



# Why the Evolution of the Firearms Industry Necessitates Digital Records Management

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## SUMMARY

Firearms manufacturing and ownership have a long history in the United States. It's difficult to separate the evolution of the gun industry from the development of the American identity. As firearms have become more sophisticated, laws pertaining to gun ownership and gun control have grown.

The exact number of individual gun laws in the United States is disputed. For most of our history, gun laws have been enacted at the local or state level, with the first national law passed in 1934. With those laws come recordkeeping requirements. The Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) currently has [32 forms](#) available for download on its website.

This white paper explores the evolution and growth of the firearms industry, along with its corresponding regulations and requirements, and shows how that growth has led to multiple ways of processing and retaining firearms records. It concludes by taking a practical look at employing digital technology to manage and protect these records.

## INTRODUCTION

“More guns were purchased in 2020 than at any other point in American history, with Americans buying more than 16.5 million guns, 1.6 million more than they purchased in 2016, the last record year.” ([source](#))

In order to estimate the number of guns purchased, most reports look at the number of NICS background checks. That number is going to be higher than the number of guns sold, while at the same time having a strong correlation with it. (Figure 4)

Number of Background Checks and Firearms Sold, 2016 - 2020 (Oct)

Year	Background Checks	Firearms Sold
2016	27,500,000	16,600,000
2017	25,200,000	14,000,000
2018	26,100,000	13,100,000
2019	28,400,000	13,900,000
<a href="#">As of 10/31/20</a>	32,100,000	18,600,000

**Firearm sales have seen a large spike in 2020 due to concerns about COVID-19 lockdowns, riots, protests, and the possibility of restrictions on gun ownership during a new presidential administration.**

With the spike in sales, there is a corresponding spike in background checks and ATF form processing. Completing and storing hard copies of these paper records is inefficient and leaves the records open to security risks. A better way of completing and storing firearms sales records is needed to protect privacy, keep data secure, create an audit trail, and protect the records in the event of a disaster.

## BACKGROUND

### Timeline of Firearms Manufacturing in the United States

The first armory in the United States was founded in 1777 in Springfield, Massachusetts in order to supply weapons to the revolutionary army. "At first the armory stored ammunition and gun carriages, but by the 1790s the armory began to manufacture muskets and eventually other guns." ([source](#))

1795: The Springfield Armory manufactured the first musket produced in the United States.

1804-1806: Lewis and Clark carried an American-made version of the Girandoni repeating air rifle (invented in 1779 in Italy by Bartholomaeus Girandoni ) on their famous expedition to find a land route to the Pacific Ocean.

1816: Eliphalet Remington built his first flintlock rifle in 1816. E. Remington and Sons was formed in 1840 and has officially been in business for 180 years. They supplied ammunition for the Civil War, WW1 and WW2. In 2017, they were the second largest gun manufacturer in the United States by sales volume.

1836: Samuel Colt secured a patent for the revolver in 1836 and opened the Colt Patent Firearms Manufacturing Company. It was the first commercially available revolving cylinder pistol and became one of the most popular firearm choices in history. ([source](#))

1856: Smith & Wesson company formed. Horace Smith and Daniel Baird Wesson manufactured repeating firearms and the company became known for the Model 27, Model 29, and later the 357 Magnum. In 2017, they were the largest gun manufacturer in the United States by sales volume.

During and after the Civil War, innovations in the firearms industry multiplied.

1865: The first machine gun was patented by Richard Jordan Gatling and officially adopted by the United States Army in 1866. ([source](#))

1866: The Winchester Repeating Arms company was founded by Oliver Winchester. The Winchester rifle achieved resounding success and was owned and loved by Buffalo Bill Cody and Theodore Roosevelt.

### Gun Timeline

1795:  
Springfield Armory  
Musket

1804:  
Girandoni Repeating  
Air Rifle

1816:  
Remington Flintlock  
Rifle

1836:  
Colt Revolver

1856:  
Smith & Wesson  
Repeating Firearm

1865:  
Gatling Machine Gun

1866:  
Winchester Rifle

1899:  
Savage Model 99  
Hunting Rifle

1921:  
Thompson  
Submachine Gun  
"Tommy Gun"

1947: AK-47 Assault  
Rifle

1878: Browning Arms Company founded by John and Matthew Browning. In 1979, John Moses Browning was awarded his first firearm patent. He would go on to get 127 more.

1899: The Savage Model 99, the iconic deer hunting rifle, is patented by Arthur Savage. It was a lever action rifle, had a rotary magazine, could fire pointed bullets, and was known for its accuracy. More than 1 million rifles were manufactured during the company's 99 year history.

1921: John Taliaferro Thompson takes his Thompson Submachine Gun to market. In the 1920s and 1930s, the "Tommy Gun" became the weapon of choice for both lawmen and gangsters. Thompson died in 1940 and didn't live long enough to see his invention play a large part in winning World War II for the allies.

1947: The AK-47 is developed and manufactured for the Soviet military. It's effectiveness led to the production of the M-16 in the United States. The M-16 can fire up to 900 rounds a minute.

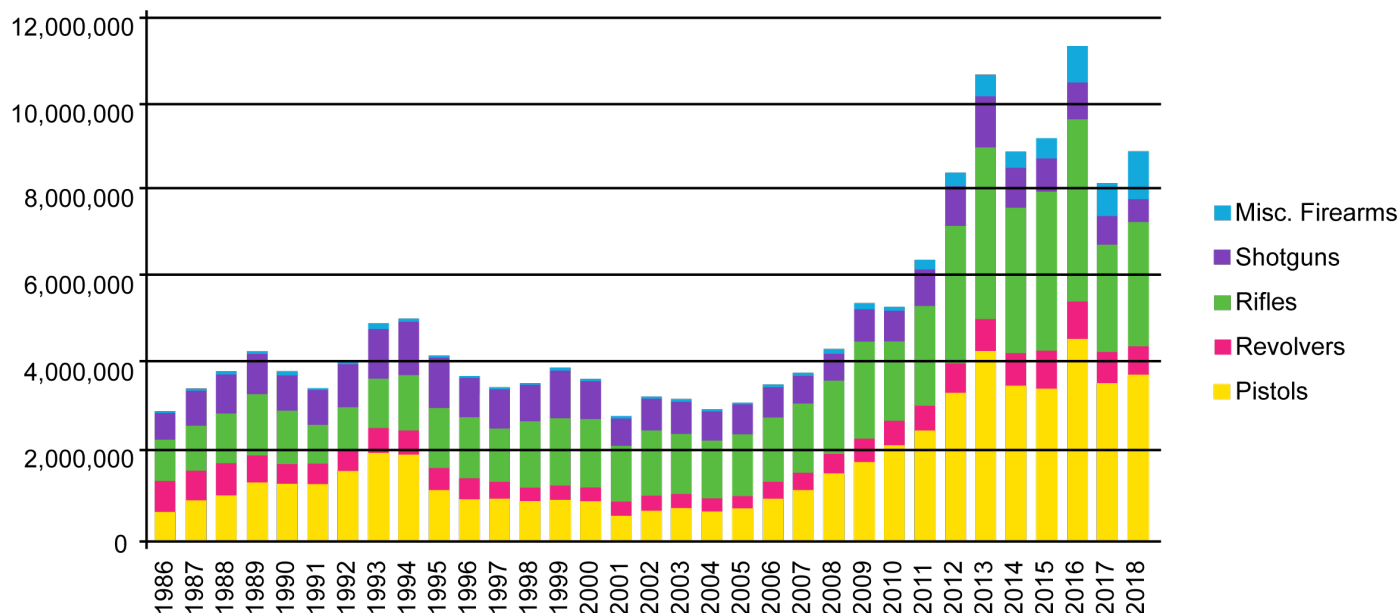
1949: Sturm, Ruger, & Company is founded in Connecticut. The company is still in business, manufacturing their popular handguns and rifles. As of 2017, they were the third largest manufacturer of firearms in the United States by sales volume.

1979: Kimber Manufacturing is founded in New York. They are known for their high-end revolvers and the Micro 9 line of concealed carry handguns. They recently relocated to Troy, Alabama for its access to engineering talent, 2A friendly community, and business-friendly city leadership. ([Source](#))

1985: Ultra Light Arms (ULA) founded by Melvin Forbes. He had developed a bolt-action rifle that weighed less than five pounds. The stock is made of Kevlar. After many ups and downs over the years, including being purchased by Colt before they went bankrupt, the company is back in business as New Ultra Light Arms ([NULA](#)).

See Figure 1 for the number of firearms manufactured between 1986 and 2018.

source: ATF **Figure 1: Firearms Manufactured (1986-2018)**



## **GUN LAWS IN THE UNITED STATES**

During the colonial period and in the early days of the new republic, guns were a necessary part of daily life. They were used for hunting and for protecting people and livestock as the nation expanded westward. The founding fathers of the United States codified the right to bear arms into the 2nd amendment of the Bill of Rights.

Prior to the 20th century, gun laws were primarily concerned with hunting and arming a militia. It was the responsibility of the state to regulate weapons, which meant that there were hundreds of laws in dozens of categories, including brandishing, dueling, carrying, and firing. ([source](#))

It wasn't until the 20th century that the first significant national gun law was passed in 1934. The National Firearms Act of 1934 (NFA) was enacted in response to the rise of organized crime during the depression. It imposed a tax on manufacturing, purchasing, and transporting specific firearms, such as machine guns, which were popular with criminal organizations.

A few years later, in 1938, The Federal Firearms Act (FFA) was passed. This act required gun manufacturers and sellers to obtain a license and the Federal Firearms License (FFL) was born. The FFA was later repealed by the Gun Control Act of 1968.

The 1968 Gun Control Act was passed in response to the assassinations of John F. Kennedy, Martin Luther King Jr., and Robert F. Kennedy. It "led to the rise of the Federal Firearms License for dealers and manufacturers of firearms, banned mail-order firearm sales, required serial numbers on all guns, and prohibited interstate handgun sales." ([source](#)) It also imposed restrictions on gun ownership: buyers had to be at least 21 year old and could not be a convicted felon or mentally ill.

The Firearm Owners Protection Act was passed in 1986 for the purpose of protecting gun owners. It prohibited a national registry of dealer records, limited ATF inspections, allowed FFLs to sell at gun shows in their state.

In 1981, James Brady was wounded and permanently disabled during the attempted assassination of President Ronald Reagan by the mentally ill John Hinckley Jr. Twelve years later, The Brady Handgun Violence Prevention Act of 1993 amended the Gun Control Act of 1968 to require background checks before a gun can be purchased. It established the NICS which is overseen by the FBI.

In 1994, Utah enacted the first "Stand Your Ground" Law in the United States ([source](#)). Stand your ground laws remove any "duty to retreat" before resorting to deadly force. They currently exist in 25 states. ([source](#))

## **FIREARM SALES IN THE UNITED STATES**

Most firearms in the United States are sold by licensed gun dealers. Transactions can be initiated either in person or online, but online purchases must be delivered to someone with a Federal Firearms License, who then conducts the background check and delivers the firearm to the customer if approved. Some FFLs work out of their home, but most work through a retail outlet such as a local gun shop, a pawn shop, or a large retailer.

According to the Gun Control Act of 1968, retail gun dealers are people who earn their livelihood through a regular course of trade in firearms. It does not include those who make “occasional sales, exchanges, or purchases of firearms for the enhancement of a personal collection or for a hobby, or who sells all or part of his personal collection of firearms.”

### **Local Brick and Mortar Gun Stores**

Until this year, the oldest gun store in America was the John Jovino Gun Shop in Manhattan. Before succumbing to financial hardships in 2020, it had been open since 1911. Today, the number of brick and mortar gun stores in America is hard to estimate because everyone who has an FFL doesn't also have a physical retail location.

Local gun store owners offer a level of service and oversight that can't be matched by other retailers. They often have loyal, repeat customers. They have a pulse on the local community and are a source of expertise for hunters, marksmen, and people buying their first gun. They also often serve as a delivery channel for firearms that have been purchased online.

### **Pawn Shops**

Pawn shops have been around for at least 3,000 years and it is believed they originated in China as a way of offering short-term credit to peasants. “In the past 100 years, the number of pawn shops has skyrocketed in the United States. During the Great Depression era, pawn shops were among the only institutions offering cash as banks failed and people were forced to give up their cherished items to make ends meet. Today...pawn shops are still a primary place people can go to turn their items into cash.” ([source](#))

Surprisingly, firearms are seldom pawned and make up only about 2.5% of the average pawn shop inventory. Possessions that most often find their way into pawn shops are electronics, antiques, and tools. However, guns are the third most valuable item pawned, behind diamond rings and Apple Macbooks, and their rate of depreciation is much lower than electronics. ([source](#)) Pawnbrokers have a separate classification of FFL and are a small minority of total FFLs.

### **Large Retailers**

Large retailers include stores like Cabela's, Walmart, and Dick's Sporting Goods. Walmart estimates that they represent about 2% of the firearms market. In October, 2020 this largest retail chain in America announced that it had removed gun and ammunition displays from thousands of its stores. Dick's Sporting Goods and Fred Meyer have also changed the way they sell firearms in recent years, while retailers such as Bass, Gander, and Big 5 have not significantly changed the way they display and sell guns.

## **THE GROWTH OF DIGITAL RECORDS MANAGEMENT**

About the same time that Samuel Colt secured a patent for his revolver, Charles Babbage was proposing the analytical engine, a mechanical general purpose computer. A hundred years later, the AK-47 appeared on the scene during the same period that random access memory was invented. A mere 20 years after that, cloud computing was born with development of ARPANET, just two years before the 1968 Gun Control Act was passed.



As the firearms industry and gun legislation grew to require more data and recordkeeping, technology grew right alongside it. As technology grew, so did business uses and applications. In [Recommendations For An Electronic Records Management System](#), by Landis and Royce (1995), the following requirements are summarized:

“Ideal ‘recordkeeping systems capture, maintain, and access’ transactional evidence in a way that is compliant with organizational and external legal requirements, as well as with industry ‘best practice’ standards. Such systems must be accurately documented and managed; fully implemented; and create complete, reliable, and unique records of all transactions. The content, structure, and context of records maintained by such systems should be meaningful and their longevity safeguarded by the system, which must also track all uses of and alterations to the records. Finally, records must be easily transported across systems without endangering either content, structure, or context, and must be readily retrievable in original or edited versions, or with a complete history of all transactions involving the record after the initial one in which it was created.”

In the early days of digital technology development, only a few visionaries were able to foresee the situation as it is in 2020. Yet, the requirements are the same today as they were in 1995: accurate documentation, easy transport across systems, unique transactions, system safeguards, and an audit trail.

Three industries have set the standard for digital records management: health, government, and finance. Each of these industries have a large, complex ecosystem of protocols for compliance. From them we can extrapolate standards for the completion, storage, and retrieval of digital records. These standards fall into six categories: capture, maintenance and use, disposal, transfer, metadata, and reporting.

**Capture.** Capture involves scanning or digitizing records so that they can be stored in a database. Metadata is assigned at the time of capture to classify the information so that it can be retrieved when necessary. Mobile devices and kiosks are two examples of devices that enable the automatic transmission of a completed form into electronic storage. An example of this in healthcare is when a patient checks in for an appointment on a tablet that takes them screen by screen through the process. Capture needs to be intuitive for the user and result in an error-free record.

**Maintenance and Use.** This section addresses the responsibilities and permissions for maintaining the record database and using its contents. Standards are developed for reading and processing records, content of the records, inputs and outputs, restrictions on access and use, and governance. Financial electronic record databases have extensive documentation on the maintenance and use of their files in order to prevent unauthorized access and alteration. Encryption and password protection are important parts of this section.

**Disposal.** Record destruction and disposal must be well documented. There are often regulations about how long a record must be kept before it can be disposed of. For example, firearm sales records are required to be kept for 20 years before they can be destroyed. If a gun shop owner sells his business, he’s required to transfer the records to the ATF. A digital system of record storage must account for these regulations so that the users of the system are always in compliance.

**Transfer.** In addition to the example above, there are other reasons why records may need to be transferred. A common example is when health records need to be transferred between healthcare



providers. Protocols must ensure confidentiality and security of permanent electronic records. Encryption is used in these circumstances.

Metadata. Metadata is used to describe a record and its relationships with other records. It allows users to locate and retrieve data quickly and accurately. For this to happen, records must be properly identified and described at the point of capture using a structured format and controlled vocabulary. The proper implementation of metadata is critical to protecting the integrity of digital records.

Reporting. Accurate reporting is necessary for regulatory audits (accounting), freedom of information requests (government records), and condition diagnosis (healthcare). Digital recordkeeping requires reporting capabilities that protect privacy and ensure accuracy, both of which are important in the firearms industry.

Digital records management allows for multiple uses in a variety of contexts, including protecting the confidentiality of records, presenting them as evidence, providing authorized access to the records, preserving them, and/or destroying them. These uses can only be accomplished with a robustly designed system.

## REQUIRED FIREARMS RECORD FORMS

The GCA requires FFLs to create and maintain records of gun purchases. The ATF is responsible for enforcing the recordkeeping laws. They accomplish this by requiring that certain forms be completed, by requiring background checks, and by auditing compliance with recordkeeping. FFLs with a type 01 (dealer) or type 02 (pawnbroker) need to create and maintain the following records.

Acquisition & Disposition Record. Retained for 20 years.

ATF Form 4473 – Transfer Occurred. Retained for 20 years.

ATF Form 4473 – Transfer Did Not Occur. Retained for 5 years.

ATF Form 3310.4 – Report of Multiple Sale or Other Disposition of Pistols and Revolvers. Retained for 5 years.

ATF Form 3310.12 – Report of Multiple Sale or Other Disposition of Certain Rifles

ATF Form 3310.11 – Theft/Loss Report. Retained for 5 years.

Transacting in NFA Items. Retained for 20 years. (Figure 2)

ATF Form 1 (5320.1) – Application to Make and Register a Firearm

ATF Form 2 (5320.2) – Notice of Firearms Manufactured or Imported

ATF Form 3 (5320.3) – Application for Tax-Exempt Transfer and Registration

ATF Form 4 (5320.4) – Application for Tax Paid Transfer and Registration

ATF Form 5 (5320.5) – Application for Tax-Exempt Transfer and Registration

## CONCLUSION

Like the healthcare industry, **the firearms industry needs recordkeeping that takes everything online, simplifies it, and makes it error-free.** Paper records are still the industry standard for gun retailers, despite the difficulties of maintaining privacy, confidentiality, and accuracy. The ATF's 20-year record retention requirement creates logistics problems with storage, transfer, and security. Furthermore, ATF audits of paper records are more time consuming for both the shop owner and the agent.

While offering many advantages, an electronic system of capture and storage must comply with ATF requirements. For example, when a firearms retailer can show that they have met all of the requirements for Form 4473 specifically, they're issued a variance. The minimum standards for an ATF variance contain 12 separate requirements, including completing the form entirely in a digital environment, saving it in an unalterable format and backing it up during and at the completion of the transaction, and providing ATF with uninterrupted access to the system in "read only" capacity. A complete list of requirements can be found on their [website](#).

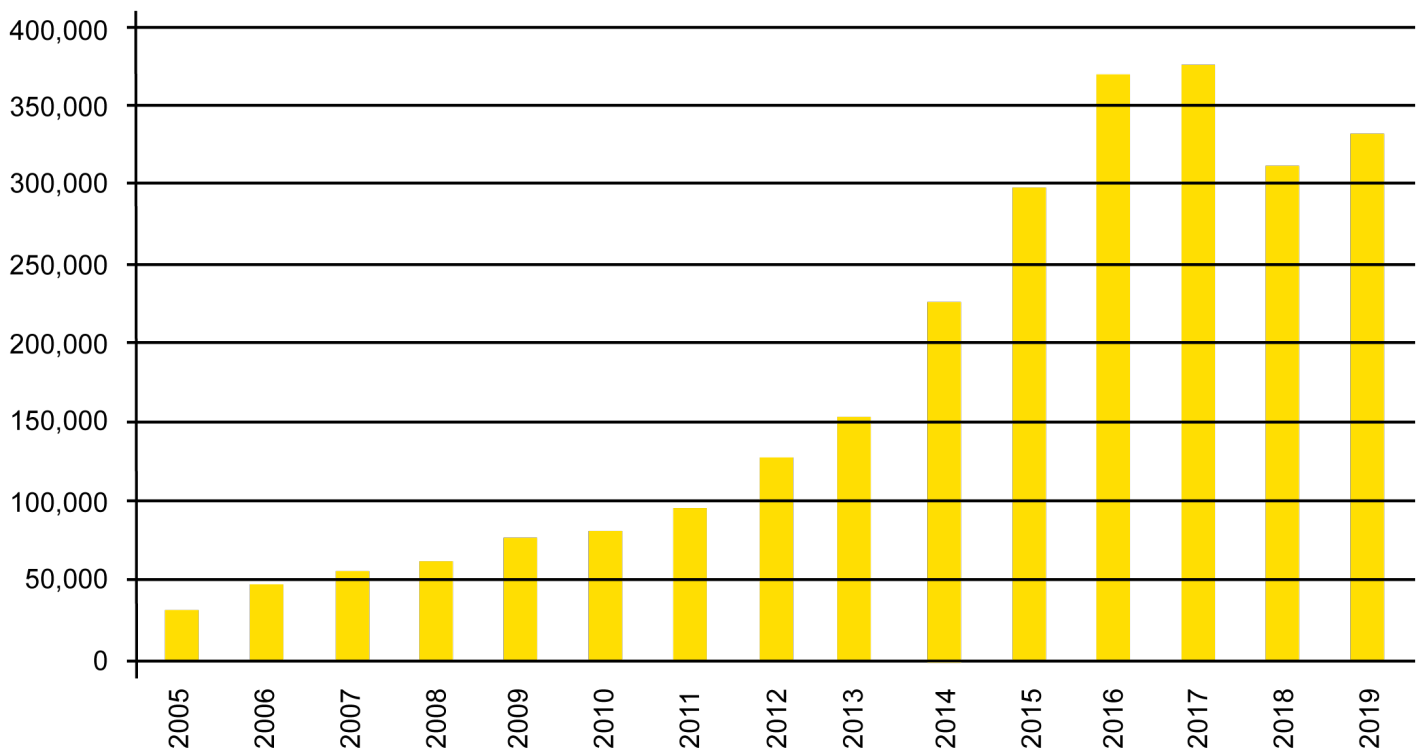
In addition to what is required by statute, there are user experience requirements that contribute to the reliability of the system. There needs to be multi-user capability so many users can all be on the system at the same time without errors or timeouts. Forms must be accessible anywhere, anytime, and on any device. It must be error-proof, with form fields verified and validated, questions displayed with definitions and exceptions, and alerts for improper answers.

Finally, the system must ensure 100% compliance. This can be accomplished with protections such as strong login and password systems using dual factor authentication, multi-tier data security protocols, and encryption of completed forms. When complete, transaction records need to be stored digitally with all attachments until authorized access is required.

### ABOUT E4473

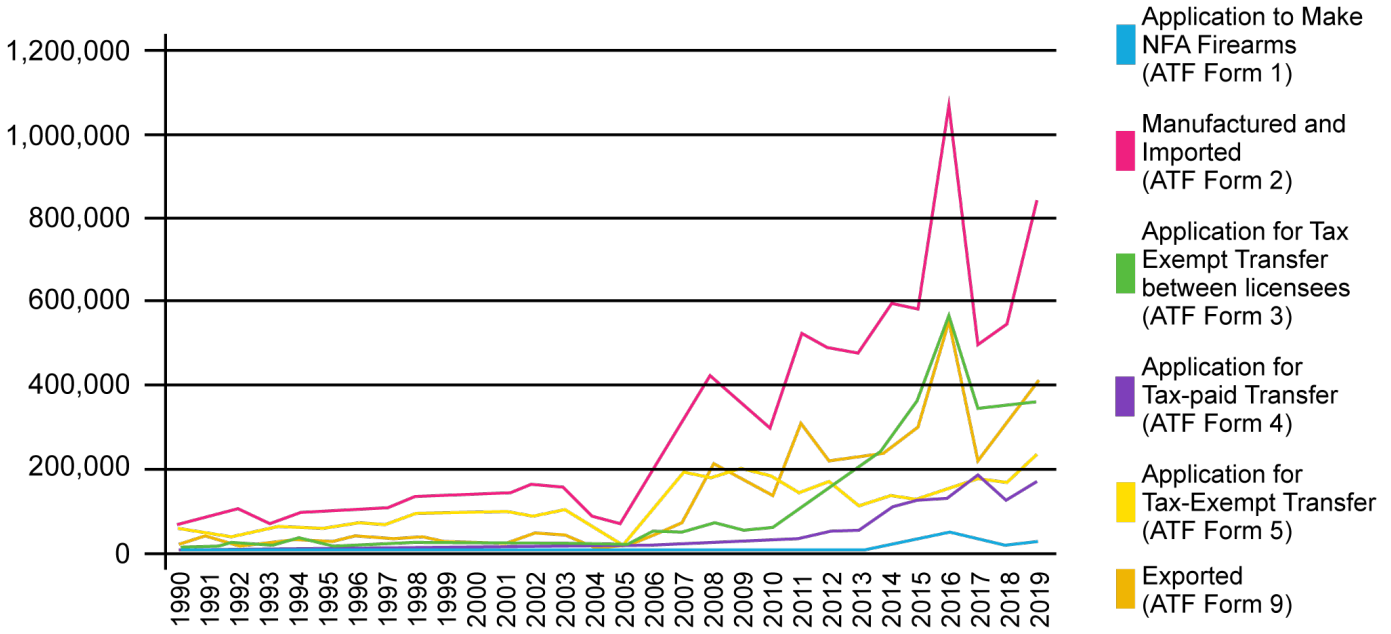
At E4473, we understand the serious responsibility that comes with each firearm sale. E4473 is a solution that prevents errors and increases the security of each transaction and offers a safer way to buy and sell guns. We have years of experience working with gun store owners and a passion for the firearms industry. We take every firearm sale seriously and support the right and responsibility to own firearms.

source: ATF **Figure 2: Number of NFA Forms Processed by Fiscal Year**



source: ATF

### Figure 3: National Firearms Act Firearms Processed by Form Type (1990-2019)



### Figure 4: Google Search Trends and Background Checks

Google searches for guns closely track number of background checks conducted by FBI

Monthly U.S. Google gun search activity and background checks

source: Pew Research

