



**An Analysis of NAFTA-TAA and the Employment Impacts  
of NAFTA in California**

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## I. Introduction

The large literature on displaced workers indicates that such job loss is often associated with substantial loss of earnings, long periods of unemployment, and difficulty finding another comparable job. Manufacturing plant closures are particularly difficult for groups of workers who have spent long years in a specific job and also have certain labor market disadvantages, such as limited education or limited English ability. The impacts of NAFTA—which represent our largest trading partners and hence the greatest impacts on the labor force—are supposed to be compensated for with extended unemployment insurance payments, job training, and relocation assistance for affected workers. This NAFTA-Trade Adjustment Assistance (NAFTA-TAA) program depends on self-identification (whether by the workers, the firm, or a union) of impacted workers. In this paper we examine the functioning of this program in California and the possibilities for improving it through the production and use of more industry, trade, and labor market information.

## II. NAFTA-TAA overview

One development that emerged from the negotiation of NAFTA was the creation of the NAFTA-TAA (Trade Adjustment Assistance) Program within the U.S. Department of Labor.<sup>1</sup> The NAFTA-TAA Program is significant not only because it provides an unprecedented level of training and adjustment resources to a targeted population, but it is also proving to be a valuable database of firms and workers by sector and region that have been certified as having been affected by trade and investment relations with Mexico and Canada. Nevertheless, it was not designed to be an accounting of trade impacts and it has significant limitations in this regard.

The reporting system of NAFTA-TAA is particularly significant for several reasons: first, it is presently the only public effort to document and record the impacts of NAFTA on workers and businesses; second, it is the basis on which mitigation efforts are implemented by the Department of Labor; and third, the NAFTA-TAA reports, due to the absence of other measures, have become the yardstick for assessing impact – by scale, by sector, and by region – and thus are the basis for identifying communities and industries that are in need of assistance. The North American Development Bank's Community Adjustment and Investment Program, for example, uses the data to determine the eligibility of counties for loan subsidies to business through SBA and USDA.

Schoepfle (1996) has summarized the nature of the program:

“A petition for assistance under the NAFTA-TAA program may be filed by a group of 3 or more workers (including farm workers), a union or other duly

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<sup>1</sup>The NAFTA-TAA Program was created as a part of the NAFTA implementing legislation that was approved by the U.S. Congress in November 1993.

authorized representative (including community-based organizations), or a company official. The workers on whose behalf a petition is filed must be (or have been) related to the production of an article (i.e. the provision of a non-tangible service is not covered). NAFTA-TAA petitions must be filed within one year of the impact date of a layoff...

“The NAFTA-TAA program is similar to the existing TAA program that has been available in various forms since 1962 to workers dislocated as the result of increased U.S. imports. The TAA program offers assistance (training and extended unemployment benefits) to displaced workers whose employment is the direct result of increased imports from any source. The NAFTA-TAA program has a... requirement that a claimant must be enrolled in training in order to qualify for extended income support; waivers of the training requirement are allowed under the TAA program, but not under the NAFTA-TAA program...

“In determining whether a significant number or proportion of workers in a firm or subdivision of the firm covered by a NAFTA-TAA petition have become totally or partially separated, or are threatened to be totally or partially separated, the following criteria are applied, either:

1.(i) the sales or production, or both, of the firm or subdivision have decreased absolutely; (ii) imports from Mexico or Canada of articles like or directly competitive with articles produced by the firm or subdivision have increased; and (iii) the increase in such imports contributed importantly – that is, be a cause that is important but not necessarily more important than any other cause – to the workers’ separation or threat of separation and to the decline in sales or production of the firm or subdivision; or

2. there has been a shift in production by the workers’ firm or subdivision to Mexico or Canada of articles like or directly competitive with articles which are produced by the firm or subdivision.”

NAFTA-TAA allocates the displacement impact into three categories, applicable to either Mexico or Canada (or unspecified country). The classification of impacts, with their certification codes, are the following:

### NAFTA TAA Criteria For Certification

	Mexico	Canada	Country not specified
Production moved to other country	C-1	C-2	
Increased company imports	C-3	C-4	C-5
Increased customer imports	C-6	C-7	C-8
Increased general imports			C-9

The presumption of this system is that firms, or the affected union, or a group of workers will obtain and prepare a NAFTA TAA application, which then is submitted to the designated state agency which, as the partner to the Department of Labor, handles the "intake" of applications and makes an initial review (the EDD in the case of California). The application is then passed on to the Department of Labor in Washington, which relies upon a variety of procedures to either "certify" or deny the application.

NAFTA-TAA is an incomplete accounting of employment impacts due to trade with Mexico and Canada, mainly because:

1. Workers often know nothing about such programs and depend on the firms laying them off or unions to help them apply. Since unions represent only a small proportion of workers, it is likely that a large number of displaced workers are unaware of the availability of NAFTA-TAA.
2. Workers indirectly displaced by an increase in imports or a decline in exports would be unlikely to be aware of such market share shifts unless informed of them by their firm or union.
3. Within some industries, even the firms may be unaware of the details (causes) of displacement due to shifts by clients to suppliers from Mexico or Canada. The position of apparel industry contractors is an example of this.
4. In general the whole process of monitoring and applying for TAA by firms is biased in favor of larger firms with the resources to carry out the requisite information gathering and application.
5. Even if there are applications for DOL assistance in response to perceived NAFTA impacts, there is no assurance that the NAFTA-TAA route will be taken to address

- the problem. There are a variety of considerations related to the rules and administration of NAFTA-TAA, TAA, and other displaced-worker programs (e.g. the former JTPA Title 3) that cause us to doubt that all workers displaced by NAFTA will apply for NAFTA-TAA. In particular, as noted above, TAA allows workers to collect extended unemployment without being in job training and has a less stringent time schedule.
6. Of course, NAFTA-TAA not only misses many displaced workers, it also contains some false positives, i.e. workers who were laid off for conjunctural market reasons unrelated to trade, yet were certified because of rising imports.

In sum, while it is useful that some form of impact measurement is in place, the count of NAFTA-TAA certified workers or firms must not be treated as the definitive measure of NAFTA impacts, something it was not designed to be. In the following sections we examine the NAFTA-TAA database to determine what it says about types of impact and where the impact falls. The results of the empirical analysis clearly demonstrate the limitations of relying solely upon NAFTA-TAA, and lead to the development of additional (not substitute) measures that address the issue of increased trade impacts in particular.

### NAFTA-TAA Data

Given the unique role NAFTA-TAA plays currently as the only official recording system of NAFTA impacts, it is essential to assess the findings that result from the NAFTA TAA process.<sup>2</sup> What do the data show with regard to magnitude, source (Mexico/Canada), type (shift of production versus trade impact), sector, and region?

Overall, 309,768 workers were certified as being affected by NAFTA by the end of August 2000, resulting in an average of 3,872 workers per month for 80 months. Schoepfle (1996) compares this to the U.S. Bureau of Labor Statistics' (BLS) Mass Layoff Statistics, which show that a total of 947,799 workers were separated from their employers in 5,155 mass layoff events in one year (July 1995-June 1996), or 78,893 workers per month, making NAFTA-TAA certifications on average five percent of these separations. Schoepfle also compared NAFTA-TAA to the dislocated worker survey conducted by the BLS: "The survey reported that – out of a total labor force of over 110 million – 4.2 million workers were displaced between January 1993 and December 1995 (a period of employment expansion and declining unemployment) from jobs that they had held for at least 3 years... The survey also reported that another 5.2 million workers were displaced from jobs that they had held for less than 3 years. Thus, a total of 9.4 million workers were displaced over the last survey period..." (Schoepfle, 1996:12-13) These data imply an average of 175,000 long-term workers displaced per month, or 391,667

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<sup>2</sup>Given the larger context of macro economic changes in both the United States and, more strikingly, in Mexico, including the peso devaluation, it is more accurate to adopt a broader conception of assessment: what have been the impacts *since* NAFTA was implemented, rather than *due to* NAFTA's implementation.



total workers displaced per month, making NAFTA-TAA certifications potentially two percent of the long-term layoffs or one percent of all displacements.

Overall, then, the certified NAFTA impact is small and represents approximately one percent of all displaced workers in the United States. One expects jobs to shift to trading partners, but this is hardly the “giant sucking sound” predicted by Perot and others. However, there may be significant impacts on particular industries and locations.

In fact, despite this high rate of churning, the U.S. economy has also had a high rate of net job creation of over 200,000 jobs per month. The Council of Economic Advisors (1996) noted that BLS establishment survey data showed growth in U.S. non-farm employment of 8.5 million from January 1993 to March 1996, or about 224,000 more jobs per month.

The distribution of NAFTA-TAA certifications according to the type of job loss and source country is portrayed in Table 1, which shows that 68 percent of worker certifications were related to Mexico, 17 percent to Canada, and the rest unspecified. The single largest category is C1, shifts of production to Mexico, which accounts for 50 percent of certified workers and 51 percent of certified firms. In every category, the Mexican impact is significantly greater than the Canadian impact.

The non-manufacturing component of NAFTA impact is relatively small, as can be observed in Table 2, which focuses only on NAFTA-TAA certified non-manufacturing companies. Because of its size and consequent greater significance, most of the following NAFTA-TAA analysis will focus on manufacturing, with a total of 2,398 certified sites, accounting for 95 percent of all NAFTA-TAA certified workers.

The most common type of NAFTA manufacturing impact is due to production shifts, according to the NAFTA-TAA database: 58 percent of the firms and 60 percent of the certified workers (Table 3). This finding about the higher level of production shifts provides a possible clue about the bias of the NAFTA-TAA system. Plant closings and major production layoffs are salient and indisputable manifestations of trade impacts, in contrast to lost sales. Plant shutdowns are more likely to lead to petition filings – whether it be by the company, workers, or a union – because the source of the job dislocation is easier to identify. Though the NAFTA-TAA self-reporting system may be an indicator of production shifts, it may be somewhat less appropriate to rely upon NAFTA-TAA as a general means to identify job losses due to imports, especially since one would expect that import impacts would be more widespread.

But even the shifting of production is not as self-evident as it might appear. There are additional factors, such as the structure of the industry, which may obscure the cause of a

plant shutdown, layoffs, and actual shifting of production. With declining unionization, and regions of the country (and particular sectors) in which union density is quite low, there is an absence of advocates for workers who are adversely impacted.

### **Sectoral Distribution of NAFTA-TAA**

Sectorally, of the 294,016 certified NAFTA-TAA manufacturing workers at 2,398 sites, the greatest employment impact has been in the apparel sector (SIC 23), followed by the electronics/electrical sector (SIC 36). These two sectors alone account for 43 percent of the NAFTA-TAA certified manufacturing workers.

Figure 1 shows the number of NAFTA-TAA certified workers in the United States, 1994-1999, for the six most impacted 2-digit SIC sectors: Apparel (SIC 23), Electronic and Electrical Equipment (SIC 36), Transportation Equipment (SIC 37), Industrial and Commercial Machinery and Computers (SIC 35), Fabricated Metal Products (SIC 34), and Textile Mill Products (SIC 22). The numbers for apparel mount steadily over time, from 3,415 in 1994 to 23,053 in 1999. This is the sector with the greatest job loss, as was widely predicted prior to NAFTA, given the high degree of protection that it enjoyed. Electronics also shows an upward trend, though with only about a third as many certified workers as apparel in 1999. The other sectors vary from year to year, but in general tend to grow over time. This is reflected in total U.S. certifications, which tripled from 21,419 in 1994 to 69,687 in 1999. California certifications have also tended to grow over time. This growth is likely a result both of greater knowledge of the program as well as increasing impacts from NAFTA.

The certified job losses are a tiny fraction of total U.S. manufacturing employment, and even when calculated as a portion of employment change over the same time period, the job losses did not significantly impact the majority of the twenty SIC categories. The NAFTA-TAA job losses are more than two percent of employment only in seven sectors: textile products (4 percent), the apparel industry (about 11 percent), paper products (2.4 percent), instruments (2.1 percent), electronics and electrical (2.7 percent), miscellaneous manufacturing (2 percent), and the very small and long-declining leather industry (about 16 percent).

Table 4 breaks down the Mexico-related impacts by sector, for the 20 2-digit SICs. Of these 20 sectors, Mexico-related impacts account for more than 60 percent of all certifications in 11 sectors (more than 70 percent in 9 sectors), Canada for more than 60 percent in 3 sectors, with 6 sectors fairly evenly divided between the trading partners. The leading sectors are overwhelmingly impacted by Mexico: SIC 23, Apparel, 78 percent due to Mexico; SIC 36, Electronic and Electrical Equipment, 85 percent due to Mexico.

## Geographic Distribution of NAFTA-TAA

Just as the sectoral distribution of NAFTA-TAA represents a distribution distinct from both the overall employment levels, the regional distribution of the NAFTA-TAA certifications shows the uneven impact of NAFTA as reflected by the NAFTA-TAA certifications – and thus highlights the need to pursue detailed tracking. As may be noted in Table 5 – which ranks states by the total number of NAFTA-TAA certified workers, whether attributed to Mexico, Canada, or undetermined – eight states account for over half (52 percent) of the certified workers: North Carolina, Texas, Pennsylvania, New York, California, Georgia, Tennessee, and Indiana. North Carolina accounts for 10 percent; California accounts for 6.2 percent.

The last column in Table 5 shows the state's share of the U.S. labor force. Comparing this with the state's share of NAFTA-TAA certifications, 11 of the top 14 states are over-represented in NAFTA-TAA certifications relative to their share of the labor force. New York and Michigan are just slightly under-represented. Only California is significantly under-represented in NAFTA-TAA in this top group. Therefore, even though California has a large number of NAFTA-TAA certifications, ranking it number five, given its large size these are many fewer than would be expected. This implies that either California is less affected by NAFTA imports or that California is doing a worse job of identifying these impacts.

The NAFTA-TAA ranking is not simply a ranking of states by their population or the number of manufacturing employees. Rather, the NAFTA-TAA tally reflects the particular concentrations of industries in different regions, as well as factors that may make firms in a state or region more likely to file for NAFTA-TAA certification. However it should be noted that the distribution of impacts differs according to country of origin: the Canada impact is not surprisingly largely concentrated in the northern tier of the United States; the Mexican impact predominates throughout the southern portion of the United States as well as in the Northeast, which are both regions of significant electronics and apparel employment.

Figure 2 shows the spatial distribution of all NAFTA-TAA certified workers. One can see that the impacts are centered in the industrial areas of the eastern half of the country, though there are clear impacts in the Los Angeles and San Francisco metropolitan regions. Figure 3 shows the spatial distribution by county within California. The dense concentration of impact in Los Angeles and Orange counties might be expected, given the large numbers of low-wage manufacturers in those counties, but it calls into question the low recorded impacts in the surrounding counties of Ventura, San Bernardino, Riverside, and San Diego. Also suspect is the complete absence of any NAFTA impact in such counties as Imperial, Kern, Fresno, or Sacramento.



Figure 4 maps the distribution of job loss from production shifts to Mexico in the two sectors most impacted by NAFTA—Apparel (SIC 23) and Electronic and Electrical Equipment (SIC 36). The remarkable thing about this map is that it shows that all of the lower 48 states are impacted by NAFTA in these industries. California shows a significant impact in both industries and in fact they are the sectors most impacted in California as well. For this reason, we focus on these two industries in the more detailed analyses that we perform on California in the following sections.

### **NAFTA-TAA in the State of California**

In Table 6, we have broken down California NAFTA-TAA worker certifications by industry (the individual certifications are shown in Appendix B). Total certifications have increased significantly over the six years considered,<sup>3</sup> from 545 in 1994 to 4,543 in 1999. As is true nationally, apparel (SIC 23) and Electronics and Electrical Equipment (SIC 36) are the most impacted sectors. Apparel certifications only started in 1996, but have been significant every year since. SIC 36 certifications are smaller, but occurred in all six years. The data for 2000, not shown in the table, indicate that almost 1,000 new workers had already been certified by August in SIC 36.

In the lower half of Table 6, these California certifications are shown as a percentage of all national-level certifications. California's share is highest in agriculture (SIC 01), food processing (SIC 20), and miscellaneous manufacturing (SIC 39). The first two of these are particularly significant, because California has a very large agriculture and food processing sector, spread across the entire state, especially in many rural counties that have recorded no NAFTA-TAA certifications. It may well be that many more jobs in these sectors have been impacted directly or indirectly by NAFTA, but their seasonal nature and dispersion have prevented recognition of such effects.

Miscellaneous Manufacturing (SIC 39) recorded a very large number of certifications in 1999. The sector should be studied to determine just which firms are being impacted. In fact, such a study would be valuable across the board. The apparel industry is engaged in a wholesale shift of sewing to Mexico, but the details of what is occurring in the other industries—just what trends these numbers represent—is less obvious, and might be of important public policy significance.

As a first step, we have broken down the California certification data to a 4-digit SIC level (Table 7). Here we see that the 1,200 workers in SIC 39 in 1999 were all in SIC 3941. In fact, they were all in one medical equipment manufacturing firm in Anaheim and this was the only firm certified in 3941 in six years. The reason for this is that THERE IS NO SIC 3941, in fact it is a mistake and should have been classified as 3841,

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<sup>3</sup> Complete data for 2000 are not yet available. In some places we report certifications through August 2000, but it is inappropriate to compare these numbers to annual totals.

## Surgical and Medical Instruments and Apparatus.<sup>4</sup>

There are some sectors that show repeated certifications. The only two sectors with certifications in four different years are 3661, Telephone and Telegraph Apparatus, and 3577, Computer Peripheral Equipment, nec. The six sectors with certifications in three separate years are:

- 2325 Men's and Boy's Separate Trousers and Slacks
- 2331 Women's and Misses' Blouses and Shirts
- 3842 Orthopedic, Prosthetic, and Surgical Appliances and Supplies
- 2339 Women's, Misses', and Juniors' Outerwear, Not Elsewhere Classified
- 3714 Motor vehicle parts and accessories
- 3949 Sporting and Athletic Goods, Not Elsewhere Classified

Eleven 4-digit SIC sectors had certifications in two separate years. The rest of the certifications are isolated, one-time cases. Therefore, out of more than 400 4-digit sectors that produce tradable goods, only 19 had certifications in California more than once. If one were looking for more impacts, these 19 sectors would be a good place to start.

## NAFTA-TAA Reporting Biases

Because NAFTA-TAA is not an active survey or monitoring system, such as the Current Employment Survey or the Current Population Survey, but rather relies upon a self-identification and application process, a review of the factors that affect the structure of the self-reporting process and possible structural biases is in order. That is, are all workers, firms and industry sectors (that may be impacted by NAFTA) equally likely to enter into the reporting process that NAFTA-TAA requires?

The areas of the United States that have been more significantly affected, as reflected by the self-reporting and application process of NAFTA-TAA, are the result of a number of factors: the special coincidence of a few large plants closing; the geographic concentration of particular sectors, due to the historical outcome of industrial agglomeration; and the structural/organizational characteristics of sectors that may make them more likely to become part of the NAFTA-TAA reporting system.

Unionization is a structural factor that increases the likelihood that an adverse NAFTA-related impact will be translated into a NAFTA-TAA application. Given the advocacy role of unions, it is not surprising to note the high percentage of union participation in the NAFTA-TAA certifications. Union petitions made up 21 percent of all the petitions that were certified, but accounted for 27 percent of certified workers – a much higher union rate than prevails nationally.

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<sup>4</sup> We discovered this too late to change the data. How many other mis-classifications are there? We shifted 600 workers in Watsonville mis-classified as agricultural workers into food processing.

Another crucial structural factor reveals itself in the NAFTA-TAA database: firm size.<sup>5</sup> As of August 1996, only 14 percent of the certified firms had more than 250 workers, but these 87 firms made up over half (54 percent) of all the certified workers (44,461). Overall, the average firm size of the 620 firms with NAFTA-TAA certified workers was 283. The average size of the 325 C1 and C2 (shift of production) manufacturing plants was 240 workers. Compare this with the U.S. average manufacturing establishment size of 47 (1993 County Business Patterns). Furthermore, the average plant size of the 161 union-petition-certified firms was 508 employees. We believe there is little doubt the NAFTA-TAA-certified firms represent a bias towards larger and unionized workplaces, with the consequence that additional NAFTA impacts are not being caught in the NAFTA-TAA net.

The more indirect (or subtle) impacts of trade penetration and possible job displacement are far more difficult to discern through the NAFTA-TAA system. The average size of the manufacturing firms that had been certified for trade-based job displacement (C3-C8) by August 1996 had an even larger average size: 301 employees. Larger companies have the resources and the institutional connections that make it more likely for them to be able to monitor, assess, and act upon the less manifest impacts of trade. And many of those smaller firms that may well be affected by trade are structurally disadvantaged in their ability to pursue inclusion in the NAFTA-TAA program.

For example, all these factors appear to be present within the non-union and small-firm segment of the apparel industry in Southern California. And, not surprisingly, the Los Angeles industry, despite extensive acknowledgement by local apparel businesses about production shifts to Mexico, has NAFTA-TAA certifications for only 2,340 workers. Consequently, we believe that supplementary estimating approaches need to be developed to properly take into account the trade impacts of NAFTA.

### **III. Estimates of Trade Impacts from NAFTA Countries**

#### **U.S. NAFTA Trade Impact Estimates**

Due to the relative paucity of NAFTA-TAA certifications in the early years, as well as the continued use by a variety of organizations of a mistaken zero-sum method for analyzing the impacts of increased imports under NAFTA, the NAID Center at UCLA undertook to devise an alternative methodology for estimating the potential impacts on labor of increased imports. This methodology is based on the use of so-called "Armington elasticities," i.e. the econometrically estimated elasticities of substitution between imported and domestically produced goods, and it is explained in detail in Appendix A. The national-level estimates reported here were developed for the U.S.

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<sup>5</sup> Unfortunately, the Department of Labor has stopped reporting firm size in the public data set, so the figures reported here are based on certifications from January 1994 through August 1996 only.

Department of Labor.<sup>6</sup>

The potential NAFTA trade impact estimates for the United States, 1994-1997, are shown in Tables 8 and 9. Table 8 contains the top 50 4-digit sectors, which is the level at which the models were estimated. Table 9 contains 2-digit sectoral sums of the 4-digit estimates, which are presented for comparative purposes.<sup>7</sup> Some caveats are in order.

First, the model is severely constrained in order to focus on trade effects. Therefore, no technological change is introduced, and labor productivity is fixed. This tends to overstate the labor-displacing impact of imports, which in reality is small relative to the effects of technology.

Second, the elasticities of substitution between imports and domestically produced goods (the Armington elasticities) do not change over time as they should to reflect the evolving production structure in the countries. In fact, the elasticities were estimated econometrically using data from the 1970s and 1980s. They, too, tend to overstate substitution effects.

These serious issues (and several minor ones) suggest that the estimates of trade impacts shown in Tables 8 and 9 are not meaningful in absolute terms. However, since the model operates in the same manner for every sector, the *relative* size of impacts is meaningful, allowing for the estimates to imply a ranking of potential impact. As can be seen in Table 9, sectors SIC 36 and SIC 35 are estimated to contain 4-digit sectors with potentially large negative labor impacts from NAFTA trade.<sup>8</sup> SICs 34 and 23 follow in importance. The models predict that at the opposite end, sectors such as SIC 26, paper products, will actually add workers as a result of imports.

### California NAFTA Trade Impact Estimates

We assume that production in any SIC industry is homogeneous across the country, in order to derive estimates for California. This assumption is necessary since we do not know which parts of an industry are in California and which are elsewhere, and have no data on the precise relationship between imported goods and California's production structure; to know this would be a major research project. This assumption is obviously not true, but its effect on the estimates is unclear—it might project trade impacts onto California when there is really no corresponding production here, or it might distribute trade impacts across the country when in fact all of the relevant production is in California.

With this caveat in mind—as well as the other caveats noted at the national level—one can consider the results of the NAFTA trade impact estimates for California presented in

<sup>6</sup> See Hinojosa, et al., 2000.

<sup>7</sup> Since these are partial equilibrium estimates, it is not clear what the values of the sums mean. But the sectors are all estimated and summed in the same manner, which should allow us to compare them.

<sup>8</sup> The models did not produce meaningful estimates for SIC 38, so it is omitted here.

Table 10. Again, though the absolute values of the estimated impacts are distorted by the artificial structure of the models, the relative impacts are comparable and should indicate the California sectors most susceptible to NAFTA trade. In this case they are:

1. SIC 36 Electronic and Electrical Machinery
2. SIC 35 Industrial Machinery, including Computers
3. SIC 39 Miscellaneous Manufacturing
4. SIC 23 Apparel
5. SIC 34 Fabricated Metal Products

These are the same top five sectors as at a national level, just reordered. They are also, in fact, the five sectors in California with the highest average number of NAFTA-TAA certifications (also shown in Table 10), demonstrating that trade flows are potentially useful data for predicting job impacts.

We also show in the last two columns of Table 10 the average number of unemployment claims per year (1995-2000) for the sector, as well as the ratio of unemployment claims to employment. Looking at this last column, some statistical tests we performed indicated that there was no obvious relationship between rate of separations and the estimates of trade impact. We return to this subject in more detail below.

Because we could not project the impacts to California at a 4-digit SIC level,<sup>9</sup> we must reference the ranking of 4-digit sectors at the national level. In Table 8, of the top 50 4-digit sectors with potential NAFTA import impacts, 19 are in SIC 36 and 16 are in SIC 35. That is, 35 out of the top 50 4-digit SICs (or 70%) projected to be impacted by NAFTA trade are in SICs 35 and 36. Any program of outreach or research should focus on these sectors. Of the other three top-five 2-digit SICs, SIC 39 had no 4-digit sectors in the top 50, and SICs 23 and 34 each had two 4-digit sectors in the top 50.

As noted earlier, NAFTA-TAA worker certifications are led by SIC 23 nationally, as they are in California. Since these certifications have been growing over time, it is likely that if we extended the analysis beyond 1997, it would show a greater impact in SIC 23 in recent years. For this reason, we have chosen to take a closer look at two sectors, SIC 36 and SIC 23, in California. They are presented below as examples of the type of analysis that could be conducted at this more detailed level.

### **Comparison of NAFTA-TAA to NAID-Armington Estimates**

The NAFTA-TAA process more likely leads to identifying plant closings and production shifts, rather than the more subtle effects of import penetration. Thus, in order to place NAFTA-TAA sectoral results in context, we can juxtapose the NAFTA-TAA industry

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<sup>9</sup> Because we could not apportion production properly, due to suppression of employment data in some sectors. This could be fixed, but it is beyond the scope of this project. We examine the 4-digit sectors in SICs 23 and 36 below.



distributions with our estimates of the potential employment impacts of the trade changes after the implementation of NAFTA in January of 1994. Do they have a *prima facie* correspondence? No obvious aggregate relationship exists between the rate of increase of Mexican imports following the onset of NAFTA and the NAFTA-TAA certifications. However, the correlation is quite high between the sectors that show a negative employment impact (for the sum of Mexico and Canada imports) in the NAID-Armington analysis of direct impacts of imports, and the NAFTA-TAA data. Under one scenario<sup>10</sup> where demand and technology varied, the simple correlation between 173 4-digit SIC sectors estimated at a national level was 67 percent.

## Sectoral Detail in California

### SIC 36

Looking first at SIC 36, Electronic and other Electrical Equipment, Table 11 shows employment and NAFTA-TAA certified workers by county and by 3-digit sector,<sup>11</sup> and Table 12 shows the same data at the 4-digit SIC level. Several observations can be made looking at these tables:

- In SIC 36, California has had NAFTA-TAA certifications in 14 4-digit sectors and 7 out of 8 3-digit sectors. As in the national trade data, the impact is widely spread and not confined to any particular set of electronic or electrical products.
- Certifications come in clumps, as large plants close. For example, of the 435 workers certified in SIC 3651, 420 of them were in one TV plant in Santa Ana.
- We estimated that SIC 3651, Household Audio and Video Equipment, was the sector in SIC 36 potentially most impacted by NAFTA imports, and the third most impacted 4-digit sector in all manufacturing. In reality, most TV production had already shifted out of the United States to Asia, and the recent increased production in Mexico (by Asian firms) is largely substituting for Asian imports. That is, our elasticity of substitution for this sector may be out of date and somewhat overstated, which would overstate the potential impact on U.S. jobs. In fact, this sector employed only 3,600 in California in 1996. Nevertheless, there has been movement of TV production to Mexico and there are recent impacts on audio production as well.
- The sector we estimated to be potentially the second most impacted in SIC 36 (and 4<sup>th</sup> overall), SIC 3661, Telecommunications Equipment, shows NAFTA-TAA certifications in five California counties. Only one other sector of 36 (3679) has certifications in even two counties, and the other 12 impacted sectors have certifications in only one county. Therefore, we can safely say that 3661 is the most impacted sector, with the largest number of workers certified in SIC 36, as well as the

<sup>10</sup> Different than the one reported here.

<sup>11</sup> We use 1996 employment data, because they are the last we could find with a 4-digit SIC breakdown. Even so, for SIC 36, total employment reported in the 3-digit sectors was 5 percent (12,820) less than the reported 2-digit total, and total employment reported in the 4-digit sectors was 16 percent (38,413) less than the reported 2-digit total. In other words, there is suppression of data at more disaggregate levels. Therefore, caution is necessary when examining employment figures in such counties as San Diego, San Francisco, or Placer, where large proportions (19%, 80%, and 97%, respectively) are suppressed.

most sites—in Santa Clara, Orange, San Diego, Ventura, and Santa Cruz counties. This sector had significantly greater employment than 3651, about 16,000 workers in 1996.

- The third most impacted SIC 36 sector (and 8<sup>th</sup> overall) by our projections was 3674, Semiconductors, the sector in 36 with the most employment in California, almost 50,000 workers in 1996. It had only 130 workers certified, all from a semiconductor assembly plant in Temecula.
- The other SIC 36 sector with high California employment, SIC 3679, Miscellaneous Electronics, with about 43,000 workers in 1996, had 110 certifications. We ranked this sector the 6<sup>th</sup> most potentially impacted sector in SIC 36 (and 11<sup>th</sup> overall).

As can be seen in Table 13, the geographic impacts in SIC 36 are concentrated in the Los Angeles area (Los Angeles, Orange, Riverside, and Ventura counties), Silicon Valley (Santa Clara and Santa Cruz counties), and San Diego. Alameda County, across the bay from the Silicon Valley, has experienced rapid employment growth in the industry in recent years, but reports no NAFTA certifications.

Table 13 also shows unemployment claims for SIC 36 for 1995-1997. There is an overall decline in the rate of claims as the decade progresses and the recession recedes. However, in all cases the NAFTA impacts are small relative to all separations. It is certainly possible that a larger share of such separations were due to NAFTA than were certified, but this would need to be investigated on a firm-by-firm basis.

## SIC 23

Looking now at SIC 23, Apparel and Other Textile Products, Table 14 shows employment and NAFTA-TAA certified workers by county and by 3-digit sector, and Table 15 shows the same data at the 4-digit SIC level. Several observations can be made looking at these tables:

- SIC 23 has seen NAFTA-TAA certifications in California in 12 of 28 4-digit sectors and 5 of 9 3-digit sectors, so the impacts are somewhat less widespread than in SIC 36
- Many of the sectors that the trade analysis predicts will see the greatest impacts are sectors of relatively low employment in California. SICs 2321, 2392, 2337, and 2329 all had less than 5,000 workers in California in 1996. Only the second ranked sector, SIC 2331, which had 15,113 workers, had significant employment, and it has experienced almost 1,000 certifications thus far (in LA and Orange counties). SIC 2325, the fifth ranked sector, had 5,971 workers, and it has had 1,232 certifications (in LA, San Francisco, and Tulare counties), making it one of the most-impacted sectors. The only sector with a greater proportional impact is SIC 2393, with 2,046

workers and 498 certifications (all in LA).

- Besides SIC 2331, just noted, the big employment sectors in California are SIC 2339, with 47,250 workers, and SIC 2335, 19,857 workers. The former has 585 certifications in LA, the latter no certifications. If the limited impacts on these large employment sectors are true, that would explain the maintenance of overall employment levels in SIC 23.
- However, there is a great deal of anecdotal information in LA about contracts being moved to Mexico, and it is doubtful that the impacts of all this shifting have been captured in NAFTA-TAA certifications.
- Though LA accounts for 72 percent of employment in SIC 23, thus far it accounts for only 57 percent of NAFTA-TAA certifications. Six other counties have seen certifications, with Tulare's employment in the sector wiped out. Are peripheral firms more susceptible to trade impacts? Or, again, are the impacts being missed in LA? This can only be answered by more investigation into firm closings and unemployment claims.

Table 16 compares employment, NAFTA-TAA certifications, and unemployment claims in SIC 23 by county. For the late 1990s, employment continued to climb and unemployment claims fell. NAFTA-TAA claims did not start until 1996, and they have averaged about 800 per year. If employment has now started to fall in the sector (not shown, but reported by EDD), then should we not see more NAFTA-TAA certifications? What else could one attribute falling employment to? As to unemployment claims, once again they are too large at this level of aggregation to see the trade impacts.

#### IV. Unemployment claims

In order to see if trade impacts could be uncovered in unemployment claims data, we examined these data, 1995-2000. Because only the 2-digit SIC is recorded for the industry where the claimant was working, the possibilities for characterizing unemployment claimants from specific industries are severely limited. This can be seen in Table 17, which presents unemployment claims by SIC for the entire six years. For this reason, we broke the data down by county and looked again only at our two case study industries, SIC 23, apparel, and SIC 36, electronics, which are the most impacted by NAFTA.

Table 18 presents claims for SIC 23 and Table 19 for SIC 36. Claims in both sectors have a tendency to decline over this time period, particularly between 1998 and 2000. In Los Angeles County, which has the largest number of NAFTA-TAA certifications, SIC 23 claims decline almost monotonically over the period, from 22,637 in 1995 to 11,414 in 2000. This pattern, the result of an improving economy and a tightening labor market, is

repeated in Orange and other impacted counties. In the electronics sector, SIC 36, there is a large up-tick in claims in 1998, but then they fall off again. This pattern is also repeated across the state. It is impossible to see the relatively small number of NAFTA-TAA claims that are buried in these data, and that are actually rising over time. Of course it is possible that more of the claims are due to NAFTA than have been identified, but a tracking system would have to be set up to identify them. Even in the smaller counties, the effects of plant closings are not obvious at this level of aggregation.

Table 20 presents some of the data available from the EDD's PC Query database about unemployment claimants. One can see that the variables presented—educational level, gender, permanence of layoff (RECLL), union status, and ethnicity—would be extremely helpful in understanding the impacts of trade on workers in California. Unfortunately, there is apparently no flag in this database that would allow us to identify the workers certified by NAFTA-TAA or TAA. As just noted, the numbers of workers filing for unemployment, even at a county level, are far too large for the trade-impacted workers to be obvious.

Comparing SIC 23 with SIC 36 in Table 20, one sees that the characteristics of workers are very different. In SIC 23, apparel, over two-thirds of the unemployed workers have not attended high school, 73 percent are women, and these proportions have been rising; in addition, less than one-half of one percent are unionized. The ethnic breakdown of unemployment claimants in SIC 23 shows that whites and blacks account for about 10 percent, Hispanics for over 60 percent, and Asians for most of the rest; the Asian share has been rising. In contrast, in SIC 36, electronics, over half of the laid-off workers have attended college and less than 20 percent did not go to high school; only about 40 percent are women; a little over 1 percent are unionized. The ethnic breakdown in SIC 36 is such that 45 percent are white or black, almost a quarter are Hispanic, and the rest mostly Asian. About half of the garment workers could be recalled to their jobs, while only about a quarter of the electronics workers are in that position. These very different labor forces have in common an extremely low rate of unionization in California. Given the high rate of involvement of unions in applying for NAFTA-TAA, it is likely that many unemployment claimants in these industries in California are not being properly identified as NAFTA impacted.

Again, the trade-impacted workers are lost in this larger group. Ideally, one would flag the trade-impacted workers, record a 4-digit SIC (or NAICS) code for them, the date of lay-off, and then follow their use of training, relocation assistance, or extended unemployment benefits, recording when these benefits ended. Do the trade-impacted workers have different characteristics? Do they have a harder time finding another job? Does the training prove useful in their next job? All of these important questions could be easily answered with small adjustments to how the data are recorded in the PC Query



database. As it stands now, however, the unemployment claims data are not useful in assessing trade impacts.

#### IV. Comparison of NAFTA Labor Impact Measures with NAFTA-TAA Program

In order to assess the State's response to NAFTA trade, we looked at some measures of spending on NAFTA-TAA. The first measure was job training expenditures. Table 21 shows the breakdown by county for FY 1999-2000 of NAFTA-TAA job training expenditures, as well as TAA job training expenditures for workers from firms that were also certified for NAFTA-TAA. Only 16 percent of such training expenditures were actually labeled "NAFTA-TAA." Over two-thirds of the expenditures labeled "TAA" were in fact for NAFTA-impacted workers. The State spent (at least) a total of \$1.6 million on such training in 1999-2000.

Since these training data are tied to the workers, in Table 21 the data are first broken down by the county of residence *of the workers*. Some spending occurred in 21 counties, as well as out of state. However, since all of the other NAFTA data we have are related to the location *of the firms*, we broke down the same training data by the county of the firm where the workers lost their jobs. Only 13 counties experienced such impacts (for this one year).

In Table 22, these training data by firm location are compared to our estimates of county share of NAFTA trade impacts and total NAFTA-TAA certifications.<sup>12</sup> Because the time periods covered by the three data sets do not line up very well—we only have one year of training data—it is difficult to judge the correspondence among them. Nevertheless, it appears in this initial comparison that most of the training money is indeed being spent in the counties of greatest impact.

Whether the training expenditures have a positive effect, however, cannot be assessed from the data available. It would be necessary to track the NAFTA-impacted workers through their training and their next job. Furthermore, studies have shown that most training has little effect on workers' incomes or employment opportunities, and repeated calls have been made to target training resources.<sup>13</sup> One recent proposal suggests that since training is more useful if workers need to switch industries, and workers are more likely to switch industries if the industry they lost the job in represents only a small part of the local labor market, careful monitoring of the size and importance locally of the industries certified in a program such as NAFTA-TAA would be essential for targeting

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<sup>12</sup> It is important to note that the trade estimates are only for manufactured goods, thereby ignoring agricultural and resource-based production, which is concentrated in the rural counties that show little impact here. Also note that the county estimates are derived from the state estimates in the same way that the state estimates were derived from national estimates: by assuming that production in each 4-digit SIC sector is homogeneously distributed according to employment in the sector.

<sup>13</sup> See Duane E. Leigh, *Does Training Work for Displaced Workers? A survey of the existing evidence*. Kalamazoo, MI: W.E. Upjohn Institute, 1990; National Commission for Employment Policy, *Understanding federal training and employment programs*. Washington, D.C.: U.S. GPO, 1995.



training resources.<sup>14</sup> Though the NAFTA-TAA certifications record 4-digit SIC for the affected firms, the individual unemployment claim records record only 2-digit SIC for the workers. The aggregated nature of these latter data make any meaningful analysis of the impact on the local labor market impossible.

The EDD also provided some information about outreach efforts they had made to inform the public about trade adjustment programs. This information is presented in Appendix C. Though it does not quantify expenditures, the information shows that: a large number of organizations all over the state were mailed information; actual presentations to Chambers of Commerce have been concentrated in southern California, with a few in the Silicon Valley; public service announcements have been concentrated in the Bay Area; notices and articles in print media were confined to the LA area and the San Joaquin valley. The growing number of certifications in California is likely due as much to this publicity as to actual increases in the severity of impacts from NAFTA; our analysis of trade data show no significant increase in predicted trade impacts over time.

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<sup>14</sup> Wendy A. Stock, "Predicting Displaced Worker Industry Switching: Targeting Training Programs." *Growth and Change*, v. 29, Winter 1998, pp. 3-22.

## V. Conclusions and Recommendations

1. The estimates of potential impacts from NAFTA imports do a quite good job of indicating the most impacted sectors and places, or at least they line up well with NAFTA-TAA certifications for the leading sectors. The absolute sizes of the impacts, however, are not accurate because of the unrealistic assumptions of the models and because the data are out of date or suppressed or based on old estimates. All of this could be improved—as discussed in Appendix A—if the state wanted to monitor trade and try to intervene in impacted sectors before workers lost their jobs. The premise of the Economic Development Administration's TAA centers is that businesses can be assisted to adapt to increased imports, although funding for such programs has been limited.<sup>15</sup> The state's Trade and Commerce department should also be involved in efforts to assist firms. EDD is the logical agency to track impacts, because employment and unemployment data are key to the process.
  
2. In order to assess the usefulness of NAFTA-TAA (or TAA) assistance to workers, it will be necessary to alter the way that data are collected from unemployment claims. Ideally, one would flag the trade-impacted workers, record a 4-digit SIC (or NAICS) code for them, the date of lay-off, and then follow their use of training, relocation assistance, or extended unemployment benefits, recording when these benefits ended. It would also be possible to include their next job (or jobs) from the unemployment insurance reporting system to assess outcomes from the NAFTA-TAA assistance. The data for such analysis currently exist, but they are not consolidated in any one place and so present a tremendous research task.
  

Unemployment claims are too large relative to trade impacts to know the characteristics of the workers being impacted by trade without flagging them in this way. The PC Query system provides extremely useful information on worker characteristics that could be easily analyzed if such small adjustments were made in the system.

  
3. Currently, the data that are collected are not properly categorized to assess NAFTA impacts. Almost 70 percent of spending on job training in FY 1999-2000 under the TAA program was actually for workers also certified for NAFTA-TAA, and therefore who were displaced by trade with Mexico or Canada.
  
4. California has a much lower rate of NAFTA-TAA certifications than its share of the labor force would lead one to expect. Of the top 15 states reporting NAFTA-TAA certifications, which includes other large states such as New York and Texas, only California is significantly under-represented. Either California is less affected by NAFTA than most other places—which would put it in a category with Florida, New

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<sup>15</sup> U.S. General Accounting Office, *Trade Adjustment Assistance: Impact of Federal Assistance to Firms Is Unclear*. Washington, D.C., December 2000.

Mexico, and Nevada—or such impacts are being missed. The logic of the program is biased toward identifying the closure of large plants, rather than general trade impacts, which suggests that many impacts are being overlooked.

Because our estimates of trade impacts line up well with NAFTA-TAA certifications in California, at least for the leading sectors, there is little doubt about where further investigation should focus to determine if NAFTA impacts are being overlooked. The large numbers of NAFTA-TAA certifications are good indicators of where impacts are occurring. There are only 19 4-digit SIC sectors in California—out of the more than 400 that produce tradable goods—that have more than one NAFTA-TAA site. The NAFTA-TAA certification processes must be more proactive about identifying the impact of NAFTA on smaller firms; selected sectors and regions demonstrating strong import penetration should be targeted for aggressive outreach efforts.

5. Participation in the Trade Act programs (TAA and NAFTA-TAA) is voluntary, and is not mandated as a condition for receipt of unemployment benefits. California has experienced a very healthy economy in recent years and the unemployment rate is at an all time low. Many trade affected workers have obligations that require them to work in order to maintain income, and these individuals do not take advantage of the Trade Act programs but simply return to work in the same or a similar industry, at the same or a similar salary. This fact is substantiated by the responses from follow-up letters sent by EDD to individuals identified as trade affected workers who do not take advantage of the benefits and services available to them. That workers do not participate in training programs is, however, a separate issue from whether or not they are properly identified and certified as eligible for such programs.
6. One consequence of missing NAFTA-TAA certifications—or certifying for TAA instead of for NAFTA—is that the state may be foregoing the opportunity to certify certain counties for North American Development Bank (NADBANK) Community Adjustment and Investment Program assistance, which to date consists of the unlimited availability of certain SBA and USDA business loans at slightly reduced cost, as well as local eligibility for grants. These programs may be expanded in the future, however, and would present even larger missed opportunities. Texas and North Carolina are examples of states that have aggressively certified for NAFTA assistance and made use of NADBANK programs.
7. The trade and employment impact methodologies presented here should be central to our understanding of the adjustment costs of the impacts of trade. Accurately identifying employment displacement risks is very important to assist workers and for communities to take adequate steps to prepare for a positive adjustment. Failure to identify and address adjustment risk will inevitably generate exaggerated political

opposition to trade liberalization, in some cases based on ignorance and fear, and in some cases based on the legitimate defense of uncompensated individual costs which are incurred on behalf of the overall societal welfare.

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