Do Immigrants Take American Jobs?

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> What we need now is immigration moderation: slowing the pace of new arrivals so that wages can rise, welfare rolls can shrink and the forces of assimilation can knit us all more closely together. But high immigration rates help the financial elite (and the political elite who receive their contributions) by keeping wages down and profits up. For them, what's not to like? ((Senator and Attorney General) Jeff Sessions 2015)

A simple model of market equilibrium allows us to explore the labor market consequences of immigration in *theory*. This bit of theory highlights the economic forces at work. Formal models also force us to state our assumptions clearly (later, we relax these).

Tools:

- comparative statics tells us how theoretical equilibrium quantities change in response to an external shock to the system. Comparative statics results are cast in terms of elasticities, which we think of as the relevant parameters for a GE analysis. Elasticities aren't really constant, but for first-order effects it's useful to treat them that way.
- After paying respects to the theory, we examine econometric estimates of immigration effects, old and new.

A Comparative Statics

A.1 Market structure

Johnson (1980) assumes that wages and employment of low-skill natives are determined by equilibrium in a perfectly competitive labor market.

- n_1 identical (low-skilled) natives supply this much labor:

$$L_1 \equiv S_1(w) = n_1 h(w), \tag{1}$$

  where $h(w)$ is per-worker hours worked at wage w

- Firms demand $D(w)$ low-skill workers, immigrants or natives, whatever. They just gotta work!

- Without immigration, equilibrium wages (w^*) and employment (L_1^*) in the low-skill labor market satisfy:

$$\begin{aligned} S_1(w^*) &= D(w^*) \\ L_1^* &= S_1(w^*) \end{aligned}$$

A.2 Shocking Immigration

Look out! 40,000 Canadian economists girded with H-1Bs are a comin' down I-93 . . .

- These n_2 immigrant economists supply labor inelastically (just happy to be here, *mon ami*! will code for food).
  - Q. What might justify this assumption?
- The post-immigration equilibrium is characterized by:

$$n_1 h(w^*) + n_2 = D(w^*) \tag{2}$$

  - Q. Besides price-taking firms and inelastically supplied immigrant labor, what restriction does (2) impose on production technology?
- We this model to ask:
  1. How does an increase in immigration change equilibrium labor market outcomes (wages and employment)?
  2. What parameters does the effect of immigration on equilibrium outcomes depend on?
- *Comparative Statics* reveals the (theoretical) answers*:* Totally differentiate the equilibrium conditions, and solve for the change in equilibrium outcomes with respect to a change in the exogenous variable of interest. In this case, we want to know

$$\frac{dw^*}{dn_2} = ? \tag{3}$$

$$\frac{dL_1^*}{dn_2} = ? \tag{4}$$

Details

Totally differentiate (2) to find

$$D'(w)dw = n_1 h'(w)dw + h(w)dn_1 + dn_2$$

Assume $dn_1 = 0$, so

$$D'(w)dw = n_1 h'(w)dw + dn_2$$

Divide by $D(w)$, multiply by $\frac{w}{w}$, $\frac{n_2}{n_2}$, as needed to get:

$$\underbrace{\left[\frac{D'(w)w}{D(w)}\right]}_{\eta}\underbrace{\left(\frac{dw}{w}\right)}_{d\ln w} = \underbrace{\left[\frac{n_1 h'(w)w}{S_1(w)}\right]}_{\varepsilon}\underbrace{\left[\frac{S_1(w)}{D(w)}\right]}_{1-\phi}\left(\frac{dw}{w}\right) + \underbrace{\left(\frac{dn_2}{n_2}\right)}_{d\ln n_2}\underbrace{\left(\frac{n_2}{D(w)}\right)}_{\phi}$$

where

$$\phi \equiv \frac{n_2}{D(w)}, \text{ the } \textit{immigrant share}$$

- This yields the first comparative statics result:

$$\frac{d\ln w}{d\ln n_2} = \frac{\phi}{\eta - \varepsilon(1-\phi)} < 0 \tag{5}$$

- To get the employment effect, differentiate (1):

$$dL_1 = S_1'(w)dw$$

or, in elasticity terms:

$$\frac{dL_1}{L_1} = \underbrace{\left[\frac{S_1'(w)w}{S_1(w)}\right]}_{\varepsilon}\left(\frac{dw}{w}\right).$$

Using (5), we get a second comparative statics result

$$\frac{d\ln L_1}{d\ln n_2} = \frac{\varepsilon\phi}{\eta - \varepsilon(1-\phi)} < 0$$

Here, however, its useful to work in levels instead of logs:

$$\frac{dL_1}{dn_2} = \left[\frac{d\ln L_1}{d\ln n_2}\right]\underbrace{\left(\frac{L_1}{n_2}\right)}_{(1-\phi)/\phi} = \frac{\varepsilon(1-\phi)}{\eta - \varepsilon(1-\phi)} \tag{6}$$

- *When 100 immigrants arrive, how many natives lose their jobs?* Jobs are lost indeed, but less than 1:1 (see Johnson 1980, Table 1, below)

Table 1. Employment Reduction of Domestic Low-Skilled Workers Caused by Additional 100 Employed Immigrants for Selected Values of ε, η, and μ.[a]

	μ =0			μ =.5		
	ε_l =.2	ε_l =.5	ε_l =1	ε_l =.2	ε_l =.5	ε_l =1
η_l =.5	29	50	67	17	33	50
η_l =1	17	33	50	9	20	33
η_l =1.5	12	25	40	6	14	25

[a] ε = supply elasticity, η = demand elasticity, and μ = proportion of low-skilled labor force composed of immigrants.

1. What do wage and job losses depend on?
2. What parameter values give job losses at the extremes?

A.3 Key Assumptions (in Johnson 1980)

- Immigrants and natives are perfect substitutes
- Immigrant labor supply is inelastic
- Immigrants don't buy or make anything that matters for native labor demand; neither do they invest or bring capital

Consider a more realistic world, where immigrants boost product demand and complement some natives' labor input, making these natives more productive [DRAW THIS]

B Empirical Immigration Effects: Point-Counterpoint

- Card (1990) uses the Mariel Boatlift as a natural experiment in a landmark empirical study of immigration effects interpreted as showing little effect of immigration on native wages and employment
- Deploying similar *area study* designs, Hunt (1992) exploits the 1962 influx of Algerian repatriates in southern France, Friedberg (2001) examines effects of the 1990s wave of Russian immigration to Israel
- Angrist and Kugler (2003) uses the 1990s Balkan Wars as natural experiments affecting many European labor markets
- Borjas (2003) links US immigrant inflows over decades with wage and work variation by skill group

- Borjas (2017) revisits the four area studies listed above
  - Applies Abadie and Gardeazabal (2021) synthetic controls, an innovation in the DD domain that seems tailor-made for Mariel-Boatlift-type problems
  - Pursues a revisionist argument: Mariel matters! The "Boatlift that didn't happen (ala AK99) - happened!"
- Clemens and Hunt (2019) redo the Borjas (2017) do-overs, further substantiating (they argue) the case for modest immigration effects
  - CH19 argues that Borjas' new findings are the fruits of a cherry-picked sample and contemporaneous composition changes in the Miami CPS sample

Measurement matters

  - CH19 takes all the post-Mariel area studies above to task for a measurement problem similar to division bias
    - Regressors/instruments of form $\frac{x_{rt}}{d_{rt}}$ reflect variation in d_{rt} even with an uninformative numerator
    - Area studies of immigration effects instrument $M_{rt} = \frac{x_{rt}}{d_{rt}}$ with something like $\frac{z_{rt}}{d_{rt}}$, where M_{rt} is immigrant share of the labor force (of size d_{rt}) and z_{rt} predicts the number of immigrants.
      - Clemens-Hunt demonstrate a first stage even when z_{rt} is random noise - shades of Bound, Jaeger, Baker (1995)! (likewise, $\frac{storks}{woman}$predicts $\frac{babies}{woman}$)
      - Earlier exchanges in the minimum wage wars make a similar point (see, e.g., Card, Katz, and Krueger 1994 commenting on Neumark and Wascher 1992, 1994)
    - CH19 employs a solution attributed to Kronmal (1993), which I suspect is older:
      - replace M_{rt} with $m_{rt} = \ln M_{rt}$, and include $\ln x_{rt}$ and $\ln d_{rt}$ as separate regressors
      - likewise for the instrument, use $\ln z_{rt}$as an instrument controlling for covariate $\ln d_{rt}$
      - a detail: CH19 use the inverse hyperbolic sine function $\text{arcsinh}\, x = \ln[x + (x^2 + 1)^{1/2}]$ instead of $\ln x$ to deal with log zeros, noting that $\text{arcsinh}\, x \approx \ln 2x$ for $x > 2$, is well-behaved near zero and is defined such that arcsinh(0)=0. Chen and Roth (2024) argues recently, however, that such "log-like" solutions to the log zero problem are an illusion.

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Characteristic	*Mariel Immigrants*	*All other Cubans*
Educational Attainment (Percent of Population in Each Category):		
No High School	56.5	25.4
Some High School	9.1	13.3
Completed High School	9.5	33.4
Some College	6.8	12.0
Completed College	18.1	15.8
Percent Male	55.6	50.7
Percent Under 30 in 1980	38.7	29.6
Mean Age in 1980 (Years)	34.9	38.0
Percent in Miami in 1985	53.9	52.4
Percent Worked in 1984	60.6	73.4
Mean Log Hourly Earnings	1.37	1.71
Occupation Distribution (Percent Employed in Each Category):		
Professional/Managers	19.3	21.0
Technical	0.0	1.5
Sales	4.5	11.2
Clerical	2.5	13.5
Craftsmen	9.5	19.9
Operatives	19.1	13.8
Transportation Ops.	3.8	4.3
Laborers	10.8	3.3
Farm Workers	0.0	1.8
Less-Skilled Service	26.0	7.4
More-Skilled Service	4.6	2.3
Sample Size	50	528
Weighted Count	42,300	476,900

Note: The sample consists of all Cubans in the March 1985 Current Population Survey age 21–66 (i.e., age 16–61 in 1980). Mariel immigrants are identified as those Cubans who stated that they lived outside the United States 5 years previously.

Table 3. Logarithms of Real Hourly Earnings of Workers Age 16–61 in Miami and Four Comparison Cities, 1979–85.

Group	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Miami:							
Whites	1.85	1.83	1.85	1.82	1.82	1.82	1.82
	(.03)	(.03)	(.03)	(.03)	(.03)	(.03)	(.05)
Blacks	1.59	1.55	1.61	1.48	1.48	1.57	1.60
	(.03)	(.02)	(.03)	(.03)	(.03)	(.03)	(.04)
Cubans	1.58	1.54	1.51	1.49	1.49	1.53	1.49
	(.02)	(.02)	(.02)	(.02)	(.02)	(.03)	(.04)
Hispanics	1.52	1.54	1.54	1.53	1.48	1.59	1.54
	(.04)	(.04)	(.05)	(.05)	(.04)	(.04)	(.06)
Comparison Cities:							
Whites	1.93	1.90	1.91	1.91	1.90	1.91	1.92
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Blacks	1.74	1.70	1.72	1.71	1.69	1.67	1.65
	(.01)	(.02)	(.02)	(.01)	(.02)	(.02)	(.03)
Hispanics	1.65	1.63	1.61	1.61	1.58	1.60	1.58
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.02)

Note: Entries represent means of log hourly earnings (deflated by the Consumer Price Index—1980 = 100) for workers age 16–61 in Miami and four comparison cities: Atlanta, Houston, Los Angeles, and Tampa–St. Petersburg. See note to Table 1 for definitions of groups.

Source: Based on samples of employed workers in the outgoing rotation groups of the Current Population Survey in 1979–85. Due to a change in SMSA coding procedures in 1985, the 1985 sample is based on individuals in outgoing rotation groups for January–June of 1985 only.

Table 4. Unemployment Rates of Individuals Age 16–61 in Miami and Four Comparison Cities, 1979–85.
(Standard Errors in Parentheses)

Group	*1979*	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*
Miami:							
Whites	5.1	2.5	3.9	5.2	6.7	3.6	4.9
	(1.1)	(0.8)	(0.9)	(1.1)	(1.1)	(0.9)	(1.4)
Blacks	8.3	5.6	9.6	16.0	18.4	14.2	7.8
	(1.7)	(1.3)	(1.8)	(2.3)	(2.5)	(2.3)	(2.3)
Cubans	5.3	7.2	10.1	10.8	13.1	7.7	5.5
	(1.2)	(1.3)	(1.5)	(1.5)	(1.6)	(1.4)	(1.7)
Hispanics	6.5	7.7	11.8	9.1	7.5	12.1	3.7
	(2.3)	(2.2)	(3.0)	(2.5)	(2.1)	(2.4)	(1.9)
Comparison Cities:							
Whites	4.4	4.4	4.3	6.8	6.9	5.4	4.9
	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.4)
Blacks	10.3	12.6	12.6	12.7	18.4	12.1	13.3
	(0.8)	(0.9)	(0.9)	(0.9)	(1.1)	(0.9)	(1.3)
Hispanics	6.3	8.7	8.3	12.1	11.8	9.8	9.3
	(0.6)	(0.6)	(0.6)	(0.7)	(0.7)	(0.6)	(0.8)

Note: Entries represent means of unemployment indicator variable for individuals age 16–61 in Miami and four comparison cities: Atlanta, Houston, Los Angeles, and Tampa–St. Petersburg. Samples are based on individuals in the labor force. See notes to Table 3 for definitions of groups and data sources.

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- Summer 1994: tens of thousands of Cubans boarded boats destined for Miami. The US Navy, wanting to avoid another natural experiment, diverted the would-be immigrants to Guantanamo. Only a small fraction of these Cuban emigres ever got to Miami. Had the 1994 flotilla been allowed to reach the United States, there is little doubt that researchers would have used this new boatlift to extend Card's (1990) study.

- Looking for spurious effects: Unemployment rates for Whites, Blacks and Hispanics in Miami and the four comparison cities using data from the CPS Outgoing Rotation Groups are reported in AK99 Table 7.

  - The Miami unemployment data are imprecise and variable, but still indicate a large increase in unemployment in 1994, the year the immigrants were diverted to Guantanamo Bay. On the other hand, 1994 was the first year the CPS redesign was implemented (see AK99 Section 3.1).

  - Take 1993 as the pre-period and 1995 as the post-period for a difference-in-difference comparison. For Whites and Hispanics, the unemployment rate fell in Miami and fell even more in the comparison cities between the pre and post periods; the difference between these two changes is not significant.

- For blacks, however, the unemployment rate rose by 3.6 percentage points in Miami between 1993 and 1995, while it fell by 2.7 points in the comparison cities. The 6.3 point difference-in-differences estimate is on the margin of statistical significance (t=1.70), making is seem like the (unrealized) immigrant flow had a negative impact on Blacks in Miami in a DD study.

Table 7: Unemployment Rates of Individuals Age 16-61 in Miami and Four Comparison Cities, 1988-96

	1988	1989	1990	1991	1992	1993	1994	1995	1996
Miami:									
Whites	2.8	3.6	3.3	5.7	4.2	4.9	6.2	3.9	4.4
	(0.8)	(0.9)	(0.9)	(1.2)	(1.1)	(1.3)	(1.4)	(1.4)	(1.2)
Blacks	10.0	11.8	11.9	8.8	10.1	10.1	15.1	13.7	11.1
	(1.7)	(1.8)	(1.9)	(1.9)	(2.0)	(2.1)	(2.4)	(2.8)	(2.4)
Hispanics	5.5	7.6	7.2	9.1	10.3	8.5	9.4	8.4	8.9
	(1.4)	(1.5)	(1.4)	(1.6)	(1.7)	(1.6)	(1.8)	(1.8)	(1.6)
Comparison Cities:									
Whites	4.2	3.5	3.8	4.9	5.1	5.4	5.0	4.1	4.1
	(0.3)	(0.2)	(0.2)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Blacks	11.3	8.4	9.6	9.6	13.6	11.5	10.9	8.8	9.3
	(0.9)	(0.8)	(0.8)	(0.9)	(1.0)	(0.9)	(0.9)	(0.8)	(0.8)
Hispanics	7.2	7.5	5.8	9.1	10.9	11.3	11.0	10.0	9.4
	(0.7)	(0.6)	(0.4)	(0.5)	(0.6)	(0.6)	(0.6)	(0.7)	(0.6)

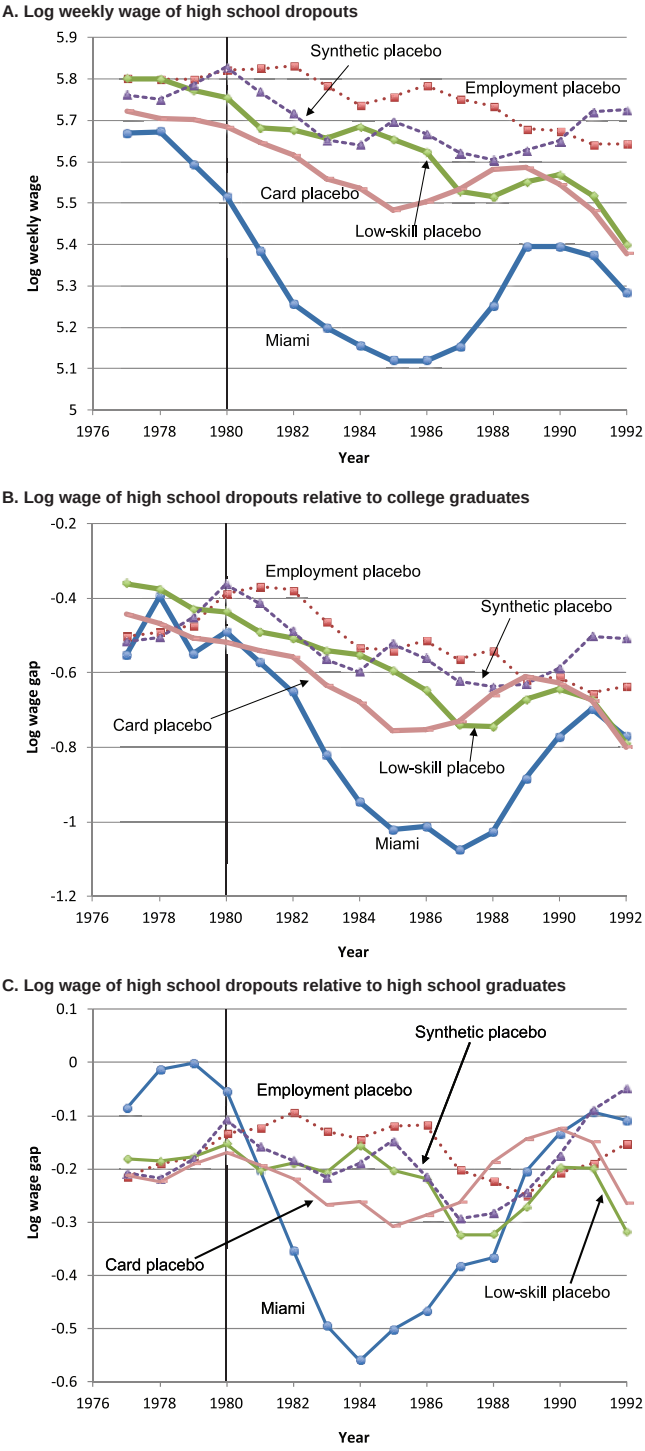
Note: Standard errors are in parentheses. The four comparison cities (Atlanta, Houston, LosAngeles, and Tampa-St. Petersburg) are the same comparison cities used by Card (1990). The reported unemployment rates are from the authors' tabulations of CPS Outgoing Rotation Groups.

- Since there was no immigration shock in 1994, this suggests the Card (1990) conclusion of no immigration effects might be sensitive to differential trends in Miami and control cities and, hence, to the choice of control group

Borjas Bids Bienvenido a Miami

- Borjas (2017) revisits both Mariel experiments using synthetic controls methods and focusing on natives classified by skill group. This paper claims: 1. Within skill groups we see big effects of the original Boatlift. 2. The Mariel that didn't happen ... happened.
- Clemens and Hunt (2019) disagree
  - Check it out!

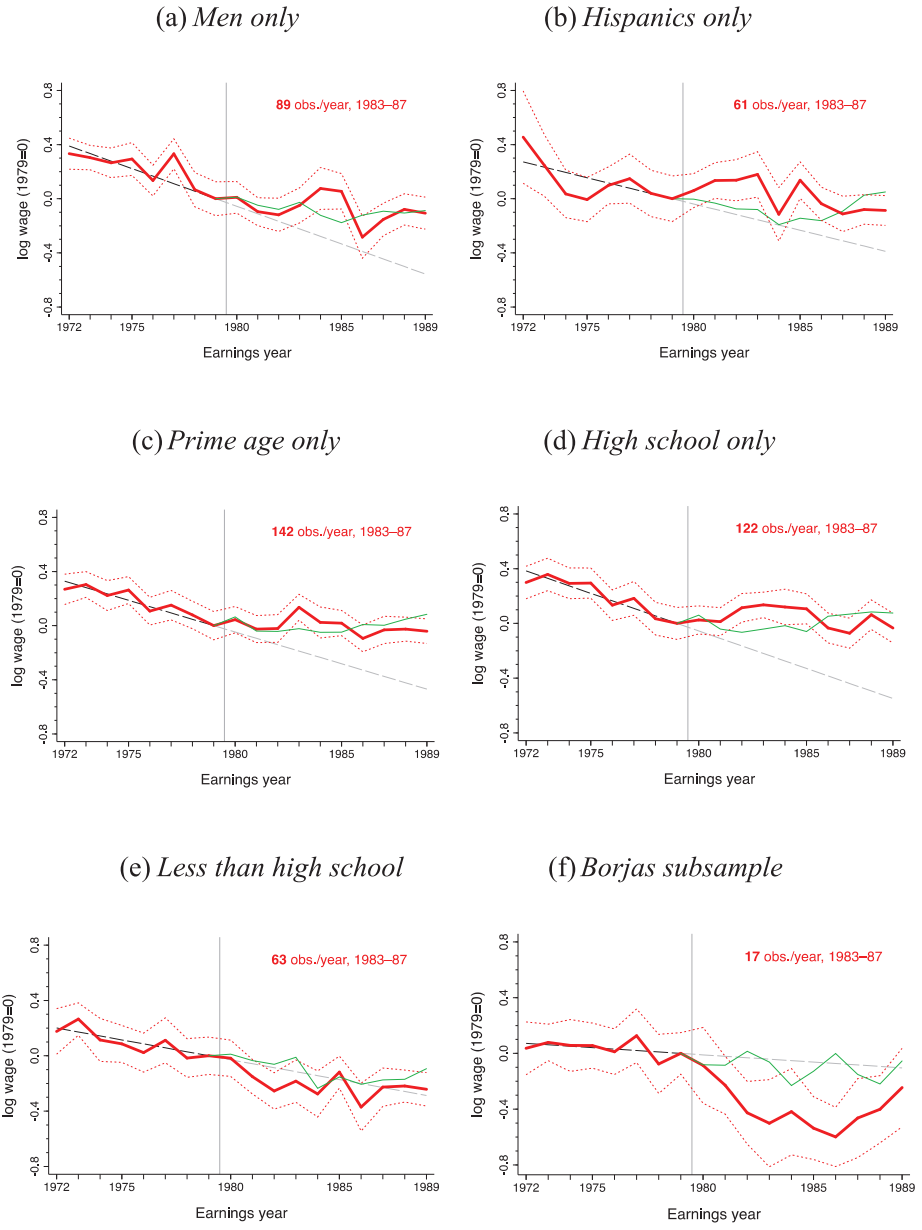
Figure 3. Trends in the Wage of Low-Skill Workers in the March CPS, 1977–1992



Borjas (2017)

Notes: Figures use a three-year moving average of the average log wage of high school dropouts, high school graduates, and college graduates in each specific geographic area.

Figure 2. Average Low-Skill Wages in Miami: March CPS Subgroups



Notes: Thick, solid (red) line shows annual average wage in Miami, with 95% confidence interval, using Supplement Weight. Dashed line shows pre-1980 linear trend in Miami. Thin, solid (green) line shows average wage of same type of workers in Borjas control cities, using Supplement Weight. March CPS data. "Earnings year" is year before survey year. "Low-skill" means workers with high school or less. "Borjas subsample" omits Hispanics, females, age < 25, age > 59, and high school only. "Workers" report positive annual wage and salary income, positive weeks worked, and positive usual hours worked weekly.

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