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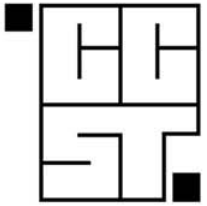
21st Century Workforce Profiles



Bay Area Science and Innovation Consortium
California Council on Science and Technology
Employment Development Department's Labor Market Division
NOVA Workforce Board
Riverside County Economic Development Agency
San Bernardino Workforce Development Department
San Diego Workforce Partnership
South Bay Economic Partnership

Funding provided by Department of Labor, Employment & Training Administration: WIRED Initiative

Project Goals

- **Investigate workforce profiles necessary for global competitiveness in the 21st century**
- **Analyze perspectives from executives, administrators (human resources), and recent PhD graduates through regional collaborative efforts involving Workforce Investment Boards, Economic Development Agencies, and the Bay Area Economic Forum**
- **Identify current and future workforce needs and skill gaps, where applicable**
- **Synthesize component surveys and recommend action items**

Project Components

- **Labor Market Information Data survey (San Diego Workforce Partnership)**
- **21st Century Workforce Preparedness in the Life Sciences (BASIC/Bay Area Economic Forum)**
- **Qualitative surveys: 21st century workforce profiles**
  - ***NOVA Workforce Board (Santa Clara, Alameda, & San Mateo Counties)***
  - ***Riverside Economic Development Corporation***
  - ***South Bay Economic Partnership***
  - ***San Diego Workforce Partnership***
  - ***San Bernardino Workforce Development Department***

LMID Survey

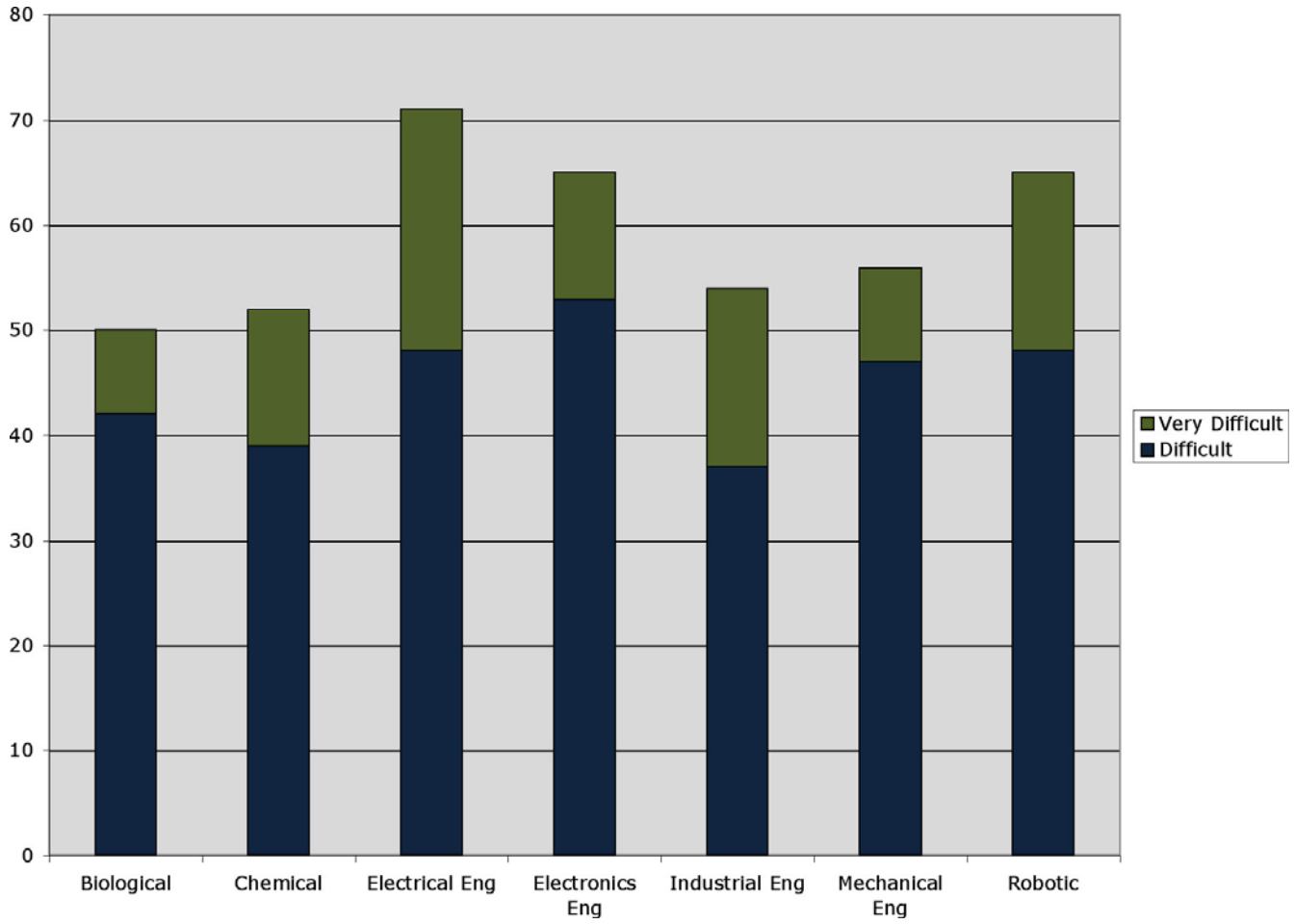
- **Employment Development Department's Labor Market Information Division sent out 18,829 questionnaires**

- **Occupational categories:**
  - *Biological Technicians*
  - *Chemical Technicians*
  - *Electrical Engineering Technicians*
  - *Electronics Engineering Technicians*
  - *Electro Mechanical Technicians*
  - *Industrial Engineering Technicians*
  - *Mechanical Engineering Technicians*
  - *Robotic (Electro Mechanical) Technicians*

- **230 questionnaires returned (directional picture rather than statistically significant sample)**

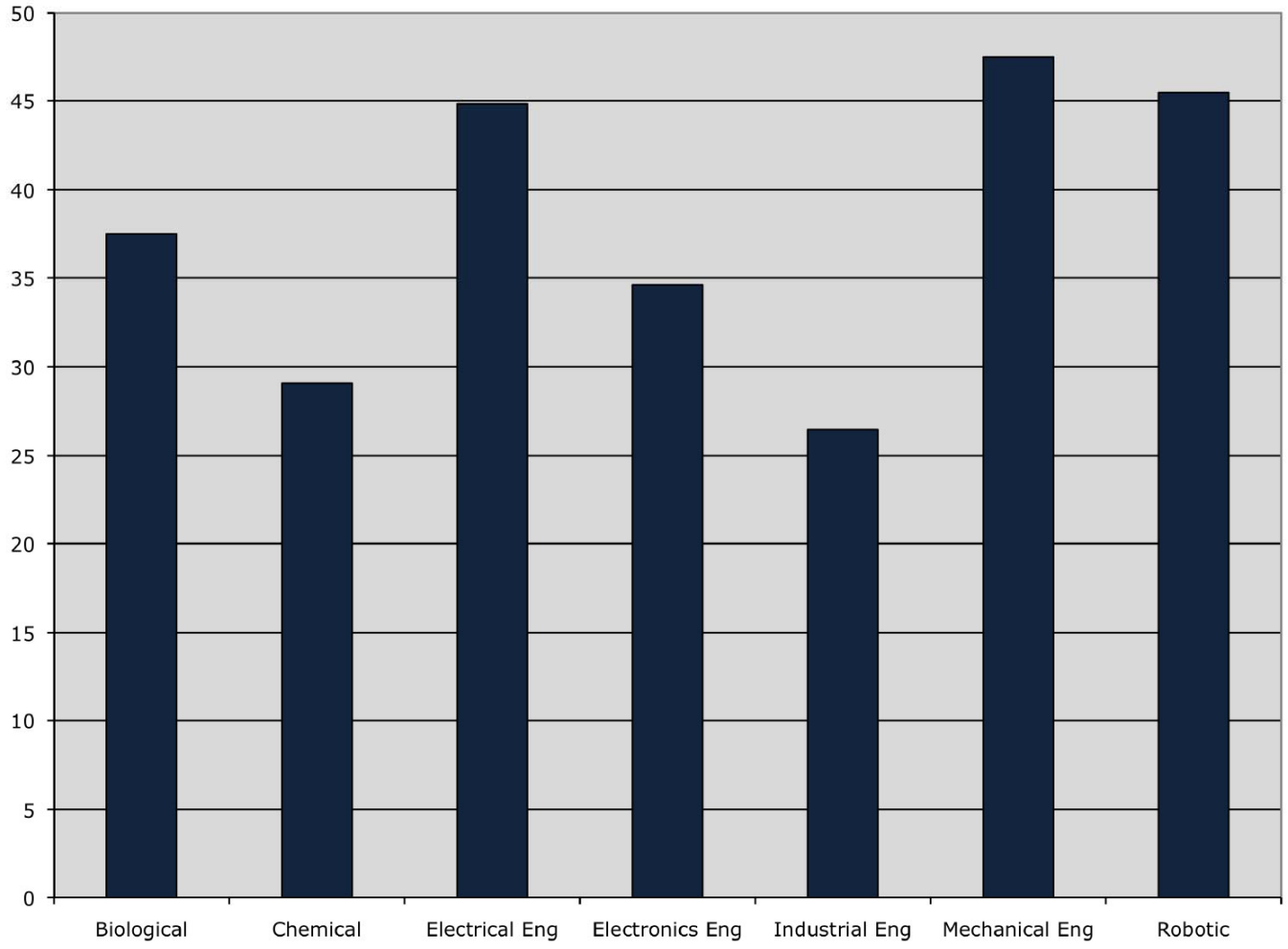
- **Most valuable skill identified aside from core skills necessary for position: communication**

LMID Survey Results



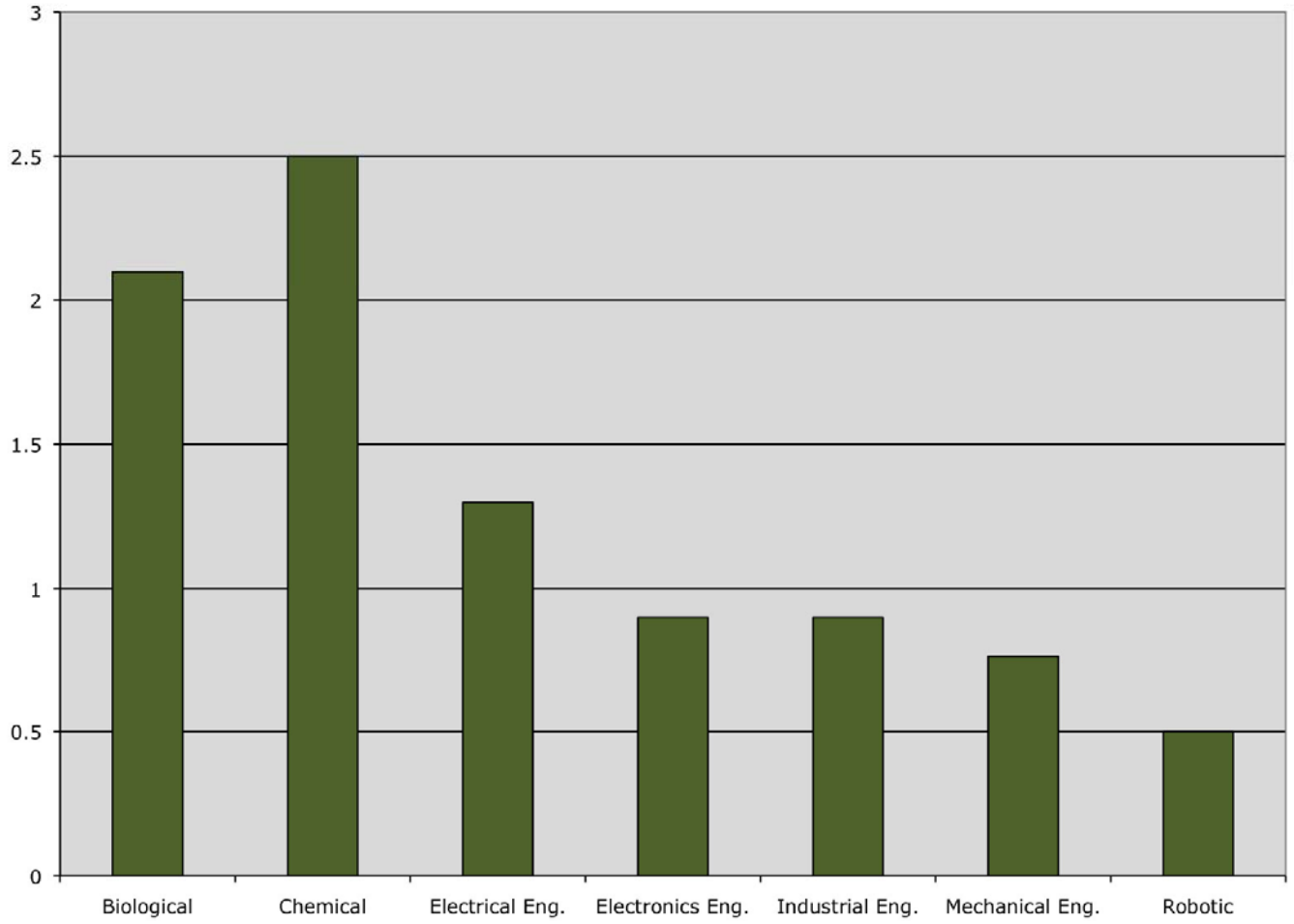
- **At least 50-70% of respondents indicated difficult or very difficult to hire qualified personnel**

LMID Survey Results



- **Projected hires as percentage of current workforce over next 12 months**

LMID Survey Results



- **Raw numbers of projected hires per respondent over next 12 months**

21st Century Workforce Preparedness

- **National workforce trend analysis**
- **Interviews: 17 senior executives, 10 recent PhD graduates**
- **Roundtable discussion with federal research laboratories, research universities (UC Berkeley, UC Davis, UC San Francisco, UC Santa Cruz, Stanford University) and industry**

BASIC
Bay Area Science and Innovation Consortium

Executive Perspectives

- **Executives see a dramatically evolving industry**
- **Industry trends affect hiring and training - although there is no system for projecting life science industry workforce needs, there are specific shortages at a range of levels**
- **Executives advocate changes at all levels of the educational system - both at the K-12 level (better STEM fundamentals) and the postsecondary (needs to adapt more rapidly to changing workforce needs)**

BASIC
Bay Area Science and Innovation Consortium

Recent PhD Perspectives

- **Frustration with length of time to degree, lack of clear career planning assistance**
- **Universities focus on training for academia rather than industry**
- **Significant attrition reported out of program, largely due to lack of academic opportunities**

BASIC
Bay Area Science and Innovation Consortium

Qualitative surveys: WIBs

- **Selected industries/NCAIS codes:**
  - **Pharmaceutical and Medicine Manufacturing (3254)**
  - **Semiconductor and Other Electronic Component Manufacturing (3344)**
  - **Navigational, Measuring, Electromedical, and Control Instruments Manufacturing (3345)**
  - **Scientific Research and Development Services (5417)**

- **Average of 15 respondents per survey**

Qualitative Surveys (WIBs)

Future of the industry

- ***Continued growth anticipated by most respondents, though funding and outsourcing a perennial concern***
- ***Need to train people quickly will remain***
- ***Need for talent & concern about workforce needs cited as driving influence in four of the surveys***

Ideal skills, education, and experience

- ***Understanding new technologies, improved skills and education, and increased communication skills***
- ***Combination of education & experience cited as most valuable at professional and managerial levels***

Qualitative Surveys (WIBs)

Critical skills gap analysis

- ***Although most respondents stated they were able to located individuals with skills needed, majority indicated there is a shortage of qualified people***
- ***Communication skills major issue at both professional and technical levels***

Education report card

- ***Concerns expressed by every group about the quality of the education system***
- ***Most companies have relationships with local colleges to address workforce needs; however many indicated that more hands-on training needed at these institutions***
- ***Lack of basic math and science skills top concern for future skilled workforce***

Roundtable Discussion

Four-part action strategy suggested

1. **Actions to better understand pain points**

   Undertake a focused investigation to understand whether the area has a fundamental worker supply problem (lack of people entering relevant courses of study) or a capacity issue (inability to graduate enough people with the right skills)

2. **Actions to address acute areas of need**

   Develop an ongoing, institutionalized process with employers and educational institutions to define areas of acute and longer term needs

   Establish a specialized technical training academy to supplement university and community college resources

Roundtable Discussion

3. Actions to address longer-term needs

Involve *all* educational institution stakeholders in addressing industry-education-government coordination

Share findings widely to gain support for changes within the academic domain (such as eliminating bias toward industry careers)

On an ongoing basis, analyze government spending and develop strategic plan to meet industry workforce needs

4. Actions to increase interest in and support for science and science teaching

Engage in coordinated PR campaign
Support a Junior Achievement-style program for science
Promote STEM teacher training programs such as CalTeach

Funding provided by Department of Labor, Employment & Training Administration: WIRED Initiative