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# AN EMPIRICAL ANALYSIS OF IDENTITY THEFT DETERMINANTS IN THE U.S.

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## ABSTRACT

This study finds that ID theft rates tend to be an increasing function of the unemployment rate and the proportion of the population concentrated in urban areas, and a decreasing function of the relative amount of resources devoted to laws enforcement and the percentage of individuals who claim a religious affiliation. We also find ID theft to be an increasing function of the extent of undocumented immigration, internet access, on the other hand, is found to negatively impact the incidence of ID theft, underscoring the decisive role of immigration and economic variables as determinants of ID theft. Educational attainment in the U.S. does not seem to be a factor.

**Keywords: Identity theft; undocumented migration; economic factors; urbanization**

## 1. Introduction

In the U.S., Cyber crime has grown dramatically in recent years (New York Times, 2006), and identity theft is one of its most pernicious manifestations (Federal Trade Commission, 2006). Criminals who illegally assume the identity of another individual (“ID theft”) usually do so for one or more of the following three reasons. They intend: (1) to steal the victim’s financial assets; (2) to obtain goods and services under false pretenses, i.e., without paying; or (3) to use the victim’s identity as a “cover” for other forms of their activities.

With respect to reason (3), undocumented immigrants may be among the major offenders, or at least this is what Michael Chertoff, the Homeland Security Director declared in December 2006 (Swarns, 2006). Chertoff argues undocumented immigrants may engage in ID theft so they can obtain someone else’s social security number, thus enabling them to obtain and hold a job, open bank accounts, obtain a driver’s license, and so forth.

Another commonly asserted hypothesis with respect to ID theft is that is a creature of the Internet. A *Washington Post* reporter put it this way: “Few Internet security watchers believe 2007 will any brighter for the millions of fraud-weary consumers already struggling to stay abreast of new computer security threats and avoiding clever scams with banking, shopping, or just surfing online” (Krebs, 2006).

In this study, we use state-level data to identify possible determinants of ID theft rates in the U.S. We treat ID theft rates as a function of economic conditions, the urban vs. rural nature of the environment, law enforcement, expenditures, religious adherence, Internet access, the extent of undocumented immigration, and education. Interestingly, consistent with Mr.

Chertoff's assertion, we find that the percentage of undocumented immigrants in a state is highly significant predictor of the incidence of that state's ID theft; moreover, this variable also has by far the largest beta coefficient in our predictive equation. Hence, whereas more work certainly needs to be done on this subject, it appears that there is some validity to the notion that the most common forms of ID theft are immigration driven and therefore relate to the need of undocumented immigrants to obtain legitimate credentials that will enable them to hold jobs in the U.S. , to obtain driver's licenses and bank accounts, and the like.

## **2. WHAT IS IDENTITY THEFT**

The Identity Theft and Assumption and Deterrence Act, U.S. Public Law 105-318 (1998), identifies an ID thief as someone who:

*.....knowingly transfers or uses, without lawful authority, any name or number that may be used alone or in conjunction with any other information, to identify a specific individual with intent to commit, or to aid and abet, any unlawful activity that constitutes a violation of Federal law, or that constitutes a felon under any applicable State or local law.*

This definition of ID theft is purposely broad and seemingly was designed to deal with unforeseen circumstances brought about by technology. As we shall now see, much that related to ID theft depends upon interpretation.

## **3. THE INCIDENCE AND REPORTING OF IDENTITY THEFT**

According to the Federal Trade Commission (2006), state ID theft rates varied in 2005 from a low of 24.8 per 100,000 persons in North Dakota to a high of 156.9 per 100,000 persons in Arizona. The median states Hawaii and Alaska had rates of 63.5 and 63.4 respectively. California, with a 125.0 rate, ranked third among states, but had the largest number of reported ID thefts (45,175) in 2005. Table summarizes these data.

Unfortunately, as is true for nearly all crime data, some ID theft crimes go unreported or even unrecognized. Furthermore, not all forms of ID theft are defined as crimes, or at least fail to be treated as such. Often to the applause of the public, member of the media sometimes assume false identities in order to pursue a story and, providing they do not attempt to obtain personal financial benefit, this variety of ID theft is not considered illegal in many states, or, if it is, it frequently goes unprosecuted. Law enforcement authorities themselves sometimes assume false identities in order to capture alleged law violators. In other cases, individuals engage in "pretexting" (assuming a false identity in order to obtain information). Hewlett-Packard notably engaged in pretexting in 2006 in an attempt to obtain telephone records as a means of tracking down a corporate leak. The congress responded by approving a bill to criminalize pretexting aimed at obtaining someone's telephone records (Rogers and Mathews, 2006), but other forms of pretexting do not necessarily violate federal, state, or local laws.

In still other cases, individuals effectively assume a false identity on web sites such as [www.myspace.com](http://www.myspace.com) and [www.facebook.com](http://www.facebook.com) by virtue of exaggerating their own virtues, or even blatantly lying about their essential characteristics (a man telling a woman on myspace.com that he's 6'2" and 200 muscular pounds rather than admitting he's 5'4" and 200 pounds). Such episodes may be frowned upon but are seldom prosecuted unless accompanied by a subsequent financial or sexual crime.

Recently, several very large security breaches have been discovered by businesses and governmental agencies that apparently exposed millions of individuals to potential ID theft (New York Times, 2006). A case in point is the U.S. Department of Veterans Affairs, which in 2006 lost personal data for an estimated 28.6 million veterans. Hackers penetrated the financial company Card Systems Solutions in 2005 and gained personal data for more than 40 million Visa and MasterCard account holders. In the former case, it appears this has not led to significant ID theft, whereas in the latter case, the "jury is still out." Should we regard these instances as ID theft because, in fact, individual identities were stolen, or focus instead only on those cases where the theft has recognizably led to criminal use of that ID? Actual Federal Trade Commission practice leans in the latter direction and therefore often tends to minimize the actual occurrence of ID theft.

The relevant point is the ID theft data published by the Federal Trade Commission (FTC) reports provide only a partial window on ID theft and are not without their flaws (Newman and McNally, 2005). An act one individual considers ID theft may not be interpreted similarly by another individual, or it may go unreported. Indeed, according to the FTC, 61 percent of ID theft victims do not notify a police department (Federal Trade Commission, 2006). Further, 32 percent of reported ID thefts were not discovered until a year after the theft occurred (Federal Trade Commission, 2006).

Nevertheless, the FTC data, which focus on credit card, phone and bank fraud, as well as employment and government documents fraud, easily constitute the best information presently available for the U.S. Perhaps more important, even if these data are only approximations of reality, they nonetheless are being used for purposes of resource allocation and public policy. Both the Department of Justice and the Federal trade Commission pay elected officials usually treat these data as sacrosanct.

**TABLE 1. IDENTITY VICTIMS BY STATE (PER 100,000 POPULATION)**

Rank	State	Victims per 100,000 People	Number of Victims	Rank	State	Victims per 100,000 People	Number of Victims
1	Arizona	56.9	9,320	26	Alaska	63.4	421
2	Nevada	130.2	3,144	27	Louisiana	62.6	2,811
3	California	125.0	45,175	28	Massachusetts	62.5	3,999
4	Texas	116.5	26,624	29	Ohio	62.4	7,155
5	Colorado	97.2	4,535	30	Minnesota	58.7	3,015
6	Florida	95.8	17,048	31	Alabama	58.7	2,675
7	Washington	92.4	5,810	32	Kansas	58.5	1,606
8	New York	90.3	17,387	33	Arkansas	58.2	1,617
9	Georgia	87.3	7,918	34	Rhode Island	58.2	626
10	Illinois	87.3	11,137	35	Tennessee	57.2	3,412
11	Maryland	86.6	4,848	36	So.Carolina	56.8	2,416
12	New Mex.	84.7	1,634	37	Nebraska	52.3	919
13	Oregon	81.7	2,973	38	Idaho	52.1	745
14	N. Jersey	75.5	6,582	39	Wisconsin	50.3	2,782
15	Michigan	70.5	7,139	40	Mississippi	49.9	1,458
16	Delaware	69.1	583	41	N. Hampshire	49.2	645
17	Virginia	68.2	5,183	42	Wyoming	44.0	224
18	Oklahoma	67.7	2,403	43	Kentucky	43.5	1,815
19	Missouri	67.6	3,920	44	Montana	42.5	398
20	Utah	67.5	1,668	45	W.Virginia	37.3	677
21	N.Carolina	67.1	5,830	46	Maine	37.2	491
22	Indiana	67.0	4,201	47	Iowa	36.7	1,090
23	Connecticut	65.9	2,313	48	Vermont	32.3	201
24	Pennsylvania	63.6	7,908	49	S.Dakota	30.0	233
25	Hawaii	63.5	810	50	N.Dakota	24.8	158

Median: 63.4/63.5

Unweighted Mean: 65.69

Source: Federal Trade Commission (2006, Table 329)

#### 4. PREVIOUS WORK

Newman and McNally (2005, p.11), in the 2005 review of the ID theft literature they conducted for the U.S. Department of Justice, commented that “...there are only a handful of studies that focus exclusively on identity theft, but they vary widely in quality and scope”. In fact, while analytical studies are scarce, there have been many articles that either have talked about what

is perceived to be the emerging menace of ID theft or have focused on the technological tricks thieves use to steal someone's ID. Representative are Smith and Lias (2005) and Smith (2005), who talk about the extent to which ID theft occurs, the manner in which it occurs, and what countermeasures individuals might take to reduce their vulnerability.

Smith and Lias (2005), for example, surveyed 75 managerial employees in the Pittsburgh area, whereas Smith (2005) focused on a sample of 107 "working professionals" in the Pittsburgh metropolitan area to ascertain how they deal with ID theft. Newman and McNally's 2005 survey contains only a handful of other references to research studies, and these studies tend to rely heavily upon survey responses. Star systems (2002) polled approximately 3,000 individuals via telephone; Gartner (2003) sampled 2,445 households; Harris Interactive (2003) focused on 3,462 adults; and the Federal Trade Commission (2003) conducted a randomized survey of 4,057 individuals.

A more recent survey of the Council of Better Business Bureaus and Javelin Strategy and Research (Johannes, 2006) relied upon 5,000 telephone interviews and concluded, in contrast to most other studies, that the growth of ID theft has been contained. Even so, the study concluded that 8.9 million American Adults had been victimized by ID theft in 2005 and that the mean financial loss had risen to \$6,383 per occurrence (Johannes, 2006, p.1).

The common thread in these studies is their descriptive nature. They describe the breadth and width of ID theft and nearly always talk about useful precautions individuals should take in order to minimize their potential exposure to ID thief (illustration: never give out your social security number in response to an e-mail). They are notable for not focusing on the determinants of ID theft --- for example, which populations are the most likely to commit ID theft? Does poverty play a role? Is ID theft an urban phenomenon? Thus, the record of research on ID theft is essentially bare insofar as analytical and/or empirical studies are concerned. This study is a first step in the direction of providing such an analysis.

## **5. A SIMPLE MODEL**

Whereas some data are available that relate ID theft to metropolitan areas, the best political unit data available relate to the 50 states. Consequently, our goal is to explain variations in the rate of ID theft using this state-level data. We estimated reduced-form equations of the following form:

$$R_i = a + bX_i + u_i$$

where:

$R_i$  = rate of reported ID theft per 100,000 individuals during the year 2005 in state "i"

$X_i$  = vector of state characteristics such as population demographics, economic status, apparent religious commitment, urban versus rural residence, education, Internet access

$u_i$  = error term

We adopt six categories of explanatory variables for each state:

- Economic conditions (UNEMP, the state's unemployment rate in 2014)
- Urban/rural nature (URBAN, the percent of the state's population living in an urban area in 2000)
- Law enforcement expenditures (LAWENEXP, law enforcement expenditures per capita in the state, 2002)
- Extent of religious affiliation (REL, the percentage of state's population that identifies as being either Christian or Jewish, 2000)
- Internet access (INTGER, the percent of households connected to the Internet, 2003)
- Incidence of undocumented immigrants (UNDOCIMM, the estimated percent of the state's population consisting of undocumented immigrants, as of March, 2005)
- The percent of a state's population, 25 years or older, that has earned a bachelor's degree or higher (EDUC)

Data sources were the U.S. Census Bureau (2006, Tables 27, 581, 71, 431, 1150, 218). The Pew Hispanic Center (2005), and Federal Trade Commission (2006, Table 329)

## 6. EMPIRICAL RESULTS

Table 2 reports two multiple linear regressions based upon the model. The signs on the independent variables in Regression One correspond with reasonable *a priori* prediction, except perhaps for the negative sign on the Internet access variable, which is discussed below. In particular, the coefficient on the undocumented immigrant's variable is positive and significant at the one percent level and boasts a very large  $\beta$ -coefficient. This should not be surprising in light of Table 1, where one can see that the states with the largest incidence of ID theft also have the largest incidence of undocumented immigrants. Here, however, we have documented that relationship in a *ceteris parabis* context in which other relevant factors such as economic conditions, the extent of urban population, law enforcement, expenditures, religious adherence, and Internet access are controlled for.

We do not know whether undocumented immigrants commit more or less serious crimes of ID theft, it is reasonable to conclude, however, that their presence dramatically increases the incidence of ID theft. Specifically, a one percent increase in undocumented aliens in a state generates an 8.546 unit increase in that state's rate of ID theft per 100,000 residents. This translates to a 13.01 percent increase in the typical state's ID theft rate. Thus, the effect of an increase in undocumented aliens on state ID theft rates is quite elastic.

It is not surprising that state unemployment rates generate higher state rate of ID theft. This relationship is statistically significant at the one percent level. Similarly, our finding that "urbanity" –highly concentrated urban populations in an environment– is conducive to ID theft corresponds with intuition with this estimated coefficient being significant at the one percent

level. Arguable, it is both more difficult to commit ID theft in a rural situation (and perhaps less need to do so as well).

One potential deterrent of ID theft is law enforcement. States that expend more resources on law enforcement per capita may well be better situated to deal with ID theft, other things held constant. We find this to be potentially true, although this relationship is weak since the coefficient is just barely significant at the ten percent level. It is easy to hypothesize that generalized law enforcement expenditures that are not target at ID theft apparently have only a minimal effect upon the incidence of ID theft.

Another plausible deterrent to ID theft is religious belief and practice. IF one believes as a moral tenet that ID theft is wrong, then ID theft is likely to be less prevalent. Using the percent of the adult population that declares itself to be either Christian or Jewish as a proxy for religious adherence, greater religious adherence appears to yield lower rates of ID theft, holding other things constant. This relationship is statistically significant at the five percent level.

If there is a surprising result, is the sign on the Internet access coefficient. *Ceteris paribus*, the negatives sign suggests that increased Internet access within states diminishes ID theft within the states. This result conflicts with the views of those who see ID theft as an Internet-based phenomenon. This view appears to be false. State variations in ID theft are much more sensitive to other influences, particularly the presence of undocumented aliens in a state. Holding economic conditions, urbanity, religion and other factors constant, Internet access may actually to some extent be a proxy for sophistication in the use and protection of sensitive, private information. That is, if I had Internet access in my home in 2003, I well might have been less likely to place myself in situations where my social security number or driver's license could be stolen, but more likely to have erected Internet defenses against scams, "phishing", spy bots, and other techniques that might induce me to supply such information, willingly or unwillingly.

Regression Two is strictly parallel to Regression One, except an education variable, EDUC (the percent of the population aged 25 or higher that has earned a bachelor's degree or higher) has been added as an argument. It adds no explanatory power; it is not statistically significant and has a very low  $\beta$ -coefficient. This finding supports the view that most ID theft is not an upper income, high education activity. Instead, ID theft appears to be much more strongly related to the presence of unemployment in a state, the urban/rural nature of a state, and the presence of undocumented immigrants in that state. It could still be true that the most costly financial episodes of ID theft involve highly educated, upper income individuals, but he bulk of ID theft cases appears to be more closely connected to other factors that are not usually associated with high incomes and high levels of education.



**TABLE 2. DETERMINANTS OF ID THEFT, 2005**

<u>Independent Variables</u>	<u>Regression Coefficients, t-Statistics and <math>\beta</math>-Coefficients</u>	
	<u>Regression One</u>	<u>Regression Two</u>
UNEMPL	5.448 (1.41)*** $\beta = .21$	5.685 (1.45)*** $\beta = .22$
URBAN	.387 (.132)*** $\beta = .085$	.363 (.135)*** $\beta = .21$
LAWENEXP	.001 (.001)* $\beta = .085$	.001 (.001) $\beta = .078$
RELIGION	-.317 (.135)** $\beta = .13$	-.338 (.138)** $\beta = .14$
INTERNET	-.395 (.243)* $\beta = .092$	-.561 (.315)** $\beta = .13$
UNDOCIMM	8.546 (.911)*** $\beta = .69$	8.546 (.915)*** $\beta = .69$
EDUC		.349 (.419) $\beta = .063$
CONSTANT	20.46 (18.33)	21.87 (18.47)
R <sup>2</sup> (adj.)	.884	.884
F	63.49***	54.13***

\*\*\*probability = .01; \*\*probability = .05; \*probability = .10

Notes: All regressions White's heteroskedasticity adjustment (1980). The t-statistics and  $\beta$  coefficients are absolute values. The significance tests are two tailed.

## 7. CONCLUSION

These are interesting results, but we hasten to note the caveats dispensed by Friedman (1991), Christ (1995), and Tomek (1993), who warn of the perils associated with strong public policy conclusions based upon the statistical significance of coefficients in single regression equations. They have pointed out we should pay more attention to consistent results confirmed in appropriately rigorous testing circumstances than to results, however strong, that emanate from a single study. State-level ID theft data necessarily yield limited conclusions. Much more work needs to be done at the level of metropolitan areas, cities, and individuals in order for us to reach stronger conclusions.

This said, it does appear (among other things) that a strong statistical relationship exists between the presence of undocumented immigrants in a state and that state's ID theft rate. Michael Chertoff, the nation's Director of Homeland Security, surmised that undocumented immigrants have been heavily involved in ID theft (Swarns, 2006). At this point, his speculations appear to be on target, and a significant proportion of ID theft could be eliminated if attention were paid to ways and means by which undocumented immigrants illegally both acquire and then utilized personnel ID information belonging to other residents of the U.S.

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