GLOBAL ELECTRONICS

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SILICON VALLEY COMMUTE PATTERN DATA IS INCONCLUSIVE

In the United States, the traditional urban development pattern has been analyzed by geographers and popularized by Hollywood. Employment is concentrated in central cities, such as New York, Chicago, or San Francisco. Lower income workers live in those cities, along with the unemployed, while managers and professionals commute in from the suburbs.

In high-tech areas, however, such as Silicon Valley and Massachusetts' Route 128, employment centers grew up in and near the affluent suburbs. Blue collar and low paid service workers commuted to high-tech plants and offices from more urban settings, such as San Jose. Efforts to make it possible for lower income workers to travel shorter distances to work were blocked through exclusionist zoning practices, even in "liberal" communities such as Palo Alto.

Land use patterns, limited studies, and anecdotal evidence reinforced our analysis of high-term commuting. Production and service workers not only suffered low wages, they bore the brunt of the time, family, and financial costs of commuting.

This year, we analyzed the 1990 Census Public Use Microdata Samples covering Silicon Valley to test this hypothesis. On each census form, employed persons are asked to note the length of their commute to work, in minutes. We broke down those reports into five ranges and calculated the mean earned income for each range.

No matter which industry we analyzed, we found that the shortest commutes are held by particularly low income, and that otherwise earned income increases slightly with commute time. This draws into question our hypothesis that lower income workers have the longer commutes.

Normally, we're hesitant to publish such inconclusive data, but in this instance we're hoping that readers can help us sort out the commute picture. We've come up with four potential explanations of the results:

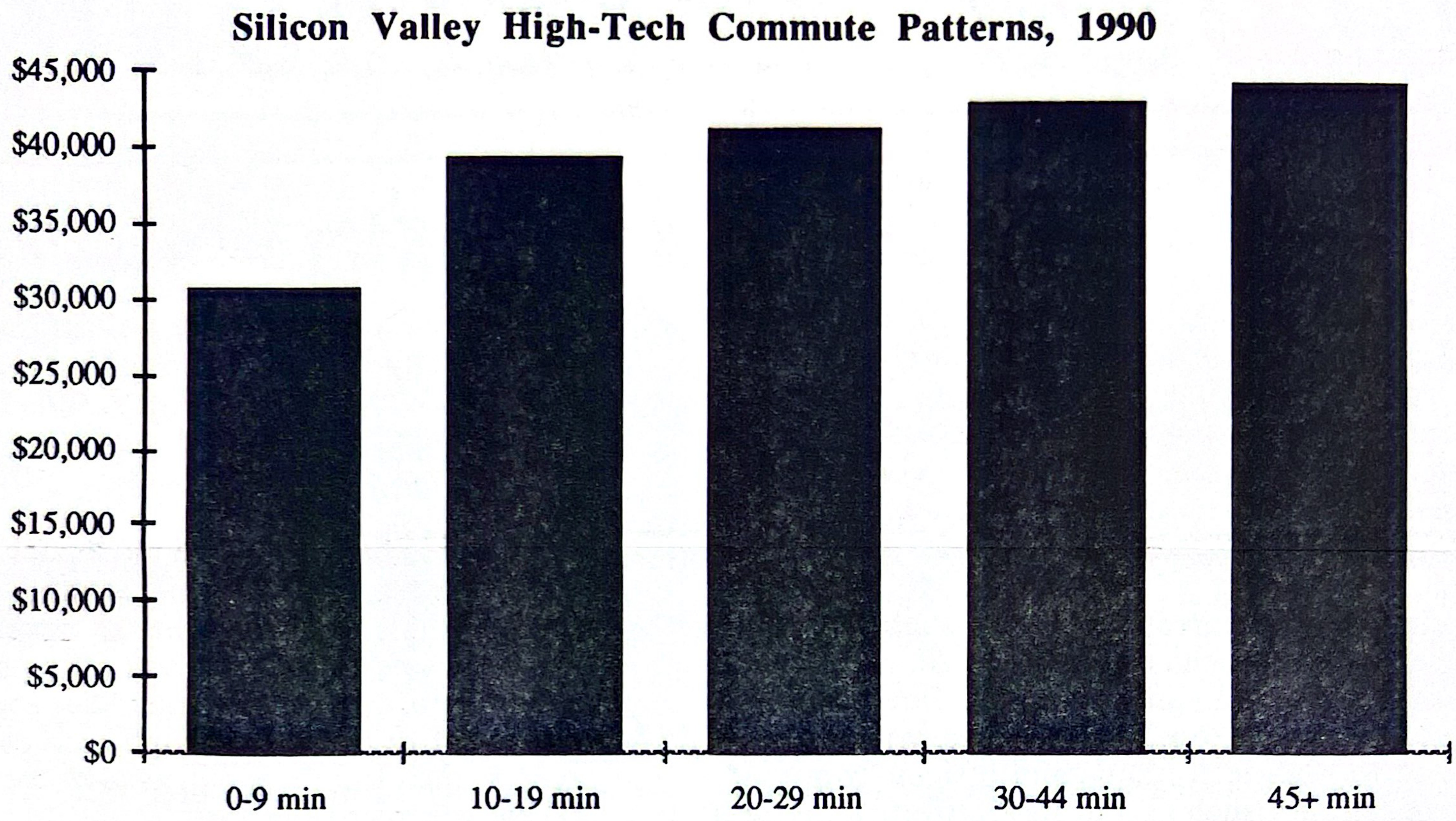
1. The method of analysis does not accurately capture commute patterns.
2. As new professionals have immigrated to the Valley, many have been forced by high home prices to locate in more distant suburbs, such as Fremont, or even in new subdivisions in the Central Valley. The historic pattern has changed.
3. Developers and cities have attempted to compensate for the Valley's toxic contamination by keeping single family residential development aware from new industrial and office development. Again, the historic pattern has changed.
4. Compared to other, non-high-tech industrial centers, the slightly uphill curves for Silicon Valley are remarkably level.
5. The hypothesis has always been incorrect, and now we have the data to prove it.

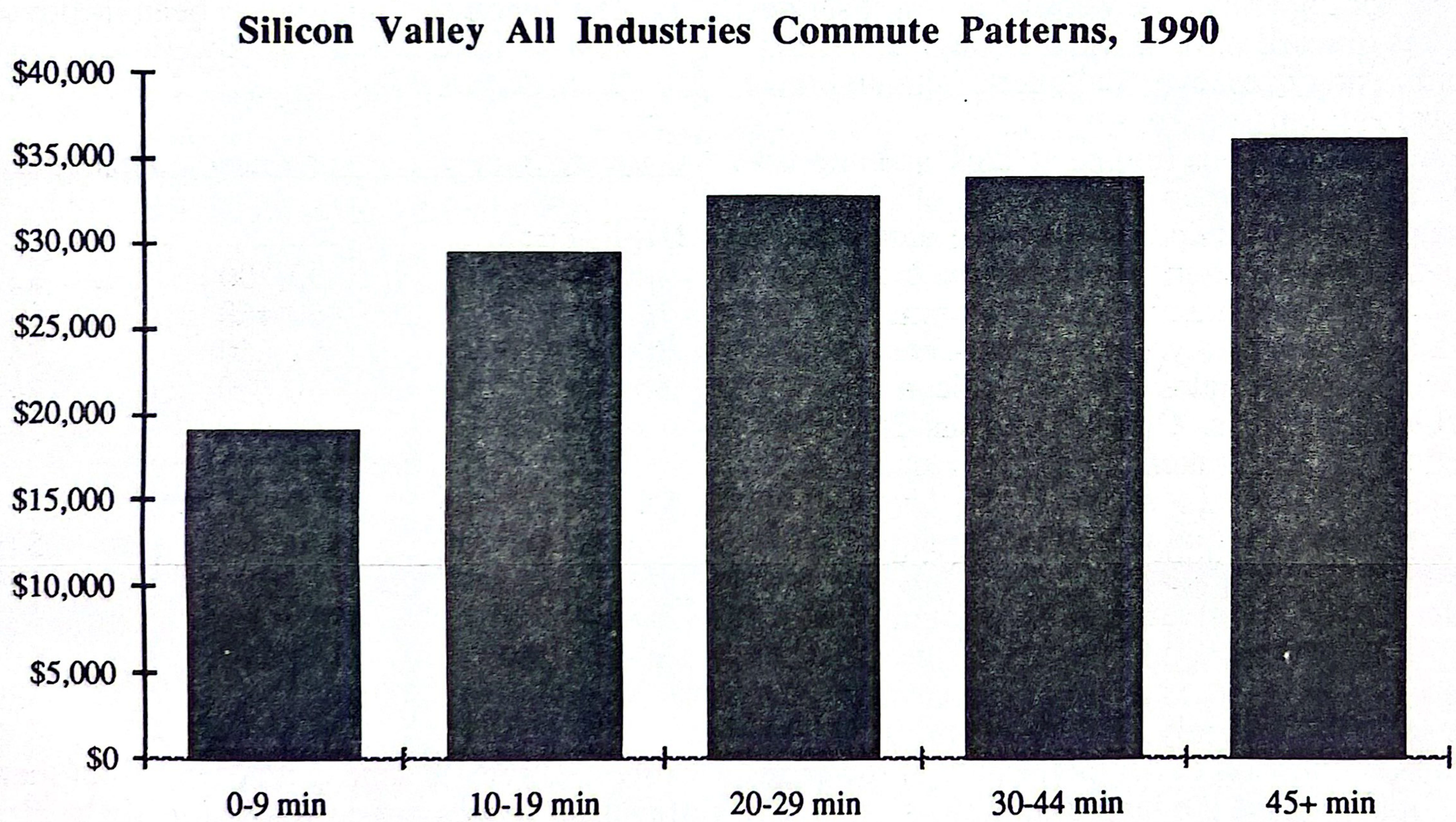
What do you think?

Commute Time	Number	Mean 1989 Income
High-Tech		
0-9 min	33,700	$30,684
10-19 min	60,460	$39,185
20-29 min	61,660	$41,087
30-44 min	60,180	$42,831
45+ min	41,600	$44,164
All Industries		
0-9 min	259,720	$19,010
10-19 min	289,400	$29,407
20-29 min	222,300	$32,918
30-44 min	218,460	$34,000
45+ min	168,280	$36,171

Notes: Commute time is independent of means of travel, so it does not correlate directly to distance, and it excludes people who work at home. Respondents reported commute times in 1990, but 1989 income. Income may have been influenced by length of employment, hours of employment, and rate of pay.

(See charts on page 2.)





Notes: Data is from 1990 Census Public Use Microdata Samples (PUMS) covering Santa Clara County, southern Alameda County, and Southern San Mateo County, plus commuters into Santa Clara County from other counties. Each column represents the mean individual earned income from employed persons reporting regular commute times within the range described at the bottom. "High-Tech" includes electronics, computer, and instrument manufacturing; computer services; and guided missiles and space vehicles.

SEMICONDUCTOR TRADE DATA

The U.S. International Trade Commission has compiled a new report on U.S. international trade in semiconductors ("Industry & Trade Summary: Semiconductors," USITC Publication 2708, December, 1993). The report contains no surprises, but it does detail important trends within the industry.

Overall, the U.S. merchandise trade deficit in semiconductors, including discrete components such as transistors as well as integrated circuits, has risen from $1,077 million in 1986 to $3,810 million in 1992. Growth was not steady, however, with the deficit dropping to $1,303 million in 1990 after two years at over $2,600 million.

The deficit is dominated by the continuing imbalance with Japan. Japan's surplus in two-way trade with the U.S. increased from $1,063 million in 1986 to $3,376 in 1992. Of course, those figures exclude Japanese imports from American subsidiaries in Southeast Asia, where virtually all U.S.-based merchant semiconductor firms assemble products for the world market.

The U.S. maintains a strong surplus—$676 million in 1992—in semiconductor trade with the European Community (EC-12), but that is down from $949 million in the previous year. U.S. companies have held, and are likely to maintain, a large share of the European market. (In 1989, U.S.-based firms supplied 41% of the European market; European firms supplied 37%. Japanese-owned producers held 20% of the market.)

However, EC policies are forcing U.S.-owned firms to conduct more semiconductor manufacturing within Europe. The report explains, "The EC's 1992 agenda on rules governing public procurement mandates that public water, energy, transport, and telecommunications procurers provide a 3-percent price preference to EC bids over equivalent non-EC offers and allows them to reject bids with contracts containing less than percent EC origin." On top of that, in 1989 the EC ruled that the country of origin was determined by the location of wafer fabrication, not assembly. Firms which previously met European origin requirements by carrying out assembly only in Europe have stepped up their investments in wafer fabrication within the common trade boundary.

Ironically, a European crackdown against dumping by Japanese semiconductor producers has impacted two major U.S.-owned firms, Motorola and Texas Instruments, which supply random access memory trips to Europe from their Japanese plants.

The Trade Commission report provides valuable data about the industry's global division of labor. In 1992 more than 57% of U.S. semiconductor exports consisted of parts, primarily U.S.-fabricated wafers shipped to Southeast Asia for assembly and testing. Parts exports totalled $6,564 million; other semiconductor exports only reached $4,901 million.

Of the top foreign countries or regions exporting semiconductors to the United States, most are merely assembling and re-exporting U.S.-fabricated chips. Only Japan, Europe, Canada, and South Korea register exports to the U.S. that significantly exceed their imports of U.S. parts.

Unfortunately, the Trade Commission does not fully explore the contradiction between nation or ownership and nation of origin. It does not document Japanese-owned production in the U.S. nor U.S.-owned plants in Japan. It ignores the triangle trade—for example, shipments by U.S. firms from Southeast Asia to Japan. Nor does it directly determine the share of re-imports in U.S. semiconductor trade.

While the Commission's own data collection system is limited by its sources, its staff reached out to other sources to put together a much broader analysis of the industry. Public policy discussions are ill served by it refusal to analyze fully the global structure of the industry.

(See table on page 4.)

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U.S. Trade in Semiconductors, 1992

($US Millions)

	Total U.S. Exports	Finished Exports	Parts Exports	U.S. Imports	Balance
EC-12	$1,611	$1,245	$394	$934	$676
Canada	$1,569	$735	$853	$1,728	($158)
Malaysia	$1,494	$88	$1,378	$1,986	($492)
Singapore	$1,338	$520	$788	$1,251	$87
Taiwan	$1,096	$603	$525	$931	$165
Japan	$911	$515	$394	$4,286	($3,376)
South Korea	$835	$157	$656	$1,982	($1,147)
Hong Kong	$689	$412	$263	$372	$317
Philippines	$631	$40	$591	$826	($195)
Mexico	$494	$216	$263	$363	$131
Thailand	$367	$39	$328	$315	$52
All Others	$430	$333	$66	$301	$130
TOTAL	$11,465	$4,901	$6,564	$15,275	($3,810)

Note: Some columns do not add up due to rounding. Some amounts are approximate because they were calculated from less precise data. Figures include all types of semiconductors, not just integrated circuits.

Source: "Industry & Trade Summary: Semiconductors," U.S. International Trade Commission Publication 2708, December, 1993. (Available from USITC Office of Industries, Washington, DC, 20436)

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