Lifetime Income Gains of the 1982 Plyler Decision: Methodological Note

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Abstract

In 1982 the Supreme Court guaranteed access for undocumented children to a K-12 public education. An estimated 3 million current adults have benefited of the Plyler decision over the last 4 decades, and about 1.8 million undocumented children are currently benefiting. This paper estimates the economic effects of the Plyler decision by comparing current values for cumulative (lifetime) income to those obtained in a counterfactual no-Plyler scenario.

1 Introduction

1.1 Project goals

The 1982 Plyler decision by the Supreme Court guarantees access for undocumented children to a K-12 education and many have benefited over 4 decades. This decision is currently under potential legal threat.

Our project has two goals:

1. How many people benefited from Plyler since its adoption in 1982? What was the resulting increase in educational attainment and income?

2. If Plyler is rescinded in 2025, what will be the resulting loss in educational attainment and income for undocumented children currently in the United States?

We are particularly interested in the cumulative income effects of Plyler but we only have data for a single year (2022). Hence, we will need to model individual income histories and use the available data as calibration target. The overall (aggregate) effects will be the simple aggregation (using the appropriate weights) over the population of interest.

1.2 Data and target population

Our main dataset will be the 2022 *American Community Survey* (ACS) enhanced with the assignments (imputations) for immigrant and Plyler statuses produced by Phillip Connor. In essence, we will create counterfactual education and income in a no-Plyler scenario for all individuals in the data and use it to estimate the average and aggregate effect of the Plyler decision.

To analyze the education and income gains resulting from the 1982 adoption of the Plyler decision, we will focus on individuals who have been undocumented during part of their childhood between 1982 and 2022. Presumably, these individuals were able to acquire additional schooling thanks to Plyler and have therefore earned higher income since joining the workforce. Some of these individuals may have obtained legal status (through naturalization or by becoming LPR) whereas others remain undocumented as of 2022. We will construct (predicted) individual income histories starting when they first entered the workforce and matching their 2022 observed income, and compare them to counterfactual (no-Plyler) histories had their schooling remained at the level observed

at the time of migrating to the United States.[1] We will restrict the sample further to individuals (predicted) to having finished their schooling and entered the workforce between 1983 and 2022.

The prospective analysis of the impact of a potential elimination of Plyler on undocumented children currently in the United States (as measured in 2022) will focus on those individuals currently in school. We will assume that the elimination of Plyler would immediately terminate their schooling and enter the workforce. We will make projections about their lifetime earnings in the current scenario (based on their expected complete schooling under Plyler) and the earnings in a no-Plyler scenario.

It is important to note that the adoption or removal of Plyler is considered to not affect citizenship (or LPR) status, which were largely driven by the 1982 IRCA. However, had Plyler not been adopted, many current DACA recipients would not have qualified since high-school completion was required to apply. Of course, it is also possible that those requirements might have been different if the vast majority of childhood arrivals had not had access to K-12 education.

1.3 The returns to schooling

Labor economists have been producing estimates of the returns to schooling for several decades. Existing estimates of the private returns to schooling range between 5% and 15% per year. Classic literature reviews of the international literature (Psacharopoulos, 1985; Psacharopoulos and Patrinos, 2018) concludes that the global average is about 9 percent a year and has been very stable over decades (with the social return found to be at least 1 percentage point higher). Private returns to schooling also tend to be higher for women and in low-income countries.

More recent, better identified estimates report lower estimates. For instance, Zimmerman (2014) estimates earnings gains of 22% for 4-year college degrees (about 10 years after high school completion) in the US, which suggests a 5-6% return on each additional college year. Similarly, Heckman et al. (2018) estimate causal effects of high school completion of around 12% (relative to completion of primary schooling) and of 22% for college completion (relative to high-school graduation), but also notes that there's substantial individual heterogeneity in returns. These estimates suggest average returns to one additional year of schooling (in the United States) ranging between 3%

[1] To fix ideas, we will assume that a 10-year old arrival (4th grader) in year 2000 would still have that same educational attainment in 2022.

and 6%.

In light of this evidence, we will consider each additional year of schooling to have a (private) rate of return of 6%.[2]

2 Data

In our retrospective analysis, our focus is on the education and income gains for the period between 1982 and 2022. For our prospective analysis, we are interested in the education and income losses for those in the US in 2022 until the end of their working lives (age 64 or perhaps 70).

2.1 ACS 2022

Our baseline data is the IPUMS version of the 2022 ACS 2022, augmented with the FWD immigration and Plyler status assignment (imputation) and weights. An important caveat is that our analysis will reflect only population present in the U.S. as of September 30, 2023 or, more properly (in an unweighted sense), individuals captured in the 2022 ACS. Hence, we are missing some foreign-born individuals who could have benefited from Plyler but have either died or have left the country before 2022. [3]

2.2 Current education (in 2022 ACS)

We code current years of education (in 2022) as in Matt Hall's code (YRSED). This variable takes value that range from 0 to 18 years of education and is based on ACS variable EDUCD. Using YRSED, I also created 4 dummy variables for current educational attainment: did not complete primary (Edu0), completed primary but not secondary (Edu1), completed secondary but not a 4-year college degree (Edu2), and completed a 4-year college degree or more (Edu3).

2.3 Education at Migration (if age at migration below 18)

Matt Hall also coded age at migration (AGEMIG) for all foreign-born (defined as YRIMMIG not missing) and the years of education at migration (EDMIG) for the foreign-born

[2]It would be great to have as much knowledge about the estimates to schooling for the undocumented population, but this is not the case.

[3]The IRCA roster files provide a count of all individuals who benefited from the legalization process. Thus, we can measure how many individuals in this group have vanished between 1982 and 2022.

aged 17 or younger when arriving in the United States.[4]

2.4 Plyler imputation

Based on Phillip Connor's assignment and weights applied to the 2022 ACS, we estimate that 4.8 Mn people were exposed (presumably benefited) or are currently exposed to the protections provided by the Plyler decision. These estimates describe *access* rather than *actual use* i.e. some undocumented minors may not have actually attended school (despite having the right). We can classify this population into 3 groups:

1. Undocumented minor arrivals (before 1982), currently LPR or naturalized (through IRCA). Younger than 18 between 1982 and 1992. Most were Mexican or Central American. Estimated at 430k.

2. Undocumented minor arrivals (after 1982), currently undocumented adults. About 2.6 Mn and 1/3 have deportation protection (DACA, TPS).

3. Undocumented minor arrivals (after 1982), currently undocumented children. This figure accelerated dramatically between 2019 and 2023. About 600k in 2019 but 1.8 Mn in 2023. About 2/3 have deportation protection (TPS, parole).

3 Empirical Strategy

Before tackling the estimating of the *cumulative* income effects of the Plyler decision, we will focus on its effects at a single point in time, year 2022. As we shall explain later, this will play a key role in the reconstruction of individual income histories in the counterfactual no-Plyler scenario.

3.1 Current (2022) gains in education and income

Let $t = 0$ denote the arrival year and $t = 1$ the current (2022) year. Individual i's arrival characteristics are reported in the ACS 2022 retrospectively (X_i^0): year of arrival, age and schooling (at arrival).

Individual i's current characteristics (in 2022) are obviously also reported: earnings/income (inc_i^1) plus characteristics vector X_i^1: year, age, gender (fem), legal status

[4]EDMIG is primarily based on AGEMIG (but also uses YRSED so that it is actual attainment, not just potential).

(*leg*), and educational attainment (*edu*).[5] Thus,

$$\begin{aligned} X_i^0 &= \{age_i^0, edu_i^0, year_i^0\} \\ X_i^1 &= \{age_i^1, edu_i^1, fem_i^1, leg_i^1\} \end{aligned}$$

Age, gender and legal status are all assumed to be deterministic. Specifically, gender is invariant between the two periods. Age is simply $age_i^1 = age_i^0 + (2022 - year_i^0)$ and legal status is documented (LPR or citizen i.e. $leg_i^1 = 1$) if arrival year was 1982 or earlier, and undocumented ($leg_i^1 = 0$) if it was after 1982:

$$leg_i^1 = \begin{cases} 1 & \text{if } year_i^0 \leq 1982, \\ 0 & \text{if } year_i^0 > 1982. \end{cases} \tag{1}$$

3.1.1 Counterfactual current education

It will be helpful to adopt the following notation. Let edu_i denote the current *complete* years of education for individuals who entered the workforce by year 2022. This information is obviously observable in the 2022 ACS.

We assume that, absent the Plyler decision, schooling would have remained *frozen* at the level observed at arrival. Hence, the *counterfactual* (no-Plyler) education in year 2022 is assumed to be

$$edu_i^c = edu_i^0, \tag{2}$$

where superindex c denotes the no-Plyler counterfactual value and edu_i^0 is the years of education at arrival in the United States. All remaining characteristics (as of 2022) are assumed to be unaffected (gender, age, state of residence and legal status) i.e. identical under both scenarios.

Note: The counterfactual schooling issue could be investigated further. We could examine the educational gains of undocumented individuals (relative to arrival schooling) who completed their education *before* the Plyler decision and use this information to build the no-Plyler counterfactual.

3.1.2 Counterfactual current income

We will evaluate the counterfactual income in year 2022 as the income adjusted for the *lower* educational attainment. Specifically, we assume that counterfactual income needs

[5] Other characteristics, such as state of residence could be added.

to be deflated as follows:

$$y_i^c = \frac{y_i^1}{1 + \beta_e(edu_i^1 - edu_i^c)}, \tag{3}$$

where y_i^1 is the baseline (observed) income in year 2000, β_e is the return to one year of education (e.g. $\beta_e = 0.06$ if the return is 6%), and $(educ_i - educ_i^c)$ is the reduction in years of schooling. To fix ideas, if the return to schooling if 6% per additional year and there is a reduction in 7 years of schooling, the counterfactual income is given by $y_i^c = y_i^1/1.42$.[6]

The treatment effects on educational attainment and income are given by

$$TE_i^{edu} = edu_i^1 - edu_i^c = edu_i^1 - edu_i^0 \geq 0 \tag{4}$$

$$TE_i^y = y_i^1 - y_i^c \geq 0. \tag{5}$$

3.2 Cumulative gains in income

3.2.1 Baseline income by year

In estimating the cumulative gains over the 2-decades since the Plyler decision, we face an important data limitation: we only have information on income (and other individual characteristics) for a single year (2022). To predict annual income (and the resulting cumulative 1982-2022 value), I will assume a simple income process and calibrate it to match the observed 2022 value.

Let t_i^w denote individual i's year of entry into the workforce. This information is not in the ACS 2022 so we predict it as follows:

$$t_i^w = birthyear_i + 5 + yrsed_i. \tag{6}$$

To ensure that no one is working before age 14, we apply Equation (6) only to individuals with at least 10 years of schooling. For those with less schooling, we set $t_i^w = birthyear_i + 14$ so that they begin earning income at age 14.

Furthermore, we assume:

1. Income is zero before entering the workforce (or younger than 14): $y_{i,t} = 0$ for $t < t_i^w$

[6]The computation of counterfactual income is based oh the commonly used Mincerian earnings model where log earnings are a function of years of education, potential experience, and other socio-demographic characteristics. In practice, we will assume that $\beta_e = 6\%$ and cap the overall income adjustment to $16\beta_e = 96\%$ to avoid negative counterfactual income.

2. Each individual has an idiosyncratic entry-level wage v_i, reflecting ability, schooling, gender, legal status, state of residence, etc.

3. Everyone's income grows at a constant annual rate $g = 0.05$ (due to 2% general economic growth and 3% return to work experience)

4. Once an individual enters the workforce, she is assumed to stay in the workforce

These assumptions lead to the following process for individual annual income:

$$y_{i,t} = \begin{cases} 0 & \text{if } t < t_i^w \\ v_i & \text{if } t = t_i^w \\ y_{i,t-1}(1+g) & \text{if } t > t_i^w, \end{cases} \tag{7}$$

which can be written more compactly as

$$y_{i,t} = \mathbb{1}(t \geq t_i^w) v_i (1+g)^{t-t_i^w}, \tag{8}$$

for $t \geq t_i^w$. It is worth recalling that our interest in the retrospective analysis of the effects of Plyler is on earnings/income between 1982 and 2022. Hence, individuals entering the workforce *after* 2022 will not be considered.[7]

Obviously, earnings/income in 2022 are observed (for those employed), g is a known constant, and the year of entry into the workforce t_i^w is known (predicted). However, making Equation (9) operational requires estimating the entry-level wage v_i. On the basis of our assumptions, we can back out the entry-level wage v_i as follows: for individuals that entered the *workforce before 2022 and were employed* in that year,

$$v_i = \frac{y_{i,2022}}{(1+g)^{(2022-t_i^w)}}. \tag{9}$$

[7]Alternatively, we could have imputed *complete* educational attainment and the resulting income for individuals currently in school and predicted to enter the workforce after 2022. Specifically, we could impute their *complete* educational attainment using the average income of undocumented individuals, age 25 in 2022, who arrived in the United States between the ages of 5 and 10 years. The data shows that these individuals had an average of 13 years of education and have been working for 8 years. We use the average income (discounted back 8 years) for this reference group to estimate v_i for the individuals who had not completed their schooling in 2022. We estimate that, on average, individuals in the reference group attained 13 years of schooling and worked for 8 years before 2022. Hence, we deflate (using g) their average 2022 earnings to estimate v_i.

3.2.2 Non-employment

For individuals who were *not employed in 2022* (but who already entered the labor market, $t_i^w \leq 2022$), we impute their income level. Specifically, we replace $y_{i,2022}$ by the mean 2022 income of a *reference group* (with the same age, years of education, gender and legal status), also deflated (by $1+g$ annually) according to the mean number of years in the workforce for the reference group.

In essence, the imputation assumes that non-employment is purely random i.e. unrelated to the entry-wage level and its determinants. Because this seems unrealistic, we introduce a *selection correction*: we impose a 25% penalty over the income of the reference workers.

In sum, we are able to utilize Equation (9) in order to compute the *predicted* annual income for all individuals entering the workforce between 1982 and 2022 for the whole period of interest. Before entering the workforce ($t < t_i^w$), income is assumed to be zero. At the time of entering the workforce, the earnings/income is given by v_i. For individuals in the workforce ($t_i^w \leq 2022$), income grows annually at a rate $g \geq 0$ until reaching $y_{i,2022}$ (or the mean value of the reference group for those with imputed 2022 income).[8]

On the basis of income process Equation (9), we define Y_i as the cumulative sum of annual income $\{y_{i,t}\}$ over the period $1982 \leq t \leq 2022$. In aggregating cumulative income across all individuals, we will take into account that not everyone is employed in every year. Specifically, we will assume that all individuals face a probability of non-employment, assumed identical for all individuals (and estimated by the employment rate for the Plyler population).

3.2.3 Counterfactual (no-Plyler) annual income

Next, we calculate counterfactual annual income in a no-Plyler scenario. As discussed above, we assume that educational attainment would be frozen at the education level *in the year of arrival*, which entails an average of 6-7 fewer years of schooling. It is also worth noting that the shorter schooling implies an earlier (predicted) entry into the workforce. Hence, there is a *trade-off* between lower educational attainment (presumably leading to lower-paid jobs) and longer work tenure (leading to more work experience), but this is an order of magnitude less important than the large reduction in educational

[8]The employment tenure as of 2022 is just one year for individuals entering the workforce in that same year and, more generally, has length $(2022 - t_i^w + 1)$ for everyone else.

attainment.

We construct counterfactual annual income analogously to the calculation of baseline income, with only three substantive changes:

1. We assume that the year of entry into the workforce (in the *counterfactual*) is when the individual turns age 14, provided she is already in the United States. Thus, the counterfactual year of entry into the U.S. workforce is given by $t_i^c = birthyear_i + 14$, provided the individual is already in the U.S in that year. Those age 14 or older at migration are assumed to join the workforce right away.

2. The 2022 earnings/income need to be adjusted to account for the *lower* educational attainment:
$$y_i^c = \frac{y_{i,2022}}{1 + \beta_e(edu_i - edu_i^c)}, \tag{10}$$
where $y_{i,2022}$ is observed for those employed in 2022 and is imputed (based on a reference group with the same characteristics) for those not employed in that year.

3. Entry-level predicted earnings need to be recalculated due to the typically longer work tenure ($t_i^c \leq t_i^w$):
$$v_i^c = \frac{y_{i,2022}^c}{(1+g)^{(2022-t_i^c)}}, \tag{11}$$
for those employed in 2022. Conversely, for those not employed, the numerator is the mean income of the reference group, also *adjusted* to account for the lower educational attainment.

As before, we can now compute the counterfactual income sequence $\{y_{i,t}^c\}$ by applying the constant growth rate g and obtain the cumulative 1982-2022 income Y_i^c. Last, the effects of Plyler on cumulative income (over the period 1982-2022) are given by $(Y_i - Y_i^c)$ at the individual level and its sum over the Plyler-exposed population in the aggregate.[9]

3.3 Extension through retirement

Plyler beneficiaries will benefit from the additional education until the end of their working lives. Most of them will work for many years after 2023. We now extend the income histories computed in **??** until each individual reaches age 70. Our income projections from 2022 onward need to account for the age-earnings profile; it is well established that

[9]It is also worth noting that Plyler only affected the education and earnings of individuals entering the workforce in 1983 or later ($t_i^w \leq 1983$). Hence, $y_{i,1982} = y_{i,1982}^c$ for all i.

earnings grow after entering the workforce (thanks to increasing experience as well as economic growth). Specifically, we will rely on the age-earnings profile estimated for the undocumented workers population in Ortega and Connor (2024), which will be further discussed in the next section.[10]

3.3.1 Lifetime income histories under Plyler

Recall that t_i^w is the year in which individual i finished schooling and began working (provided she's 14 or older) and v_i are her entry-level earnings (in year t_i^w). Her income history is described as follows:

$$y_{i,t} = \begin{cases} 0 & \text{if } t < t_i^w \\ v_i & \text{if } t = t_i^w \\ v_i(1 + g_{ex} + g_{ec})^{(t-t_i^w)} & \text{if } t_i^w < t \leq 2022 \\ v_i a_{i,t}(1 + g_{ec}) & \text{if } t_i^w < t \leq 2022 \\ 0 & \text{if } t \geq r_i^r, \end{cases} \tag{12}$$

where t_i^r is individual i's retirement age, assumed to be the year when she turns 70. Before 2022, earnings increase annually reflecting (potential) experience ($g_{ex} = 0.03$) and economic growth ($g_{ec} = 0.02$). Earnings after 2022 grow annually due to economic growth (g_{ec}) and according to an inverted-U age-earnings profile captured by factor $a_{i,t}$. Specifically, individuals age 23-28 earn 73% more when they first entered the labor market ($a_{i,t} = 1.73$). Individuals ages 29-34 earn 132% more than when they first started working ($a_{i,t} = 2.32$) due to their accumulated experience (in addition to the increases in wages due to economic growth), and so on. In the absence of economic growth, individual earnings would peak at age 47-52 ($a_{i,t} = 3.10$) and decline thereafter.

3.3.2 Lifetime income histories under the no-Plyler scenario

In the counterfactual scenario where the Plyler decision had not been adopted, undocumented youth's educational attainment is given by the years of schooling they had when they arrived to the United States. We assume that those children join the U.S. workforce when they turn 14 (provided they are already in the U.S.). The year they enter the workforce is denoted by $t_i^c \leq t_i^w$.

[10]We stress that our calculations are in constant 2023 dollars. The over-time growth in earnings in our analysis is not due to inflation. It is *real* earnings growth and does not reflect inflation.

The counterfactual income histories $y^c_{i,t}$ are described by a function similar to Equation (12), modified to account for the potentially earlier entry into the workforce (t^c_i) and the *lower* entry-level earnings (v^c_i) for those with lower education in this scenario.

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