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## **Assessment and Resolution of Replicated Firearm Eligibility Checks**

### **Abstract**

This report describes a research study carried out by Structured Decisions Corporation in cooperation with the NICS (National Instant Background Check System) Section of the FBI's Criminal Justice Information Services (CJIS) Division. The purpose of the study is to determine the nature and scope of firearm eligibility checks submitted by the point of contact (POC) states to NICS which replicate previously submitted transactions and to formulate recommendations to reduce, if not eliminate, their incidence.

### **Disclaimer**

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# Assessment and Resolution of Replicated Firearm Eligibility Checks

by

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This report describes a research study carried out by Structured Decisions Corporation in cooperation with the NICS (National Instant Background Check System) Section of the FBI's Criminal Justice Information Services (CJIS) Division. The purpose of the study is to determine the *nature* and *scope* of firearm eligibility checks submitted by the point of contact (POC) states to NICS which replicate previously submitted transactions and to formulate recommendations to reduce, if not eliminate, their incidence. The study was funded by the Bureau of Justice Statistics (BJS), U.S. Department of Justice, under Cooperative Agreement #2001-RU-KX-B002.

## Highlights

### Summary of Findings and Recommendations

- Virtually all of the point of contact (POC) states replicate at least some of the firearm eligibility checks they submit to NICS. The replications can reasonably be categorized as input, follow-up, or systemic in nature.
- Based on NICS and state volume statistics for 2001 and 2002, on the average the state POCs submit 1.35 checks to NICS for every firearm transfer application they process. As a result, the number of POC state firearm eligibility checks reported by NICS is overstated by some 35 percent!
- While replicated checks do occur in the non-POC states, they are quite infrequent and have no effect on the denial rate reported by NICS.

- NICS and the state POCs could reduce the incidence of replications by implementing a number of technical and operational changes, as suggested herein.
- Further research should be undertaken to ascertain the impact of the replications on state POC workload and to assess their effectiveness in increasing denial rates.

## Study Background

The replications issue surfaced during SDC’s conduct of the BJS-funded research study, “Cost-Benefit of POC versus Non-POC Firearm Eligibility Checks”; an assessment of the cost-benefit of firearm purchase eligibility background checks performed by state points of contact – which include checks of both state records and the FBI’s NICS – versus those performed by the FBI in non-POC states where only a NICS check is involved. While the research focused on the Georgia and Oregon POCs, it addressed the more general question of what value, if any, state POCs add to the overall efficacy of firearm eligibility background checks and at what cost. The one-year study [*Cost-Benefit of POC Versus Non-POC Firearm Eligibility Checks, Structured Decisions Corporation, June 2003*], found that the state-only files add value by enhancing the likelihood of *denials* to those prospective firearm purchasers who should be denied. It is estimated that POCs are able to increase denials by almost 20% in comparison to non-POC denials. Because the cost of state checks is generally less than the cost of NICS checks, when cost is considered, the value added by the POC states approaches 30% in comparison to non-POC states.

The cost-benefit study’s methodology called for NICS to “recheck” a sample of almost 40,000 eligibility checks – already performed by the Georgia and Oregon POCs – as though they had originated in non-POC states; SDC employed the uniquely assigned NICS Transaction Numbers (NTNs) to match the POC and NICS outcomes. At first, SDC experienced unexpected difficulty in matching the Georgia and NICS checks. Further investigation revealed the existence of a substantial number of replicated checks; occasionally, as many as eight for a single firearm transaction. Although the replications phenomenon had been observed before, its prevalence caught everyone by surprise. More precisely, SDC estimated that the average numbers of NTNs generated per actual firearm transfer application were 1.6 in Georgia and 1.1 in Oregon. In other words, of the transactions submitted to NICS by the Georgia and Oregon POCs, 60% and 10%, respectively, replicated previously submitted checks!

Based on these observations, and the fact that most, if not all, of the POC states submit at least some replicated checks to NICS, BJS agreed to extend SDC’s firearm research study by funding a collaborative effort between SDC and NICS to assess and resolve the replications issue. The study’s objectives are to (i) improve the overall efficiency and accuracy of firearm eligibility checks, (ii) reduce or eliminate the incidence of replicated POC checks, thereby facilitating an accurate NICS count and (iii) to the extent the problem exists in the non-POC states, reduce or eliminate replications, possibly facilitating the reporting of a true (i.e., higher) denial rate.

## Study Approach

The study focused on answering the following five questions:

1. What are the reasons for the generation of replicated checks (i.e., replicated NTN) in POC states; what is their *nature*?
2. Is NICS itself subject to similar replications issues in non-POC states? If so, what is their *nature*?
3. To what extent does the replications problem occur in POC states; what is their *scope*?
4. If replications occur in non-POC states, what is their *scope*?
5. How can NICS and the affected state POCs best address the replications problem so as to improve the overall *efficiency* and *accuracy* of eligibility checks?

To address these questions, SDC, with NICS's cooperation and participation, conducted a 12-month research study comprised of four key tasks:

1. Through a combination of data collection and targeted site visits, determine the nature of the replications occurring in POC states and non-POC states (if any).
2. Analyze the collected data and develop a replications *typology*.
3. Determine the scope (i.e., extent and, if possible, distributional characteristics) of the replications problem in POC states and, if appropriate, in non-POC states.
4. Formulate recommendations to resolve the replications problem.

For practical reasons, the study concentrated on the *centralized* POC states; i.e., those POC states with a single point of contact. Currently, as depicted in Table 1, there are 16 centralized POC states which, in 2002, accounted for approximately 2.5 million firearm transfer applications. The largest four states in terms of volume, California, Florida, Illinois and Pennsylvania, accounted for more than half of all POC transactions. Because there is no single reporting source, the actual numbers of firearm transfer applications generated in the seven decentralized states is not known. It should be noted that Michigan alone has almost 600 separate law enforcement entities (e.g., police departments, sheriff's departments) submitting firearm eligibility checks to NICS.

Three of the 16 centralized POC states are "partial POCs"; i.e., the state POC performs handgun background checks while firearm dealers [i.e., Federal Firearm Licensees (FFLs)] contact NICS directly to perform long gun checks. In the full-POC states, the state POCs perform all the eligibility checks. Note that all of the decentralized POCs, except for Hawaii, are partial-POCs. Some states require a prospective firearm purchaser to obtain a permit – usually, solely for the purchase of a handgun. A necessary, but not sufficient, condition for the permit to exempt the purchaser from a NICS check at the time of actual purchase, is that the permit check must include a NICS check. Seven of the centralized states submit State

Transaction Numbers (STNs) with their NICS checks which turned out to be helpful in assessing the scope of the replications problem.

**Table 1. State Point of Contact Characteristics**

Point-of-Contact (POC) States (23)	Full POC?	No Permit Required for Firearm Purchase?	Submits STN with NICS Checks?	Number of Firearm Transfer Applications Received in 2002?
<i>Centralized POC-Single Point of Contact</i>				
California	Y	Y	N	352,425
Colorado	Y	Y	N	138,779
Connecticut <sup>1,2</sup>	Y	N	Y	55,216
Florida	Y	Y	N	266,249
Georgia	Y	Y	N	189,906
Illinois <sup>1</sup>	Y	N	Y	376,587
Maryland	N	Y	N	N/A
Nevada	Y	Y	Y	45,593
New Hampshire <sup>3</sup>	N	Y	N	12,752
New Jersey <sup>1</sup>	Y	N	Y	88,038
Oregon	Y	Y	Y	118,023
Pennsylvania	Y	Y	N	378,728
Tennessee	Y	Y	Y	205,204
Utah	Y	Y	N	66,100
Virginia	Y	Y	Y	187,959
Wisconsin <sup>3</sup>	N	Y	N	29,488
<i>Decentralized POC-Multiple Points of Contact</i>				
Hawaii	Y	N	N	6,990
Iowa	N	N	N	N/A
Michigan	N	N	N	N/A
Nebraska	N	N	N	N/A
New York	N	N	Y	N/A
North Carolina	N	N	N	N/A
Washington	N	Y	Y	N/A
Total "Yes"	14	14	9	2,511,047

Key: Y = Yes; N = No; N/A = Not Available

Source: REJIS, FBI/NICS

Notes:

1. Conduct checks on permits or ID cards and again at time of firearm transfer.
2. Application volume for instant checks only.
3. Application volume for handguns only.

In order to establish a baseline regarding the nature and scope of the replications phenomenon, SDC implemented an easy-to-complete information form on its corporate Web site and invited the centralized POC states to fill it out. An announcement was made to that effect at the 2003 NICS User Conference in Seattle, followed by phone calls and email reminders. Ultimately, eight of the sixteen centralized states responded by furnishing the requested information; California, Colorado, Florida, Georgia, Nevada, Oregon, Utah and Virginia.

Of particular importance to the study are the site visits SDC conducted to the California, Colorado, Nevada and Virginia points of contact. In all but the Nevada site visit, SDC was accompanied by a NICS operations staff person. Because of NICS's intimate knowledge of firearm eligibility check procedures, as well as its familiarity with state-specific idiosyncrasies, their presence was invaluable. In the course of conducting the predecessor cost-benefit study, SDC staff had conducted numerous site visits to both Georgia and Oregon and in the site-selection process, visited Florida and Nevada. It should also be noted that as the national evaluator of the BJS-funded National Criminal History Improvement Program (NCHIP), SDC staff have visited many of the other state points of contact.

### **The Nature of Replications**

As described above, SDC's initial exposure to the replications phenomenon occurred in the Georgia and Oregon POCs. In Georgia, where the frequency of the replications outstrips that in Oregon, the dominant reason for their occurrence is that the computer system employed by the point of contact was not designed to retain the information returned by NICS pursuant to an eligibility check. Let's assume that the original check sent to NICS and to the Georgia Bureau of Investigation and other state databases indicates that the prospective purchaser has a potentially disqualifying felony arrest but that the disposition is missing from his/her criminal history record. Pursuant to the search for the disposition, a POC researcher reopens the POC's database record – perhaps many times – but the detailed results of the initial query may no longer be available. If not, the check is rerun, thereby creating a replicated check which the NICS system cannot currently distinguish from the original. As a result, NICS will have generated two or more NTN's for a single firearm transfer application.

Oregon's replications turned out to have more to do with systems issues. Occasionally a hardware problem, for example a terminal keyboard with intermittent contacts, would cause a check to be run a second time. Or, on attempting to load the results of a prior check, which are retained in the POC's database, a system glitch causes the data not to load and the check is run once again in order to reconstitute the record.

As it turns out, the replications occurring in each POC state have some unique attributes but for the most part they are variations on several recurring themes as reflected in the replications typology in Table 2. All the reasons for their occurrence can be categorized as related to the *input* of the initial eligibility check, subsequent *follow-up* checks pursuant to the original check or *systemic* issues relating to hardware, software or systems.

Although they are rare, it turns out that replications do occur in the non-POC states. Discussion of the forms they take and their frequency is deferred to the below section on scope.

## *Input Replications*

Input replications most commonly result from a state POC's "spinning" a name in different permutations in order to maximize the chances of uncovering all potentially disqualifying information. The way most state POC computer systems are designed, each such "spin" spawns a check of the various state databases (e.g., criminal history, wants and warrants, parole/probation, restraining order, mental health, drug abuse, stolen guns, etc). However, each state check also spawns a NICS check, as well. Thus, if a hyphenated last name is checked in the state files using both the stated first and last names as surnames, then two checks will be sent to NICS, generating two distinct NTN's. In some states, certain name spinning is performed automatically and in others at the user's discretion. In some states, all such name spinning is discretionary.

### **Table 2. Replications Typology**

#### Reasons for Input Replications

- ◆ Checking hyphenated last name both ways
- ◆ Checking permutations of first, middle and last names
- ◆ Checking ethnic names (e.g., Asian, Latino) both ways (i.e., by permuting first and last names)
- ◆ Checking both married and unmarried surnames supplied by purchaser

#### Reasons for Follow-Up Replications

- ◆ Further research performed to resolve a prior transaction
- ◆ Check submitted in support of an appeal of a previous denial
- ◆ Checking an alias revealed in initial check of state or local systems
- ◆ Check resubmitted after entry of say, incorrect, date of birth or social security number

#### Reasons for Systemic Replications

- ◆ Software or system not designed to retain results of prior check
- ◆ Check repeated due to state and/or local system being down
- ◆ Faulty hardware (e.g., keyboard contacts) causes repeated submission
- ◆ Problem loading results of prior check forces resubmission
- ◆ Manual reentry follows crash of state's automated instacheck system

As noted in Table 2, other forms of spinning include permuting the purchaser's stated first, middle and last names, and checking names of apparent ethnicity – such as Asian or Latino names – to be sure that the given surname matches the way a possibly disqualifying record has been entered. Also, a married woman may furnish the FFL with her married and unmarried surnames, both of which are likely to be checked.

### *Follow-up Replications*

As the category suggests, follow-up replications occur pursuant to an original eligibility check, usually for the purpose of continuing the research required to ascertain eligibility. There are other reasons for checks being replicated on a follow-up basis. Illustratively, suppose the original check of the state databases – most probably the criminal history system – reveals the existence of one or more aliases. If the records associated with the purchaser’s stated name contain no disqualifying information, the state POC may then begin checking the identified aliases. Again, replicated NTN’s are generated. Consistent with standard eligibility check practice, once a disqualifier is found, the checking ceases.

Denied purchasers have the right to appeal the denial to either the POC state or to NICS, if they so choose. For the most part, appeals are directed to the denying POC and may result in one or more repetitions of the original check. Another type of follow-up replication can occur when the POC, or an FFL in states with automated instacheck systems, makes a data entry error; incorrect dates of birth or social security numbers are among the more likely mistakes. Thereupon, the check is resubmitted with the error corrected and the check has been replicated.

### *Systemic Replications*

Across the POC states, the most common form of systemic replication occurs when a state, or perhaps local, database is down at the time of the POC’s initial query. In many such cases, the check is sent off to NICS even though the state portion cannot be implemented. Then, when the state/local database is back up, the state check is repeated causing the NICS check to be repeated and, of course, resulting in another replication. As noted above, problems loading the results of a prior check can result in replications as can faulty hardware. Also, the source of the problem can be a POC system not designed to retain the results of the original check in its database.

Another class of systemic replications occurs in states that have implemented automated instacheck systems. Such systems can be of the point-of-sale (POS) variety where the purchaser’s application information is entered directly in a terminal and transmitted over communication lines to the POC system for eligibility checking. Alternatively, the application may be browser-based, utilizing the Internet to transmit the application. Suppose the instacheck system should crash after submission of the check to NICS. If manual reentry by the POC follows the crash, the check will be replicated.

Table 3 summarizes the firearm eligibility background check scenarios which lead to replicated checks, according to the eight states responding to the survey. As one can see from the results, hyphenated last names and the purchaser’s providing both married and unmarried surnames typically lead to replications. The prevalence of “Don’t Know” responses reflects the fact that POC operations staff are often unfamiliar with the inner workings of their instant check systems’ name-check algorithm; in some cases we were unable to identify or make contact with technical persons who could provide that level of information.

**Table 3. State POC Survey Responses**

Replication Scenario	Does the Scenario Result in the Generation of Replicated NICS Transaction Numbers (NTNs) for the State?																
	CA	CO	CT	FL	GA	IL	MD	NV	NH	NJ	OR	PA	TN	UT	VA	WI	
Hyphenated last name	Y	Y	--	D	D	--	--	Y	--	--	N	--	--	Y	Y	--	
Purchaser gives unmarried and married names	Y	Y	--	D	D	--	--	Y	--	--	Y	--	--	Y	Y	--	
Permutation of first/last/middle names	Y	Y	--	D	D	--	--	Y	--	--	N	--	--	Y	Y	--	
System/connection problem, check repeated	Y	Y	--	N	D	--	--	Y	--	--	Y	--	--	Y	Y	--	
Faulty hardware	N	Y	--	N	D	--	--	N	--	--	Y	--	--	Y	N	--	
Problem loading previously stored data	N	N	--	Y	N	--	--	N	--	--	Y	--	--	N	N	--	
Research on prior transaction	Y	N	--	Y	D	--	--	N	--	--	S	--	--	N	Y	--	
State check produces aliases (i.e., AKAs)	Y	Y	--	D	D	--	--	D	--	--	D	--	--	D	D	--	
Latino surname	S	Y	--	D	D	--	--	D	--	--	D	--	--	D	D	--	
Automated check system crashes	D	Y	--	D	D	--	--	A	--	--	A	--	--	D	D	--	
Repeat check re appealed denial	D	Y	--	D	D	--	--	D	--	--	D	--	--	D	D	--	
Date of birth/social security number entered incorrectly	D	D	--	D	D	--	--	D	--	--	D	--	--	D	Y	--	

### Scope of Replications in POC States

The two aspects of replications scope of interest to this study are (i) frequency of their occurrence and (ii) their distribution. The former is addressed by answering the question, “What is the average number of NTNs generated by NICS per firearm purchase application?” To address the latter, we need to know what fractions of the NICS checks result in zero, one, two, three, four, etc. replications.

#### *Frequency of Occurrence*

Every firearm eligibility check received by FBI/NICS is processed by the NICS computer system which checks for potentially disqualifying records in the FBI’s Interstate Identification Index (III) and National Crime Information Center (NCIC) files and in the NICS Index. Inasmuch as NICS cannot distinguish among an original check and its subsequent replicated checks, a unique NTN is assigned to all checks. Thus, one can think of the total number of assigned NTNs as the *workload count* of eligibility check transactions. Concomitantly, the actual number of firearm transfer applications processed (i.e., excluding replications) can be thought of as the *application count*. Over time, the ratio of the workload count to the application count is the average number of NICS transactions per actual check; i.e., the frequency of replication occurrence.

The workload counts by state are readily available from NICS while the application counts can be obtained from the states directly or from the BJS “Background Checks for Firearm Transfers” reports compiled annually by REJIS (Regional Justice Information Service; St. Louis, MO). Table 4 contains the counts for four calendar years, 1999-2002. Looking at the average numbers of NICS transactions per check, one immediately observes a wide range of values. For example, the four-year aggregate ratios range from a high of 5.50 in Wisconsin to a low of 1.02 in Utah. In the case of Utah, they are submitting virtually no replicated checks to NICS as indicated by the very low ratio. Meanwhile, the high 5.50 ratio in

Wisconsin is attributable to the fact that they are a partial-POC state and the application volume reported to REJIS reflects the volume of handgun applications only; the NICS value includes checks of both handgun and long gun purchasers. Similarly, New Hampshire's ratios are high and Oregon, which effectively became a full-POC in 2001, exhibits high ratios in 1999 and 2000 and then substantially lower ratios in the two succeeding years.

In addition to partial-POC status, another confounding factor is whether the state requires a permit for the purchase of a firearm. In Connecticut, a permit state, the volumes reported to REJIS are only for the "instachecks" performed at the time of purchase and exclude the checks performed in processing the permit applications. Thus, the ratios are consistently high. New Jersey reports both permit and instacheck volumes to REJIS but apparently, the NICS workload count includes only the instachecks.

In 1999, Colorado reverted from POC to non-POC status and then back to POC status, which accounts for the inordinately high ratio. Maryland's state POC volume data are not available.

**Table 4. NICS versus POC Transaction Volumes**

Centralized Point of Contact State	Calendar Year 1999			Calendar Year 2000			Calendar Year 2001			Calendar Year 2002			Total for 1999-2002		
	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check
California	513,418	883,144	1.72	386,210	794,506	2.06	353,722	854,569	2.42	352,425	684,390	1.94	1,605,775	3,216,609	2.00
Colorado <sup>1</sup>	76,729	257,308	3.35	137,916	307,512	2.23	145,403	348,696	2.40	138,779	183,754	1.32	498,827	1,097,270	2.20
Connecticut <sup>2,3</sup>	49,285	87,209	1.77	49,079	87,586	1.78	51,339	89,689	1.75	55,216	93,598	1.70	204,919	358,082	1.75
Florida	239,876	279,700	1.17	231,783	266,035	1.15	275,755	303,396	1.10	266,249	288,848	1.08	1,013,663	1,137,979	1.12
Georgia	252,807	409,810	1.62	213,110	352,357	1.65	209,202	325,521	1.56	189,883	285,201	1.50	865,002	1,372,889	1.59
Illinois <sup>2</sup>	419,904	484,848	1.15	375,361	449,771	1.20	380,586	462,702	1.22	376,587	446,138	1.18	1,552,438	1,843,459	1.19
Maryland	--	91,381	--	--	84,309	--	--	83,347	--	--	78,764	--	--	337,801	--
Nevada	42,156	62,375	1.48	54,438	49,807	0.91	45,280	50,549	1.12	48,918	47,155	0.96	190,792	209,886	1.10
New Hampshire <sup>4</sup>	13,616	37,711	2.77	12,938	40,120	3.10	13,870	45,727	3.30	12,752	49,666	3.89	53,176	173,224	3.26
New Jersey <sup>2,3</sup>	34,463	38,601	1.12	34,907	37,106	1.06	36,041	39,527	1.10	39,322	43,318	1.10	144,733	158,552	1.10
Oregon <sup>5</sup>	58,324	160,358	2.75	53,769	135,336	2.52	124,754	141,295	1.13	118,023	137,513	1.17	354,870	574,502	1.62
Pennsylvania	557,992	541,555	0.97	469,540	481,294	1.03	528,138	509,881	0.97	378,728	567,702	1.50	1,934,398	2,100,432	1.09
Tennessee	246,430	264,214	1.07	213,249	234,673	1.10	216,066	230,779	1.07	205,204	223,048	1.09	880,949	952,714	1.08
Utah	73,746	77,718	1.05	64,917	67,420	1.04	65,696	67,518	1.03	64,325	61,710	0.96	268,684	274,366	1.02
Virginia	201,411	208,554	1.04	182,170	188,508	1.03	192,653	196,181	1.02	187,959	191,789	1.02	764,193	785,032	1.03
Wisconsin <sup>4</sup>	36,751	179,340	4.88	32,314	180,492	5.59	31,551	181,798	5.76	29,488	173,779	5.89	130,104	715,409	5.50

Sources: FBI/NICS, REJIS, State Points of Contact

Notes:

1. Had a POC from 1/1/99-3/31/99 and again from 8/1/99-12/31/99.
2. Conduct checks on permits or ID cards and again at time of firearm transfer.
3. POC-reported volume for instant checks only (i.e., no purchase permits included).
4. POC-reported application volumes for handguns only.
5. Converted from partial- to full-POC status on 12/8/2000.

In an attempt to derive a reasonable estimate of the additional workload the replications generate, Table 5 restricts the volume data to the most recent two years available and excludes Connecticut, Maryland, New Hampshire and Wisconsin for the aforementioned reasons. The overall, two-year average number of NICS transactions per checks is **1.35**. Thus, the additional workload is approximately 35%, affecting both NICS and the state POCs. With regard to NICS, the "NICS Operations Report 2002" states that the number of state POC checks performed by NICS in 2002 was 4,205,429. Based on the above findings, it is estimated that the number of state firearms applications represented by the 4.2 million checks = 4,205,429/1.35 = 3.1 million. Therefore, due to replicated checks, the NICS computer system processed an additional workload of more than one million checks!

**Table 5. Estimate of Additional Workload**

Centralized Point of-Contact State	Calendar Year 2001			Calendar Year 2002			Total for 2001-2002		
	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check	POC-Reported State Eligibility Check Volume	NICS-Reported State Transaction Volume	Average Number of NICS Transactions per Check
California	353,722	854,569	2.42	352,425	684,390	1.94	706,147	1,538,959	2.18
Colorado	145,403	348,696	2.40	138,779	183,754	1.32	284,182	532,450	1.87
Florida	275,755	303,396	1.10	266,249	288,848	1.08	542,004	592,244	1.09
Georgia	209,202	325,521	1.56	189,883	285,201	1.50	399,085	610,722	1.53
Illinois	380,586	462,702	1.22	376,587	446,138	1.18	757,173	908,840	1.20
Nevada	45,280	50,549	1.12	48,918	47,155	0.96	94,198	97,704	1.04
New Jersey	36,041	39,527	1.10	39,322	43,318	1.10	75,363	82,845	1.10
Oregon	124,754	141,295	1.13	118,023	137,513	1.17	242,777	278,808	1.15
Pennsylvania	528,138	509,881	0.97	378,728	567,702	1.50	906,866	1,077,583	1.19
Tennessee	216,066	230,779	1.07	205,204	223,048	1.09	421,270	453,827	1.08
Utah	65,696	67,518	1.03	64,325	61,710	0.96	130,021	129,228	0.99
Virginia	192,653	196,181	1.02	187,959	191,789	1.02	380,612	387,970	1.02
<b>TOTAL</b>	<b>2,573,296</b>	<b>3,530,614</b>	<b>1.37</b>	<b>2,366,402</b>	<b>3,160,566</b>	<b>1.34</b>	<b>4,939,698</b>	<b>6,691,180</b>	<b>1.35</b>

With regard to the POCs, the 1.1 million additional checks constitute added workload of two varieties. First, in a number of the POC states, some or all of the replicated checks are manually initiated; the required human intervention constitutes additional workload. Much more significantly, resultant hits on either state or federal files must be followed up by the research staffs of the respective state POCs, often requiring a substantial expenditure of effort. The obvious question is, “How effective are the replicated checks in increasing the deniability of those who should be denied?” To address this important question, and to measure the impact on NICS and state workloads, additional research is required.

*Replications Distribution*

Ascertaining the distribution of replicated eligibility checks is more difficult than estimating the frequency of occurrence because it requires detailed, check-specific information. Fortunately, some of the POC states submit a unique state transaction number (STN) to NICS with each check. Clearly, multiple records in the NICS Audit Log with differing NTNs but a common STN is a signature of a replicated check. Working closely with NICS, SDC worked out a procedure whereby NICS would create a statistical extract from the Audit Log containing the desired distributional information. There are several data limitations which must be noted. First, as stated above, while all the POC states utilize STNs, not all of them submit the STNs with the NICS transactions. In several cases (e.g., Colorado), this is because the state does not generate the STN until after the check results are returned to the POC. Second, the data are not “clean” in the sense that for specific transactions the STN field contains either no data or a non-STN entry. Thus, much of the data provided by NICS were not usable for calculating distributional information. More importantly, although the NICS Audit Log is restricted from retaining information on applications that are not denied or not open for longer than a certain time, this did not affect SDC’s request because it applies to purchaser identifying information alone; identifying information was neither required nor requested. Table 6 summarizes the Audit Log data.

**Table 6. Audit Log Statistics (2/13/2004-5/26/2004)**

State	Number of Originating Agencies (ORIs) in the State's Data <sup>1</sup>	Number of NICS Checks	Number of NICS Checks with STNs	Number of Replicated STNs	Audit Log Data Usable?	Number of Usable NICS Checks	Projected Number of State POC Checks	Average Number of NICS Transactions per Check
Arizona	3	4,493	0	--	N	--	--	--
Arkansas	3	1,437	0	--	N	--	--	--
California	6	114,625	332	331	N	--	--	--
Colorado	3	37,750	609	602	N	--	--	--
Connecticut	124	22,559	22,559	22,077	N	--	--	--
Florida	33	57,456	91	88	N	--	--	--
Georgia	140	39,220	0	--	N	--	--	--
Hawaii	10	1,795	0	--	N	--	--	--
Idaho	50	3,297	0	--	N	--	--	--
Illinois	2	115,952	30,643	0	N	--	--	--
Iowa	161	10,892	0	--	N	--	--	--
Maryland	19	5,541	0	--	N	--	--	--
Massachusetts	335	15,817	383	313	N	--	--	--
Michigan	580	32,389	0	--	N	--	--	--
Minnesota	307	13,696	0	--	N	--	--	--
Montana	67	1,166	3	0	N	--	--	--
Nebraska	161	3,363	2	0	N	--	--	--
Nevada	15	11,379	11,376	0	N	11,379	11,379	1.00
New Hampshire	119	7,061	0	--	N	--	--	--
New Jersey	10	7,938	7,938	0	N	7,938	7,938	1.00
New York	72	8,537	8,537	1,361	N	--	--	--
North Carolina	248	22,509	428	76	Y	421	351	1.20
North Dakota	1	719	0	--	N	--	--	--
Oregon	1	31,751	31,751	4,277	Y	31,751	27,474	1.16
Pennsylvania	39	108,798	0	--	N	--	--	--
South Carolina	5	2,570	0	--	N	--	--	--
Tennessee	21	38,256	19,089	0	N	38,256	38,256	1.00
Texas	1	20,938	0	--	N	--	--	--
Utah	1	14,517	0	--	N	--	--	--
Virginia	68	36,785	36,785	406	Y	36,785	36,379	1.01
Washington	320	14,112	14,112	580	Y	14,112	13,532	1.04
Wisconsin	9	10,559	0	--	N	--	--	--
Wyoming	2	489	0	--	N	--	--	--

Source: FBI/NICS

Note:

1. An ORI (Originating Agency Identifier) is a unique number assigned to a law enforcement entity communicating with the FBI. Single points of contact often have multiple ORIs; for example, each data terminal in the agency may be assigned its own ORI.

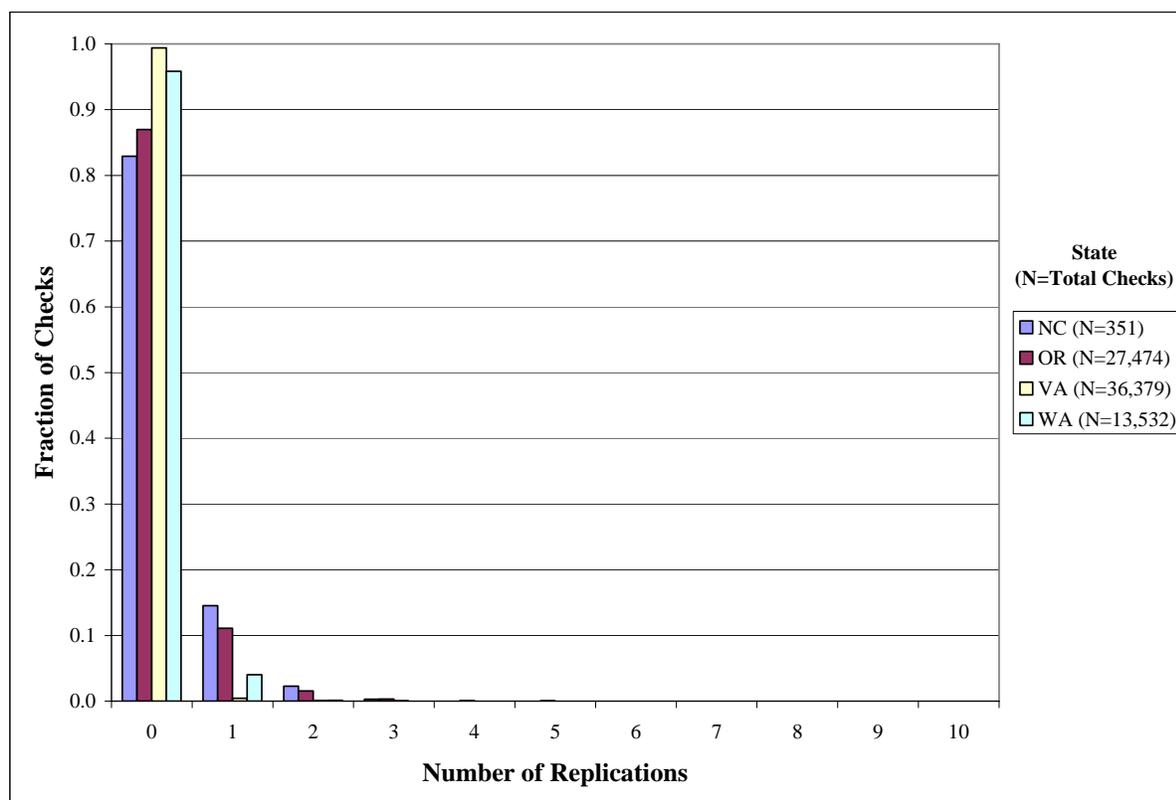
Note that of the 33 states for which data were provided to SDC, only 16 contained entries in the STN field. Of those, only seven were deemed “usable” and three of the seven, Nevada, New Jersey and Tennessee, indicated no replicated STNs. All three of these states submit replications but there is no explanation for their absence from the Audit Log extract. Only North Carolina, Oregon, Virginia and Washington records contain distributional information. While there is no way to check the validity of the Audit Log data from the two decentralized POC states, North Carolina and Washington, there are comparison frequency of occurrence

statistics for Oregon and Virginia. For Oregon, the 2002 volume data in Table 4 indicates an average of 1.15 NICS transactions per check as compared with a figure of 1.16 in Table 5. The comparative figures for Virginia are 1.02 and 1.01, respectively. The distributional data are summarized in Table 7 and displayed graphically in Figure 1.

**Table 7. Replication Distribution Data**

State	Total Checks	Number of Replications											
		0	1	2	3	4	5	6	7	8	9	10	
North Carolina	351	291	51	8	1	0	0	0	0	0	0	0	0
Oregon	27,474	23,893	3,045	425	84	15	8	1	2	0	0	1	0
Virginia	36,379	36,162	166	29	9	5	3	2	1	1	0	0	1
Washington	13,532	12,970	544	18	0	0	0	0	0	0	0	0	0

**Frequency distributions of replicated checks**



*Figure 1*

First, the number of cases in North Carolina is very small because only one of the 248 law enforcement agencies submitting checks includes STNs. Second, note that there are incidences of as many as 10 replications of a single check. Third, in all the states, 82% or more of the checks are not replicated at all and the incidence of one replication diminishes to 15% or less. After that, the incidence of the replications drops off precipitously. In other words, the replications appear to be exponentially distributed which is what one would expect.

## Scope of Replications in Non-POC States

The Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), which is responsible for regulating FFLs, the sources of non-POC checks, refers to misuses of the NICS systems as “discrepancies” and investigates the ones they can identify. Further, NICS maintains for ATF a database of discrepancies which are categorized as either (i) ‘check should not have been conducted’, (ii) ‘duplicate checks being performed’, (iii) ‘FFL called in numerous checks on denied individuals’ or (iv) ‘modification of data in order to perform checks’. As one can see, duplicating checks is a misuse of the NICS system, as reflected in the category ii, and possibly category iii, discrepancies. On SDC’s request, ATF/NICS generated for the replications study a summary of discrepancies occurring in the period 2/5/1999 through 9/30/2003, as shown in Table 8.

By sorting the data by POC versus non-POC states, it is possible to isolate the non-POC discrepancies, which include replicated checks, at least 38 according to the ATF statistics. While on the one hand the data confirm the existence of replications in the non-POC states, they are rare. To see just how infrequent, consider that the approximately 40 million checks performed by NICS in the 56 months represented by the data set are almost equally divided between state (i.e., POC) and Federal (i.e., principally non-POC) checks. Clearly, 38 identified replications is a miniscule fraction of 20 million eligibility checks.

According to ATF, one of the more common replication scenarios in a non-POC state occurs when the FFL submits a background check and the response is slow in coming. When the customer seems impatient, jeopardizing the sale, the FFL resends the check. Another scenario occurs when a customer’s application is denied and the customer persuades the FFL that “there must be a mistake” and the FFL responds by resubmitting the check.

Given the very low incidence of replicated checks by the non-POC states, adjusting the count of non-POC transactions processed for them would have no effect whatsoever on the overall NICS denial rate.

**Table 8. Discrepancies in NICS Checks**

NICS Checks with Identified Discrepancies by Type in Period 2/5/99-9/30/03 (N = 40,125,431)								
State	POC?	Check should not have been conducted	Duplicate checks being performed	FFL called in numerous checks on denied individuals	Modification of data in order to perform checks	Total Checks	Percent of Total	
Alabama	N	2	7	3	3	15		
Alaska	N	1	1	2		4		
Arizona	N	1	1			2		
Arkansas	N	3	4	1	3	11		
Delaware	N		1			1		
Idaho	N	3	3	1	1	8		
Indiana	N	2		2		4		
Kansas	N		1	1		2		
Kentucky	N	4	2	1	1	8		
Louisiana	N	4	5	1	4	14		
Maine	N	2	1	2		5		
Minnesota	N	3	10	2	2	17		
Mississippi	N	2	3	1	1	7		
Missouri	N	3	4			7		
Montana	N	1	1	4		6		
New Mexico	N	2	1	1	1	5		
North Dakota	N	1				1		
Ohio	N	4	5	2	2	13		
Oklahoma	N		4	3		7		
Puerto Rico	N		1	1		2		
Rhode Island	N			1		1		
South Carolina	N		3	1		4		
South Dakota	N		2			2		
Texas	N	8	20	9	7	44		
West Virginia	N		3	2	2	7		
Wyoming	N	1	1	2		4		
Subtotal Non-POC States		47	84	43	27	201		64.8%
Percent of Row		23.4%	41.8%	21.4%	13.4%	100.0%		
Florida	Y	1	7		1	9		
Iowa	Y	1			1	2		
Maryland	Y	1	6	1		8		
Michigan	Y	4	9	2	1	16		
Nebraska	Y	1	1			2		
New Hampshire	Y		2		1	3		
New York	Y	2	2	4	3	11		
North Carolina	Y	3	1	1	2	7		
Oregon	Y		1	1		2		
Tennessee	Y	1				1		
Washington	Y	2	6	8		16		
Wisconsin	Y	3	3	2	2	10		
Subtotal POC States		19	38	19	11	87		28.1%
Percent of Row		21.8%	43.7%	21.8%	12.6%	100.0%		
Unknown State	--	5	8	2	7	22		7.1%
Percent of Row		22.7%	36.4%	9.1%	31.8%	100.0%		
TOTAL		71	130	64	45	310		100.0%
Percent of Row		22.9%	41.9%	20.6%	14.5%	100.0%		

Sources: Bureau of Alcohol, Tobacco, Firearms and Explosives (USDOJ), FBI/NICS

## Recommendations

Two categories of recommendations are offered: near-term recommendations for alleviating the replications problem and a recommendation for further research.

### *Alleviating the Replications Problem*

Resolving the replications problem is the responsibility of both NICS and the POC states. Thus, a set of near-term *technical* and *procedural* recommendations is directed to both, as summarized in the matrix in Table 9.

## NICS Technical

Inasmuch as virtually all the input replications stem from spinning the prospective purchaser's name with various permutations, NICS could offer the states the opportunity to perform the spins with a single inquiry. The simplest approach would be to establish a menu of name-spinning options (e.g., flipping first and last names, reversing the sequence of a hyphenated surname) from which a POC can select one or more. This could be done either on a transaction-by-transaction basis, or globally to apply to all submissions. The selected options could be indicated by the state of a series of "software switches" as part of the character string comprising the POC-initiated search request message.

## NICS Procedural

If every state were required to submit a unique State Transaction Number with its submissions, as a number of state POCs already do, replicated STNs would be readily identifiable as they would have the signature of multiple NTNs corresponding to a single STN. If so, NICS would be able to compute the application count, along with the workload count, and there would be no need to estimate a conversion factor. A simple software "trap" would capture each incidence of a replication and a message could be returned to the submitting state indicating that a replication had been detected.

It should be noted that there is still room for error if a POC is unable to submit STNs or associates a newly-generated STN with a replicated check. However, NICS could readily develop a *replication detection algorithm*. Based on inputs such as date, time, name, date of birth, gender, type of purchase, and social security number (if furnished), the algorithm would compare checks to their recent predecessors from the same ORI. The elapsed time range over which the comparison takes place could be a "tunable parameter." Pursuant to a detection, NICS could send the state POC a "notice of possible replication" message which the POC could then confirm or deny.

## POC Technical

For the POCs, the most important area of technical improvement is in repairing the system bugs and remedying the system design and/or implementation deficiencies which adversely impact operations. At the simplest level, faulty hardware should be replaced. To the extent that software patches or perhaps development of new code eliminates the incidence of glitches such as database loading, they should be implemented. Of course, reducing unavailability (i.e., increasing "uptime") of the state or local databases that the POCs search is an important consideration. For those states that employ either POS- or browser-based automated instacheck systems, eliminating system crashes may serve to reduce the incidence of replications.

## POC Procedural

If a POC's instant check system currently fails to retain the results of initial checks, causing replications to be generated by definition with every follow-up eligibility check, in the longer term the POC's system should be modified to capture and retain that information. In the near term, a hard copy of every original check's results should be printed and retained in a readily accessible location.

Finally, if the state generates its STN at the time the query results are returned, by definition it cannot be submitted to NICS with the original check. Modifying this procedure so that an STN is assigned when the initial check is spawned would allow it to become part of the NICS search request.

**Table 9. Recommendations Matrix**

		Type of Recommendation	
		Technical	Procedural
<b>Focus of Recommendation</b>	<b>NICS</b>	Develop menu of options that determine how submitted names will be processed by NICS <ul style="list-style-type: none"> <li>* Options address all common "name-spinning" variations</li> <li>* POCs can select options by individual transaction or globally (i.e., one time)</li> <li>* Implement selections through "software switches" in the POC-initiated NICS search request message</li> </ul>	Require POC states to submit unique state transaction numbers <ul style="list-style-type: none"> <li>* Some POC state already do so</li> <li>* By identifying replicated checks, NICS can maintain dual transaction counts (i.e., "workload" and "application" counts)</li> </ul>
	<b>POC</b>	Repair bugs and remedy software and/or system design deficiencies <ul style="list-style-type: none"> <li>* Replace faulty hardware</li> <li>* Develop software patches or write new code to eliminate database loading problems</li> <li>* Reduce instances of state automated instacheck system crashes</li> </ul>	Modify procedures to reduce incidence of replicated checks <ul style="list-style-type: none"> <li>* If replicated checks are submitted when check is rerun--and the results of the original check are not on-line--generate a hard copy of the original check and retain it pending a final decision</li> <li>* Generate the STN at the time the check is spawned rather than at the time the results are returned</li> </ul>

*Directions for Further Research*

The key finding of this study, that the number of POC state initiated firearm eligibility checks reported by NICS is overstated by 35 percent, raises a number of important research questions. These include but are not limited to:

1. Do the 35 percent replications impact the POC workload in regard to (a) generating the replications in the first place and (b) checking and researching the federal and/or state file hits resulting from the replications?
2. Do the 35 percent replications increase the number of denied persons?

3. If so, what is the cost-benefit of the resultant increase?
4. If there is a significant cost-benefit, how can the replications be automated within the NICS system?