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## Foreign Citizens' Share of U.S. Engineering Doctorates Awarded in 1979

During the 1960s, U.S. citizens received approximately three-fourths of all engineering doctorates awarded by American universities. But during the seventies this proportion declined markedly. It reached a low of about 53 percent in 1979. The decline in the share of engineering doctorates going to U.S. citizens occurred at the same time that total doctorate production in this field fell sharply—from 3,433 in 1970 to 2,494 in 1979, a drop of more than 27 percent. In terms of numbers of degrees awarded, the change is striking. U.S. citizens earned 2,558 engineering doctorates in 1970 but only 1,327 in 1979. In contrast, foreign students earned 1,167 engineering doctorates in 1979, 292 (or 30 percent) more than they earned in 1970.

The domestic labor market for engineering doctorates is influenced by the number of doctor's degrees in engineering awarded by American universities to non-U.S. citizens. Since the foreign student population includes both immigrants and nonimmigrants, and most of the former are likely to be available for the domestic labor market, the potential new supply to meet this country's science and engineering requirements is greater than the data on U.S. citizens alone might suggest. In 1979 there were 13 percent of the 2,494 U.S. engineering doctorates awarded to foreign students who were permanent residents (immigrants)

and 34 percent to those who were temporary residents (nonimmigrants). Nonimmigrant foreign students accounted for half or more of all 1979 engineering doctorates in three fields: fuel technology/petroleum engineering (67%), agricultural engineering (59%) and mining engineering (50%). These three fields have particular significance to the economies of the countries from which the majority of foreign students come—countries in Asia and the Middle East.

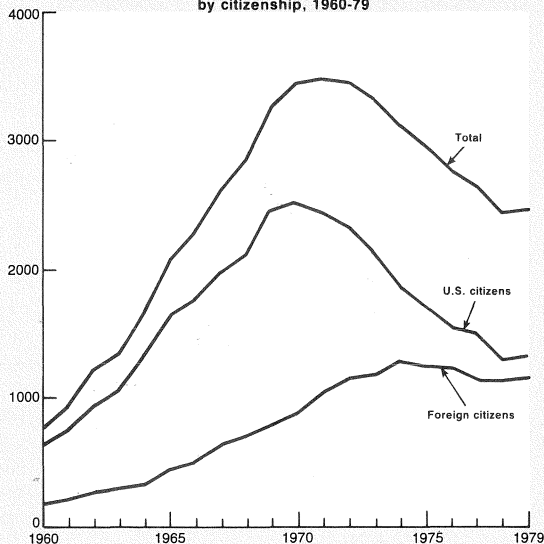
Many nonimmigrant foreign students leave the United States upon completion of their education; they should not ordinarily be considered part of the new supply available to meet domestic requirements. During the past decade, however, increasing proportions of nonimmigrant engineering doctorate recipients have obtained employment or postdoctoral study positions in the United States. In 1979 about 37 percent of this group had firm offers of employment of postdoctoral study in this country, compared to about 28 percent in 1970.

Over the 1970-79 period, at least three of every five foreign students who received U.S. engineering doctorates were from Asia and the Middle East. By comparison, the other world regions were represented by relatively modest numbers of engineering doctorate recipients. This distribution reflects in part regional requirements for engineering skills.

### Engineering doctorates, total and percent awarded to foreign students with temporary resident status: 1979

Field of engineering	Total number	Percent awarded to temporary residents
Engineering, total	2,494	33
Fuel technology, petroleum	24	67
Agricultural	66	59
Mining	4	50
Civil	236	45
Aeronautical and astronautical	81	43
Engineering, other	76	41
Metallurgy and physical metallurgy	87	39
Engineering mechanics	85	38
Electronics	83	37
Computer	79	37
Materials science	125	34
Chemical	287	34
Operations research	66	32
Mechanical	282	31
Industrial	83	28
Electrical	451	26
Nuclear	95	25
Engineering, general	33	24
Engineering physics	17	24
Systems design, systems science	75	21
Ceramic	24	17
Sanitary and environmental	66	12
Biomedical	69	10

Number of U.S. engineering doctorate recipients by citizenship, 1960-79



Source: National Science Foundation and National Research Council, *Summary Report 1979 Doctorate Recipients from United States Universities* (in press).