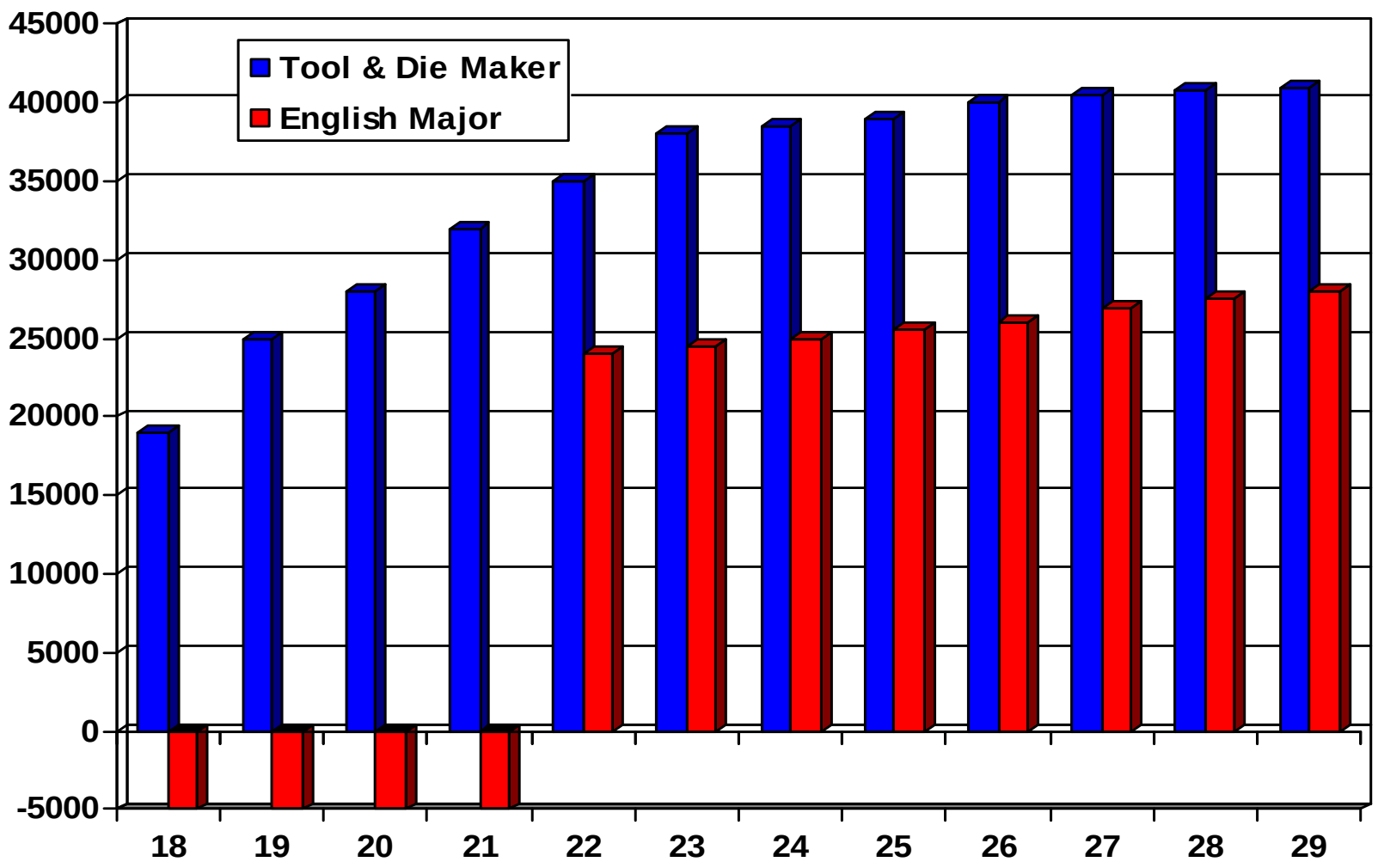
Full Year, Full Time, Total 1995 Earnings			
	Less than $30,000	$30,000 or More	
	Number	Number	%
Non-High School Graduate	271,847	41,268	13.2%
High School Graduate	1,358,704	397,462	22.6%
Some College, No Degree	774,103	290,643	27.3%
Precision Production, Craft & Repair	356,233	284,545	44.4%

Source: Data March 1996 Current Population Survey, Census Bureau, Great Lakes States, only. (Latest available data, 9/1/01.)

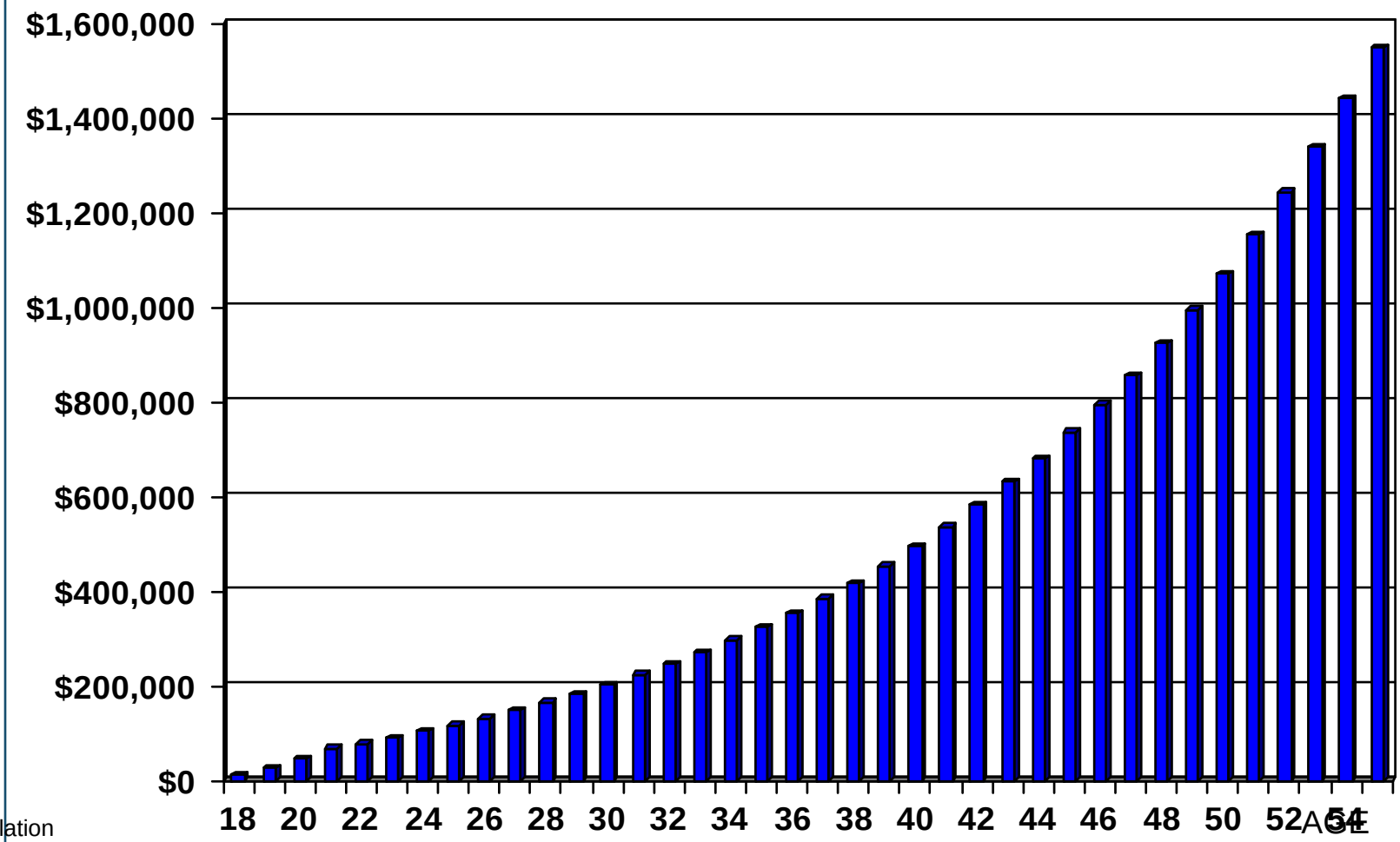
Analysis: Don Grimes, University of Michigan, for Michigan Future, Inc.

Conclusion: College drop-outs are not much better off than High School graduates. Precision Machinists are much better off than either.

Annual Income/Age



Tool & Die or English Major? A Million $ Decision



Assumptions:
1. Zero wage inflation
2. Savings = 50% of difference in income
3. Investment return of 7% per year on savings

Key Questions

IS TOOLMAKING A BETTER CHOICE THAN A LIKELY M.D. FROM HARVARD OR STATE UNIVERSITY?

NO

IS TOOLMAKING, LINKED TO A TECHNICAL DEGREE, MUCH BETTER THAN A PROBABLE COLLEGE DROP-OUT OR A MARGINAL LIBERAL ARTS COLLEGE GRADUATE?

YES

YES, FOR THE INDIVIDUAL:

- INCOME

- JOB SECURITY

- CAREER

YES, FOR THE COMMUNITY AND COUNTRY:

STABILITY

COMPETITIVENESS

Misallocation of Subsidies

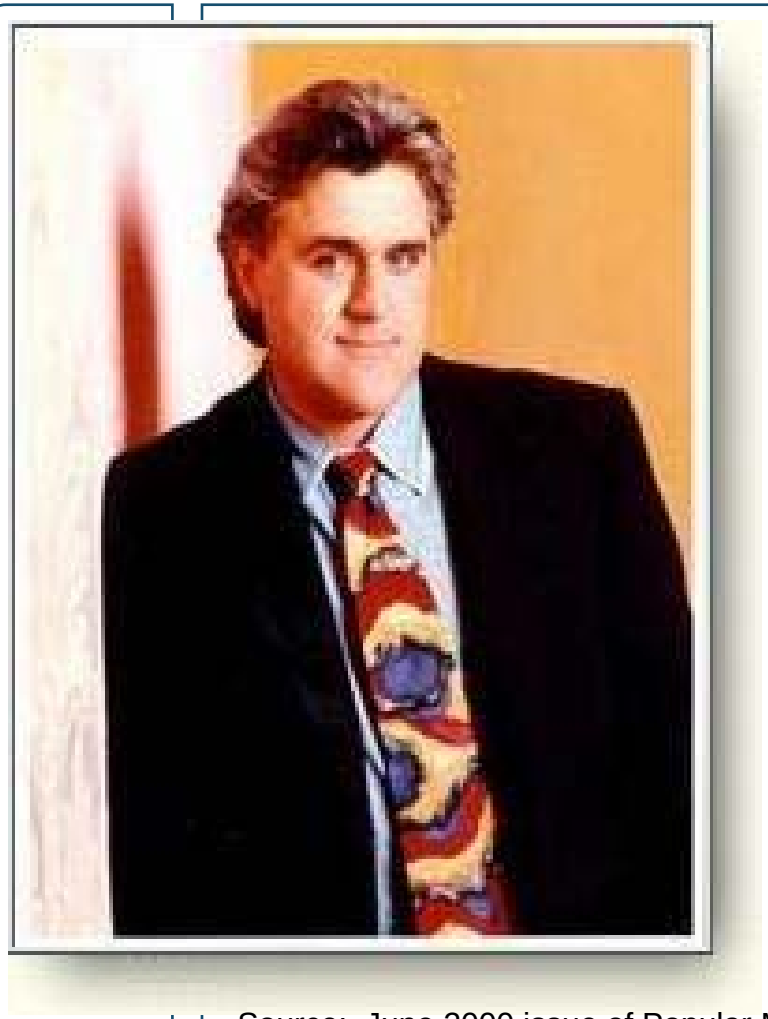
	CURRENT OPENINGS	# GRADUATED/ YEAR	DROP OUT RATE	% UTILIZING TRAINING	AVERAGE INCOME	GOVERNMENT SUBSIDY
PRECISION TOOLMAKER	30,000	3,000	25%	MOST	$53,000	0
HISTORY MAJOR	0	22,000	40%	FEW	$40,000	$40,000

GOVERNMENT SUBSIDIES OF:

- **EXCESS COLLEGE DEGREES APPROX: $5 BILLION/YEAR**
- **COLLEGE DROPOUTS APPROX: $6 BILLION/YEAR**

TAX COST OF BILL IF # OF TRAINEES DOUBLES:
(IGNORING LATER HIGHER INCOME TAXES) $45 MILLION/YEAR

Calling All Machinists



"Machine shops……

-it's a respectable trade and there's still a lot of money to be made."

"True machinists don't think of metal as something hard and unchangeable. They can make anything they want, or replace nearly any part that's ever been made. I have a lot of respect for those guys. I always will."

-Jay Leno

Source: June 2000 issue of Popular Mechanics.

2002 AMBA Newsletter

Advice About Careers in the Precision Metalworking Trade

"Go for it! It has given me a lot of discipline at work and at home. It is great when you can use your brain and hands all day long! Precision Metalworking trade is an excellent step for a good and meaningful future."

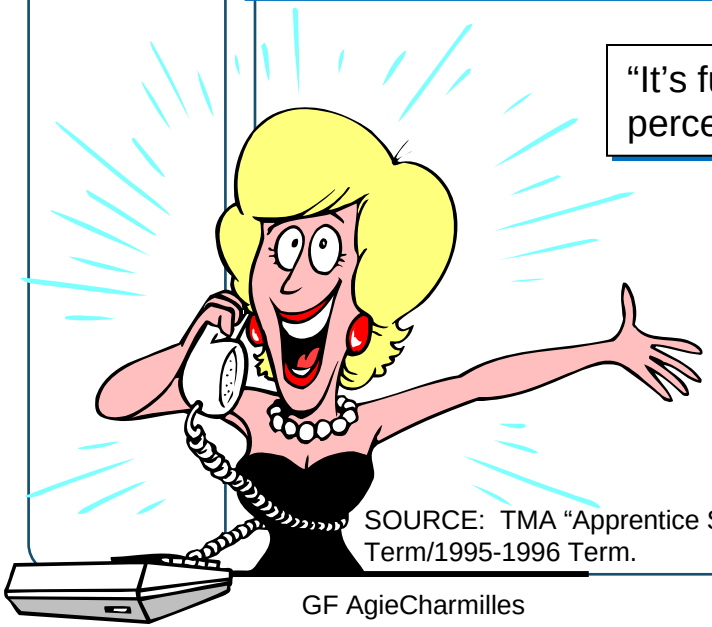
"It's not a job, it's a career."

"Get into metalworking because there's a lack of decent metalworkers. Very good job availability and benefits. Don't become a pantywaist office working drone - be a man, work with steel."

"It's fun, never boring, challenging, mind opening, sensory perceptional and very, very rewarding after completion of a job or project."

"Do it, it's a lot of fun and good money."

"It's a good and challenging skilled environment."



SOURCE: TMA "Apprentice Survey", 1994-1995 Term/1995-1996 Term.