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Border Security Metrics Between Ports of Entry

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Summary

Understanding the risks present at the U.S. borders and developing methods to measure border security are key challenges for the Department of Homeland Security (DHS) and the U.S. Border Patrol, the agency within DHS charged with securing the border between ports of entry. Metrics for border security are used at both the strategic level, by DHS, and at the operational level by Customs and Border Protection (Border Patrol). This report reviews DHS's and the Border Patrol's use of metrics in evaluating their objective to secure the border between ports of entry. DHS and the Border Patrol can use metrics to measure their performance and estimate risks at the border. Additionally, metrics provide Congress with an understanding of DHS's and Border Patrol's progress in securing the border.

At a strategic level, DHS uses performance metrics to understand its ability to meet border security objectives. However, DHS has struggled to create a comprehensive measure of border security. Most recently, DHS has labored to create a new generation of performance metrics, through the estimation of unauthorized entry of migrants into the United States. This measure represents the volume of migration entering the United States and can be influenced by factors outside of DHS's control, and therefore may not directly speak on border security. Congress may want to consider whether this is an adequate performance metric for border security and whether additional and/or more comprehensive and targeted metrics are required.

DHS's Annual Performance Report for FY2014-FY2016 reported two other performance metrics used to measure its progress in securing the border. First, the percentage of people apprehended multiple times along the Southwest border, or the recidivism rate, is used to capture the ability of the Border Patrol to deter migrants from re-entering the United States. Second, the rate of interdiction effectiveness along the Southwest border between ports of entry, or the effectiveness rate, measures the Border Patrol's ability to apprehend unauthorized migrants.

In the past, DHS has used several different performance metrics. For example, from 2001 to 2004, DHS, and the former Immigration and Naturalization Service (INS), used optimum deterrence as a measure for border security, defining it as the level where applying more border security would not significantly increase apprehensions or deterrence. In 2005, DHS began to use operational control as a new measure, describing it as the miles along the border where the Border Patrol had the ability to detect, identify, respond to, and interdict cross-border unauthorized activity. When operational control was retired as a metric, migrant apprehensions became the interim measure for border security from 2011 to 2013.

At an operational level, the Border Patrol uses metrics within its risk assessments. The estimation of risk at the sector level assists the Border Patrol in making day-to-day decisions with regard to how to best align its resources against different threats. The agency determines risk through its "State of the Border Risk Methodology." A secured border is characterized as low risk. The Border Patrol's methodology estimates the magnitude of risk by gathering and understanding intelligence information, developing a detailed awareness of threats at the border, and applying a standardized measurement of risk. These assessments are not used as metrics themselves. However, the Border Patrol's methodology monitors certain metrics at the sector level, such as the recidivist rate and effectiveness rate, which may be able to speak to the Border Patrol's performance.

Metrics can provide an understanding of the state of the border. In reviewing border security metrics, Congress may be interested in issues surrounding the oversight of DHS's measurement practices, the determination of acceptable levels of risk for each metric, and the implementation of strategic and operational metrics and how they relate to one another. Moreover, Congress may

consider how metrics can be used to inform decisions on expenditures and whether additional data and methodologies are needed to provide a more holistic view of border issues. Lastly, with migrant demographics shifting and some transit countries conducting their own enforcement of unauthorized migration, Congress may consider how these practices affect data and outcomes and what can be done to account for these changes.

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Introduction

U.S. borders are complex. They feature varied terrain, where disparate threats are met with varying levels of federal surveillance and resource allocation. Customs and Border Protection (CBP), within the Department of Homeland Security (DHS), is tasked with securing America's borders and promoting legitimate trade and travel. Within CBP, the U.S. Border Patrol (Border Patrol) is charged with securing the border between ports of entry. A reoccurring challenge for DHS and the Border Patrol has been establishing what a secure border means. Their efforts to develop a measure for this have created a continual evolution of metrics.[1] Metrics can describe important phenomena, such as an estimate of how many unauthorized migrants enter the United States every year and what proportion is apprehended by the Border Patrol. These data can help evaluate the effectiveness of border security, influence decisionmaking, and inform Congress and the public.

CBP has stated that "securing our borders means first having the visibility to see what is happening on our border, and second, having the capacity to respond to what we see."[2] Furthermore, "Border Patrol characterizes a secure border as one of low risk, where there is a high probability of detection coupled with a high probability of interdiction."[3] Border security can be assessed at both the strategic and operational levels. At the strategic level, DHS can use performance metrics to provide understanding on whether efforts to secure the border are effective or efficient. These metrics also hold DHS and its components accountable and can affect its decisionmaking. At the operational level, Border Patrol uses the identification of risk and the estimation of its magnitude in its day-to-day operations to secure the border. Such assessment helps the Border Patrol align its resources against specific threats and can help describe how secure a border sector[4] is. It is unclear whether metrics at these two levels interact with one another and if they do, how they influence or affect one another.

Understanding the security risks at the border and developing methods to measure the performance of the Border Patrol in allaying these risks are fundamental to congressional oversight of the Border Patrol, CBP, and DHS more broadly. Some Members of Congress have asked for a clear measure of how many unauthorized migrants cross the border and/or of the overall state of border security.[5] However, determining unauthorized border flows is difficult for many reasons, such as unauthorized migrants' desire to avoid detection. Still, metrics, at both the strategic and operational levels, ideally provide Congress with a sense of the current state of the

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[1] Experts have suggested that performance metrics should be understandable; created through objective methodologies that have scientific consensus; derived from valid data; and timely, actionable, and stable over time. Bryan Roberts, *Measuring the Metrics: Grading the Government on Immigration Enforcement*, Bipartisan Policy Center, February 2015.

[2] U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, *Border Security: Frontline Perspectives on Progress and Remaining Challenges*, testimony of U.S. Border Patrol Chief Michael Fisher and Office of Field Operations Acting Assistant Commissioner Kevin McAleenan, 113th Cong., 1st sess., April 10, 2013.

[3] Robert D. Schroeder, *Holding the Line in the 21st Century*, U.S. Customs and Border Protection, 2014, https://www.cbp.gov/sites/default/files/documents/Holding%20the%20Line_TRILOGY.pdf.

[4] The Border Patrol divides the U.S. borders into geographic regions called sectors. There are a total of 20 border sectors (3 coastal border sectors, 8 Northern border sectors, and 9 Southwest border sectors.) For more information on each sector, see https://www.cbp.gov/border-security/along-us-borders/border-patrol-sectors.

[5] See, for example, U.S. Congress, House Committee on Homeland Security, Subcommittee on Borders and Maritime Security, *Measuring Outcomes to Understand the State of Border Security*, 113th Congress, 1st sess., March 20, 2013; U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, *Border Security: Measuring Progress and Addressing the Challenges*, 113th Congress, 1st sess., March 14, 2013.

border that helps inform public debate and possible legislation. For example, in past discussions around comprehensive immigration reform, some have said that legislation must include measures to increase border security, while others have urged that the border first be secured before other immigration reforms take place.[6]

This report reviews the use of metrics at the department (i.e., DHS) and agency level (i.e., CBP[7]).[8] The report begins by describing the performance metrics at the strategic level that DHS is developing (the level of unauthorized entry of migrants) and has used (the recidivist rate and the effectiveness rate). Next, the report summarizes DHS's, and the former Immigration and Naturalization Service's (INS's), use of metrics since the early 2000s. The report also addresses the Border Patrol's metrics at the operational level. It concludes with a discussion of select issues Congress may consider when evaluating measures of border security. The **Appendix** includes information on additional data and methodologies that have been reviewed or recommended by scholars and think tanks.

Performance Metrics[9]

DHS's, and the former INS's, efforts in developing different performance metrics at the strategic level to depict the state of the border have resulted in an array of measures that focus either on border security as a whole or on a component of it (**Figure 1**). Over time, performance metrics have come and gone, offering little continuity and opportunity for historical assessment. In recent years, DHS has been developing a new measure to estimate unauthorized entry of migrants into the United States.[10] While DHS has shown intent to continually improve its measurement of border security, this new metric is subject to influence by external factors[11] that are outside of the control of DHS and may not directly measure border security.

DHS currently reports the recidivism rate and the rate of interdiction effectiveness.[12] These measures, though subject to limitations, are meant to estimate the Border Patrol's effectiveness in apprehending migrants and deterring migrants from re-entering the United States. DHS's continual re-evaluation of its performance metrics has created a history of past metrics that have either attempted to comprehensively measure border security, such as optimal deterrence[13] and operational control,[14] or have reported only single metrics, such as apprehensions.[15]

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[6] Pew Research Center, '*Borders First' a Dividing Line in Immigration Debate*, June 23, 2013, http://www.people-press.org/2013/06/23/borders-first-a-dividing-line-in-immigration-debate/.

[7] Throughout this report CBP and the Border Patrol are used interchangeably.

[8] For the purposes of this report, border security metrics will focus on measures of migrants crossing or attempting to cross the border. The report will not include a discussion of metrics describing illicit contraband (e.g., weapons and drugs) or criminal organizations.

[9] Data and information for this section were gathered through briefings conducted by DHS's Congressional Affairs (October 13, 2015 and November 9, 2015) and DHS's annual performance reports.

[10] U.S. Department of Homeland Security, briefing conducted for CRS, October 13, 2015.

[11] For example, some external factors include the changes in the source and receiving countries' economy, demographics, and political climate.

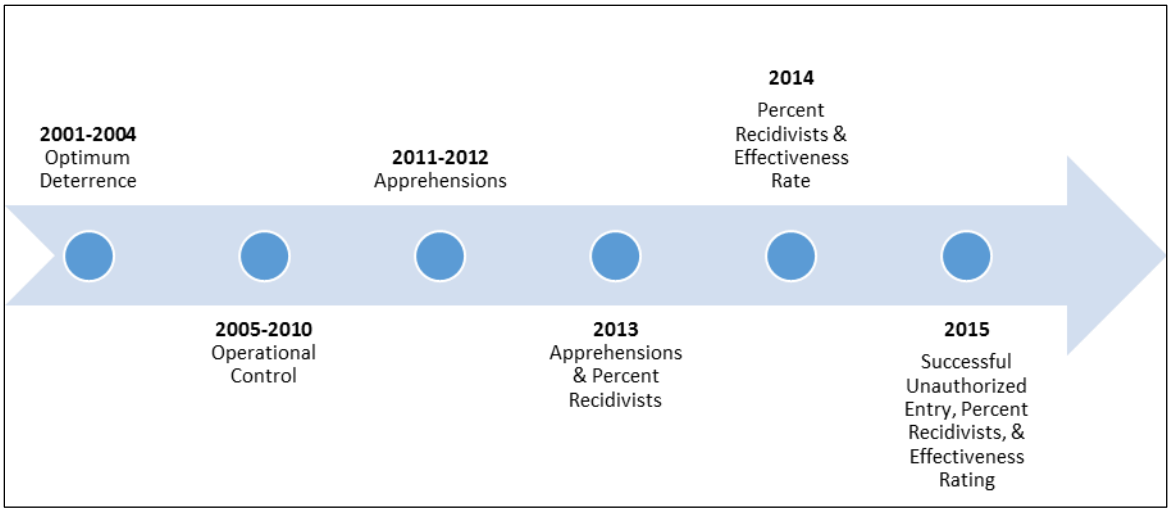
[12] See U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2015-2017*, February 9, 2016.

[13] See "Past Measures" for definitions.

[14] Ibid.

[15] Ibid.

Figure 1.Border Security Performance Metrics, FY2001-FY2015



Source: CRS representation of information provided by Department of Justice, *Fiscal Year 2000 Performance Report and Fiscal Year 2002 Performance Plan*, April 2001; U.S. Department of Homeland Security, performance and accountability reports for FY2003-FY2006; U.S. Department of Homeland Security, annual performance reports for FY2007-FY2017.

Notes: For FY2015, Successful Unauthorized Entry represents a metric that was under development that year but not yet reported in the DHS Annual Performance Report for FY2015-FY2017.

Recent Efforts at DHS[16]

DHS has been working to create a new generation of performance metrics in an effort to better measure border security at the strategic level. For instance, in 2011 DHS announced that CBP was developing a new "border conditions index" (BCI),[17] which would have included measures of estimated unauthorized flows between ports of entry, wait times to cross the border at ports of entry, the efficiency of legal flows at ports of entry, public safety, and quality of life in border regions. In 2013, DHS officials determined that the BCI would not satisfy the demands for a single comprehensive measure of border security[18] and discontinued its development.[19]

Abandoning efforts to establish a single, comprehensive measure of border security, in FY2015 DHS began to develop a means of estimating another component of border security: the level of unauthorized entry into the United States.[20] The measure would only cover migration, not drug smuggling or other security concerns.[21] It appears that DHS opted to fashion what may be a

[16] Data and information for this section were gathered, in part, through briefings conducted by DHS's Congressional Affairs on October 13, 2015, and November 9, 2015.

[17] U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, *Securing the Border: Progress at the Federal Level*, testimony of Secretary of Homeland Security Janet Napolitano, 112th Cong., 1st sess., May 4, 2011.

[18] Assistant Commissioner of Homeland Security Mark Borkowski stated that BCI was meant to be *part* of a set of information used to advise the agency on "where we are and most importantly, what the trends are." U.S. Congress, House Committee on Homeland Security, Subcommittee on Borders and Maritime Security, *Measuring Outcomes to Understand the State of Border Security*, testimony of Assistant Commissioner of Homeland Security Mark Borkowski, 113th Congress, 1st sess., March 20, 2013.

[19] U.S. Department of Homeland Security, briefing conducted for CRS, November 9, 2015.

[20] Ibid.

[21] DHS has performance measures that examine illicit activities, such as drug smuggling. For more information see

baseline figure upon which it can build broader, more nuanced estimates of performance. Through the use of this metric, DHS hopes to inform its strategic efforts and decisionmaking, while also informing the public and Congress.[22]

Level of Unauthorized Entry of Migrants

According to DHS officials, the agency has begun efforts to estimate the level of unauthorized entry of migrants into the United States.[23] DHS commissioned the Institute for Defense Analyses (IDA) to produce a baseline estimate for this new metric through the use of the repeated trials method (RTM), also known as the capture-recapture method.[24] The basic model calculates the probability of apprehension by examining a group of migrants who have been apprehended and removed previously, with the assumption that the migrant will continue to attempt crossing the border.[25]

The probability of apprehension for a given trip is calculated as:

$$\textbf{\textit{Probability of Apprehension}} = \frac{\textbf{\textit{Migrants Re-apprehended}}}{\textbf{\textit{Total Initial Apprehensions}}}$$

The probability of apprehension can then be used to estimate the level of unauthorized entry by:

$$\textbf{\textit{Total Unauthorized Inflow}} = \frac{\textbf{\textit{Total Apprehensions}}}{\textbf{\textit{Probability of Apprehension}}}$$

An advantage of RTM is that it relies on observable administrative enforcement data—apprehensions and recidivists—to calculate key border security metrics: apprehension rates and unauthorized flows. The model has limitations grounded in certain assumptions, such as that the pool of migrants is fixed, the probability of being apprehended is the same for each attempt,[26] and those who have been arrested have not succeeded in entering the United States between arrests.[27] The basic model also does not account for migrants who are deterred from attempting to cross the border again because it uses the basic assumption that migrants will continue to attempt crossing the border until they are successful. Furthermore, given that this metric measures migrant volume and is influenced by the push and pull factors of migration that are outside the control of DHS's components (e.g., economic, social, and political factors in source countries and countries of destination), it does not speak directly to the effectiveness of border security efforts.

U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2014-2016*, February 2, 2015.

[22] U.S. Department of Homeland Security, Briefing conducted for CRS, November 9, 2015.

[23] Ibid.

[24] This methodology was originally employed in estimating bird and rare animal populations. Thomas Espenshade first used it in the context of unauthorized migration in the mid-1990s.

[25] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

[26] Randy Capps, Doris Meissner, and Michael Fix, *Measuring Effective Border Control - What Can We Know?* Migration Policy Institute, August 14, 2012.

[27] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

DHS is working to factor deterrence into RTM in order to control for migrants who will be deterred from attempting to re-cross the border. DHS is using a survey that measures the characteristics, volumes, tendencies, and effects of migrant flows between the United States and Mexico.[28] The survey, *Encuestas sobre Migración en la Frontera Norte de Mexico* (EMIF Norte),[29] is conducted by the *Colegio de la Frontera Norte*[30] (COLEF) and other agencies of the Mexican government,[31] who sample potential migrants at busy departure points[32] in Northern Mexico and migrants removed from the United States.

With the incorporation of deterrence, the probability of deterrence is then calculated as:

$$\textbf{\textit{Probability of Apprehension}} = \frac{\textbf{\textit{Migrants Re-Apprehended}}}{\textbf{\textit{Migrants that Attempt to Reenter (Not Deterred)}}}$$

EMIF Norte provides information on other migrant populations, outside of Mexicans. RTM models are most useful when sensitive to how migrants from other source countries could affect results.

In addition to RTM, DHS is developing two other methods to validate its estimates. One method is based on the *Encuesta Nacional de Ocupación y Empleo* (ENOE), a representative Mexican household survey.[33] The second method is based on an econometric analysis of apprehension records used to validate deterrence. These new measurements are to be included in DHS's State of the Border report that is to be produced alongside its 4th Quarter BorderStat[34] Report.[35] DHS also plans to create "BorderStat," modeled on law enforcement's CompStat,[36] which would

[28] Apart from deterrence, other variables are also to be included in DHS models, such as deterrence with controls for regions and the consequences given to migrants, migrants who are displaced to other border regions, turn back and got away data (See "Estimated Got Aways and Turn Backs"), the length of the trip the migrants make, and adjustments for each sector. U.S. Department of Homeland Security, *An Outcome-Based Approach to Border Security Performance Measurements*, November 9, 2015.

[29] Survey on Migration on Mexico's Northern Border. For more information see http://www.colef.mx/emif/.

[30] Northern Border College.

[31] For a complete list of participating institutions, see http://www.colef.net/emif/instituciones.php.

[32] In 2015, the included cities were Tijuana, Mexicali, San Luis Rio Colorado, Altar, Nogales, Cananea, Agua Prieta, Ciudad Juárez, Ciudad Acuña, Piedras Negras, Nuevo Laredo, Reynosa, and Matamoros. http://www.colef.net/emif/cgeonte.php.

[33] National Occupation and Employment Survey. For more information see http://www.inegi.org.mx/est/contenidos/Proyectos/encuestas/hogares/regulares/enoe/.

[34] BorderStat is the CBP system used to capture and report on all enforcement and operational statistical data across CBP's operational components. U.S. Department of Homeland Security Office of Inspector General, *Independent Review of the U.S. Customs and Border Protection's Reporting of FY2008 Drug Control Performance Summary Report*, OIG-09-21, Washington, DC, February 2009.

[35] U.S. Department of Homeland Security, Briefing conducted for CRS, October 13, 2015. As of the date of this report, findings had not been made publicly available.

[36] CompStat (short for Computer Comparison Statistics) is a system for managing police operations that functions as a crime control process. CompStat includes meetings to review an agency's performance indicators to identify areas for improvement, crime trends, and new strategies. For more information on CompStat see Jeff Godown, "CompStat Process: Four Principles for Managing Crime Reduction," *The Police Chief*, vol. 76, no. 8 (August 2009), pp. 36, 38, 40-42.

provide current and historical trends for performance metrics along with statistics specific to subpopulations among the unauthorized population who enter the United States.[37]

Technology

In addition to estimating the level of unauthorized entry of migrants into the United States, DHS has also begun to turn its attention to evaluating the performance of the technology used to secure the border. A 2014 Government Accountability Office (GAO) report found that CBP had identified how technologies contribute to its mission but that it had not yet created performance metrics to evaluate them.[38] DHS databases allow for CBP to collect data on "asset assists," which are "instances in which a technology, such as a camera, or other asset such as a canine team, contributed to an apprehension or seizure."[39] Currently, Border Patrol agents are not required to record these data and therefore the data on asset assists are incomplete. GAO stated that "requiring the reporting and tracking of asset assist data could help CBP determine the extent to which its surveillance technologies are contributing to CBP's border security efforts."[40] According to DHS officials, the agency's FY2016 border research agenda will include an analysis on the effectiveness of border investments on outcomes. The study is to focus on the change in unauthorized entries and forecast future unauthorized entries (incorporating law enforcement and non-enforcement determinants). The study is to also include an analysis of the effectiveness of CBP border investments.[41]

Other Metrics[42]

At the strategic level, DHS has used two other performance metrics: the percentage of people apprehended multiple times along the Southwest border, or the recidivism rate (introduced in 2013), and the rate of interdiction effectiveness along the Southwest border between ports of entry, or the effectiveness rate (introduced in 2014).[43] These performance metrics, as reported in DHS's FY2015-FY2017 Annual Performance Report, were used to assess the department's efforts in reaching its goal of securing the U.S. borders.[44] These metrics signal DHS's efforts to improve measuring practices, but they are not without limitations.

Recidivism Rate

Since 2000, the Border Patrol has tracked the number of unique subjects the agency apprehends per year by analyzing biometric data (i.e., fingerprints and digital photographs) of persons apprehended.[45] These data are used to obtain the percentage of people apprehended multiple times

[37] U.S. Department of Homeland Security, Briefing conducted for CRS, November 9, 2015.

[38] U.S. Government Accountability Office, *Arizona Border Surveillance Technology Plan: Additional Actions Needed to Strengthen Management and Assess Effectiveness*, GAO-14-368, March 12, 2014, http://gao.gov/products/GAO-14-368.

[39] Ibid.

[40] Ibid.

[41] Border investments are to include agents, tactical infrastructure, technology, and consequences. Outcomes/outputs are successful unauthorized entry, apprehension rate, and deterrence. U.S. Department of Homeland Security, November 9, 2015.

[42] Data and information for this section were gathered, in part, from DHS's annual performance reports.

[43] U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2015-2017*, February 9, 2016.

[44] Ibid.

[45] Biometric data of persons apprehended are recorded in the Automated Biometric Identification System (IDENT)

along the Southwest border, which represents the percentage of individuals who are recidivists (also referred to as the recidivism rate). CBP holds that "effective and efficient application of consequences for illegal border crossers will, over time, reduce overall recidivism." Therefore, the Border Patrol uses recidivism data as a method to evaluate if it is effectively deterring additional unauthorized crossings.

The recidivism rate is calculated as:[46]

$$\frac{\textit{Unique Subjects Apprehended Multiple Times}}{\textit{Total Unique Subjects Apprehended}}$$

The recidivism rate has some weaknesses as a performance measurement. For example, it is not sensitive to the distance between the United States' border and migrants' source countries. The farther an individual's source country is from the United States, the more difficult it is for the migrant to attempt multiple entries. Therefore, increases in the number of migrants traveling from outside of Mexico could lower the recidivism rate, but such a dip in the rate would not necessarily indicate better border security. Furthermore, recidivism rates are not only determined by deterrence migrants may have experienced, but also the probability of apprehension. A decreasing recidivism rate that may be interpreted as a successful increase in deterrence could also be the result of a falling apprehension rate.[47] Moreover, intensified enforcement could increase both rates of deterrence and apprehension, offsetting one another and resulting in no change to the recidivism rate, thereby obscuring results.[48]

Annual Southwest border recidivism rates, tracked by the Border Patrol since 2005, increased slightly between FY2005 (25%) and FY2007 (29%), but have fallen since that time, reaching 14% in FY2014 and FY2015.[49] DHS's *Annual Performance Report for Fiscal Years 2015-2017* set the target for this metric at less than 17% for FY2015, FY2016, and FY2017.[50]

system. When Border Patrol agents enter migrants' biometric data in the IDENT system, the data are to be automatically checked against DHS' "recidivist" database, which is used to track repeat entrants, and its "lookout" database, which is used to identify criminal migrants.

[46] The denominator and numerator refer to data collected during the same time period and geographic parameter.

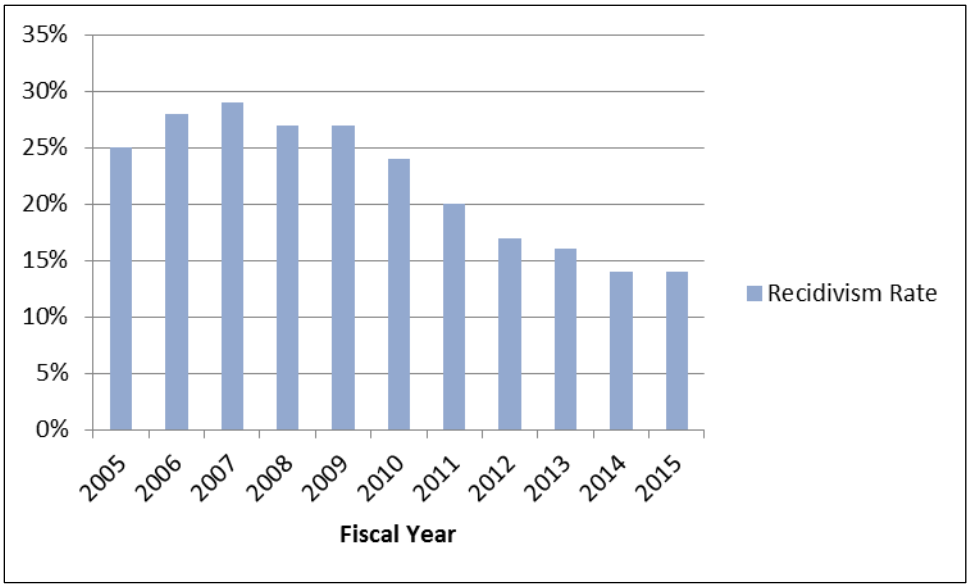
[47] Bryan Roberts, *Measuring the Metrics: Grading the Government on Immigration Enforcement*, Bipartisan Policy Center, February 2015.

[48] Ibid.

[49] U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2015-2017*, February 9, 2016.

[50] Ibid.

Figure 2.U.S. Border Patrol Southwest Border Recidivism Rates, FY2005-FY2015



Source: CRS presentation of data provided by CBP Office of Congressional Affairs, March 10, 2013; DHS *Annual Performance Report for Fiscal Years 2014-2016*; U.S. Border Patrol; U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2015-2017*, February 9, 2016.

Notes: The recidivism rate is the percentage of unique individuals apprehended two or more times in a given fiscal year.

The Effectiveness Rate

The rate of interdiction effectiveness along the Southwest border between ports of entry, also referred to as the effectiveness rate, reports the percentage of all detected unauthorized entrants who are either apprehended or turned back.[51] The Border Patrol achieves this outcome by maximizing the percentage of unauthorized entrants it apprehends or that return to their source countries (turn backs) and minimizing those that evade apprehension (got aways).[52]

The rate of interdiction effectiveness is calculated as:

$$\frac{\textit{Apprehensions} + \textit{Turn Backs}}{\textit{Apprehensions} + \textit{Turn Backs} + \textit{Got Aways}}$$

DHS's *Annual Performance Report for Fiscal Years 2015-2017* set the goal for this metric at 80% for FY2015 and 81% for FY2016 and FY2017.[53] In FY2015, DHS met its target by interdicting 81.01% of unauthorized crossers.[54]

[51] U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2014-2016*, February 2, 2015.

[52] For the purpose of this metric, apprehensions include individuals apprehended within 30 days of crossing the border, and individuals not apprehended further to the interior than the northernmost Border Patrol checkpoint. U.S. Border Patrol, November 19, 2015.

[53] U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2015-2017*, February 9, 2016.

[54] Ibid.

The Border Patrol stated that this metric is "used to determine the effectiveness of border security operation at the tactical—or zone—level but can also affect strategic decisionmaking,"[55] such as evaluating whether it is employing the appropriate mix and placement of personnel and assets and whether they are being deployed efficiently and effectively.[56]

The interdiction effectiveness rate has drawbacks. This measure is based only on observable events reported by the Border Patrol and therefore excludes undetected entry. The data used are also based on events and not unique subjects, allowing for potential double counting.[57] Moreover, GAO found that this metric's inclusion of turn back and got away data, the reporting of which can vary across sectors, impedes its ability to compare the rate across sectors.[58] While using enforcement data to measure border security can raise a number of methodological concerns, the effectiveness rate may have an advantage over other enforcement metrics because, as a ratio, it may be somewhat less sensitive to the level of enforcement resources in place.[59]

Estimated Got Aways and Turn Backs

A got away is a "subject who, after making an illegal entry, is not turned back or apprehended and is no longer being actively pursued by Border Patrol agents"; and a turn back is a "subject who, after making an illegal entry into the United States, returns to the country from which he/she entered, not resulting in an apprehension or got away." Border Patrol agents use standard definitions for determining whether an individual is a got away or a turn back, with the determination being made through direct observation by the agent or after agents use evidence, such as foot signs, sensor activities, interviews with apprehended subjects, camera views, communication between stations and sectors, and other information. DHS currently uses the sum of apprehensions, turn backs, and got aways as an estimate for the total number of known unauthorized entrants.

The agency has used got away and turn back data since 2006 to inform tactical decisionmaking and to allocate resources across Southwest border sectors, but the Border Patrol has not published them or viewed them as reliable metrics of border security because of challenges associated with measuring got aways and turn backs across different border sectors. In a 2013 report, GAO found that differences in how sectors define, collect, and report turn back and got away data can lead to over counting, under counting, or double counting. Moreover, because estimated got aways and turn backs attempt to measure enforcement outcomes that do not result in apprehensions, they are heavily dependent on the subjective judgment of individual border agents. To the extent that agents—or the agency—are rewarded for effective enforcement, some people may question the credibility of a measure based on such judgments. Indeed, some media reports already have raised questions about the accuracy of the got away and turn back data. The Border Patrol issued new guidance in September 2012 designed to impose greater consistency on turn back and got away data collection and reporting, but data from the new system have not yet been analyzed.

Sources: U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2014-2016*, February 2, 2015; U.S. Government Accountability Office, *Border Patrol: Key Elements of Strategic Plan not Yet in Place to Inform*

[55] U.S. Government Accountability Office, *Border Patrol: Goals and Measures Not Yet in Place to Inform Border Security Status and Resource Needs*, GAO-13-330T, February 26, 2013.

[56] U.S. Congress, House Committee on Homeland Security, Subcommittee on Border and Maritime Security, *What Does a Secure Border Look Like?* 113th Cong., 1st sess., June 2013.

[57] Randy Capps, Doris Meissner, and Michael Fix, *Measuring Effective Border Control - What Can We Know?* Migration Policy Institute, August 14, 2012.

[58] U.S. Government Accountability Office, *Border Patrol: Goals and Measures Not Yet in Place to Inform Border Security Status and Resource Needs*, GAO-13-330T, February 26, 2013.

[59] Using apprehensions as a metric of border security can be problematic because apprehensions depend on border resources. However, the ratio of apprehensions to got aways is somewhat less problematic because both apprehensions *and* estimated known got aways depend on the same resources, so the ratio may more accurately reflect the proportion of migrants that successfully enters. Nonetheless, the ratio may still be sensitive to border resources if estimating inflows is less (or more) resource-intensive than apprehending migrants. Moreover, the enforcement rate by itself may not be an acceptable metric without also considering data on total unauthorized attempts: many would consider a 10% effectiveness rate based on 100 entry attempts to be more effective than a 90% rate based on a million attempts, for example.

Border Security Status and Resource Needs, GAO-13-25, December 2012; Elliot Spagat, "Under Pressure, Border Patrol Now Counts Getaways," Associated Press, April 22, 2013; U.S. Government Accountability Office, *Border Patrol: Goals and Measures Not Yet in Place to Inform Border Security Status and Resource Needs*, GAO-13-330T, February 26, 2013; Andrew Becker, "New Drone Radar Reveals Border Patrol 'Gotaways' in High Numbers," Center for Investigative Reporting, April 4, 2013.

Past Measures[60]

The federal government has collected data on immigration since 1892. This information has been publicly reported since the 1950s.[61] Over time, there have been multiple efforts to expand data collection, improve analysis, and develop performance metrics.[62] DHS's attempts to measure border security beyond output have resulted in different iterations of performance metrics. For example, in the last 15 years DHS has used five different performance metrics[63] and, as discussed, a new metric is currently under development (see "Level of Unauthorized Entry of Migrants").[64]

The INS's 2001 and 2002 annual performance reports established "high priority entry corridors demonstrating optimal deterrence," as a performance metric for effectively controlling the border.[65] Optimum deterrence was defined as "the level at which applying more Border Patrol agents and resources would not yield a significant gain in arrests/deterrence."[66] Analyses were conducted for each corridor, including the examination of variables such as apprehensions, border related crimes, recidivism, shifts in illegal activity, smuggling fees, property values, and others. In FY2003, 9 corridors had reached optimum deterrence, and in FY2004 this increased to 11 corridors.[67] When DHS was created in 2003, it continued to report optimum deterrence through 2004.

In 2005, the concept of operational control, also referred to as effective control, replaced optimum deterrence.[68] Section 2 of the Secure Fence Act of 2006 (P.L. 109-367) defined operational control of the border as "the prevention of all unlawful entries into the United States, including entries by terrorists, other unlawful aliens, instruments of terrorism, narcotics, and other contraband." Operational control describes the number of border miles where the Border Patrol can detect, identify, respond to, and interdict cross-border unauthorized activity.[69] In February 2010, the Border Patrol reported that 1,107 miles (57%) of the Southwest border were under

[60] Data and information for this section were gathered, in part, from DHS's annual performance reports.

[61] Bryan Roberts, *Measuring the Metrics: Grading the Government on Immigration Enforcement*, Bipartisan Policy Center, February 2015.

[62] For more information on the history of metrics, see ibid.

[63] The INS and DHS reported other metrics in annual reports that are related to border security but are not included in this CRS report as they do not speak to overall border security. Some of these metrics include the percentage of apprehensions at checkpoints, the percentage of checkpoint arrests referred for prosecution, and Border Patrol agents trained in emergency medical procedures.

[64] U.S. Department of Homeland Security, briefing conducted for CRS, October 13, 2015.

[65] Department of Justice, *Fiscal Year 2000 Performance Report and Fiscal Year 2002 Performance Plan*, April 2001.

[66] Ibid.

[67] U.S. Department of Homeland Security, *Performance and Accountability Report for FY 2003 & 2004*.

[68] Bryan Roberts, *Measuring the Metrics: Grading the Government on Immigration Enforcement*, Bipartisan Policy Center, February 2015.

[69] U.S. Congress, House Committee on Homeland Security, Subcommittee on Border and Maritime Security, *What Does a Secure Border Look Like?* 113th Cong., 1st sess., June 2013.

operational control.[70] After 2010, DHS ceased to use operational control[71] as a metric because the Border Patrol station and sector chiefs could not accurately and reliably use its coding scheme to assess different border regions[72] and the agency did not view it as useful for evaluating border security on a mile-by-mile basis.[73]

From 2011 to 2013, DHS used apprehensions[74] as a performance metric for border security in annual performance reports. Though apprehension data can inform activity levels and aid CBP in identifying emerging issues and trends, multiple factors outside of U.S. border security resources and tactics affect it.[75] Such factors could include immigration enforcement in transit countries and economic and political conditions and demographic changes within the United States and source countries.[76] Additionally, apprehension data are imperfect indicators because they exclude migrants who successfully enter and remain in the United States and migrants who are deterred from entering the United States. The data are also limited in that they count events rather than unique subjects[77] and therefore may result in the double counting of those who are apprehended more than once in a given time period. Furthermore, RAND reported that "a measure that reflects successful performance whether it rises or falls has limited value as a management tool."[78] This critique refers to how a decrease in apprehensions can be seen as a success for the Border Patrol in deterring migration but it can also be seen as failure for the Border Patrol in interdicting migrants. GAO also reported that apprehension data "[do] not inform program results or resource identification and allocation decisions, and therefore until new goals and measures are developed, DHS and Congress could experience reduced oversight and DHS accountability."[79]

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[70] U.S. Congress, House Committee on Homeland Security, Subcommittee on Border and Maritime Security, *Securing Our Borders: Operational Control and the Path Forward*, 112th Congress, 1st sess., February 15, 2011.

[71] U.S. Government Accountability Office, *Border Patrol: Goals and Measures Not Yet in Place to Inform Border Security Status and Resource Needs*, GAO-13-330T, February 26, 2013.

[72] U.S. Customs and Border Patrol Office of Congressional Affairs, March 15, 2013.

[73] U.S. Congress, House Committee on Homeland Security, Subcommittee on Borders and Maritime Security, *Measuring Outcomes to Understand the State of Border Security*, testimony of Border Patrol Chief Michael Fisher, 113th Congress, 1st sess., March 20, 2013.

[74] An apprehension is a deportable subject who, after making an unauthorized entry, is taken into custody and receives a consequence. Apprehended unauthorized migrants receive a Fingerprint Identification Number (FIN) within one of the nine Southwest sectors of the border. Fingerprints are not taken and FINs are not given to individuals under 14 or over 86 years of age and in some humanitarian cases. The information regarding each apprehension is entered by a Border Patrol agent into the Enforcement Integrated Database (EID), the official system that stores the data. The EID is maintained by the Border Patrol Headquarters Statistics and Data Integrity unit, while the physical database is owned by Immigrations and Customs Enforcement's Office of Chief Information Officer (OCIO). Data are collected at the station level. U.S. Department of Homeland Security, *Annual Performance Report for Fiscal Years 2014-2016*, February 2, 2015.

[75] For more information on the apprehension trends, see CRS Report R42138, *Border Security: Immigration Enforcement Between Ports of Entry*, by Lisa Seghetti; and for CBP released data tables, please see https://www.cbp.gov/newsroom/media-resources/stats.

[76] U.S. Congress, House Committee on Homeland Security, Subcommittee on Border and Maritime Security, *What Does a Secure Border Look Like?*, testimony of Congressional Research Service Specialist in Immigration Policy Marc R. Rosenblum, 113th Cong., 1st sess., June 2013.

[77] Unique subjects refers to the number of individuals apprehended based on biometric records.

[78] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

[79] U.S. Government Accountability Office, *Border Patrol: Goals and Measures Not Yet in Place to Inform Border Security Status and Resource Needs*, GAO-13-330T, February 26, 2013.

Estimating Unauthorized Residents in the United States

As long ago as 2001, the federal government used the total estimated stock of unauthorized migrants in the United States as a key performance metric for border security, specifically in its goal of reducing the number of unauthorized migrants in the United States. For many years, analysts within DHS and other social scientists have calculated this number by using the "residual method," which involves using legal admissions data to estimate the legal, foreign-born population, and then subtracting this number from the overall count of foreign-born residents based on U.S. census data. This measure is limited in that it does not differentiate between those who crossed the border and those that enter through a port of entry and overstayed their visas. However, the residual method does provide some advantages over other border metrics, such as

- for some individuals, how many unauthorized migrants live within the United States is a more important question than how many cross the border;
- the size of the unauthorized population reflects the effectiveness of immigration policy and immigration enforcement, not just at the border;
- there is nearly a 30-year track record of unauthorized population estimates available for analysis; and
- the residual method is a relatively uncontroversial methodology.

Sources: Department of Justice, *FY2001 Performance Report, FY2002 Revised Final Performance Plan, FY2003 Performance Plan*, Washington, DC, 2001, pp. 120-122.; Jeffrey S. Passel, "The Size and Characteristics of the Unauthorized Migrant Population in the U.S.," Pew Hispanic Center, March 6, 2006, http://www.pewhispanic.org/2006/03/07/sizeand-characteristics-of-the-unauthorized-migrant-population-in-the-us/; CRS Report RL33874, *Unauthorized Aliens Residing in the United States: Estimates Since 1986*, by Ruth Ellen Wasem.

Operational Metrics[80]

At the operational level, the Border Patrol estimates risk at the border through the use of risk assessments. These assessments are not used as metrics themselves. However, the Border Patrol's methodology for risk assessments monitors certain metrics, along with other information, in order to estimate the level of risk at the sector level.

DHS defines risk as "the potential for an unwanted outcome resulting from an incident, event, or occurrence, as determined by its likelihood and the associated consequences."[81] The process of risk assessment identifies and evaluates potential risks or hazards and analyzes what could happen if the hazard went unchecked.[82] The Border Patrol conducts risk assessments at an operational level to determine the level of risk present in specific border sectors. They are meant to inform and not dictate decisionmaking with respect to resource allocation and response. Furthermore, risk assessments are not designed to measure overall performance, though DHS uses certain risk measurements that may be able to speak to performance.[83]

CBP's 2012-2016 Border Patrol Strategic Plan (BPSP) focuses on "identifying high risk areas and targeting ... response[s] to meet" threats in those areas.[84] This plan employs a risk-based strategy, which departs from the previous, resource-based 2004 National Border Patrol Strategy.[85]

[80] Data and information for this section were gathered, in part, through briefings conducted by Border Patrol's Congressional Affairs on October 13, 2015 and November 19, 2015.

[81] Robert D. Schroeder, *Holding the Line in the 21st Century*, U.S. Customs and Border Protection, 2014, https://www.cbp.gov/sites/default/files/documents/Holding%20the%20Line_TRILOGY.pdf.

[82] U.S. Department of Homeland Security, *Risk Assessment*, http://www.ready.gov/risk-assessment.

[83] Ibid.

[84] U.S. Customs and Border Protection & U.S. Border Patrol, *2012-2016 Border Patrol Strategic Plan*, 2012.

[85] In 2013, the GAO found that DHS, with respect to the BPSP, "[had] not yet developed performance goals and measures for assessing the progress of its efforts and for informing the identification and allocation of resources needed

According to Border Patrol officials, they employ the "State of the Border Risk Methodology," which the agency claims is "a scientifically valid, adaptable, and quantifiable means of assessing the relative risks of the corridors and sectors of the Southwest Border."[86] This approach has three components: "intelligence," "situational awareness," and "risk methodology."

- Intelligence refers to information gathered and analyses performed by U.S. intelligence agencies that offer insight into terrorist or criminal efforts to exploit the U.S. border and undermine security measures.[87] The Border Patrol works with other agencies to obtain and share different intelligence. The information collected through these collaborations reportedly gives the Border Patrol the opportunity to predict threats and act proactively.[88]
- Situational awareness refers to understanding conditions at specific locations on the border. The Border Patrol increases its situational awareness through two methods. First, the traditional method is used in areas of high threat and activity along the U.S. border, where agents employ different tracking strategies and coordinated patrols. Second, the technical method is used in areas of low activity, where the Border Patrol uses geospatial intelligence.[89] If activity is detected by geospatial intelligence technology, sectors are notified by DHS and they investigate the activity. As of August 24, 2015, 1,279.84 border miles (877.10 on the Southwest border and 402.74 on the Northern border) employed geospatial intelligence and 95.4% of those miles confirmed no activity present.[90]
- The risk methodology is comprised of 12 indicator metrics that were created by isolating key concepts involved in apprehending undocumented migrants and seizing contraband.[91] For example, some indicators are the average apprehensions per recidivist, daily average apprehensions, and the percentage of first time apprehensions. In addition, other metrics the Border Patrol uses are the recidivist rate and the effectiveness rate, the same metrics that DHS uses as performance metrics. However, the Border Patrol reviews these metrics at the sector level to make operational decisions, while DHS examines them for the entire border to make strategic decisions. For each sector, the Border Patrol standardizes each indicator in order to create a common unit of measure.[92] The

to secure the border." However, DHS has taken steps toward developing meaningful performance metrics for other initiatives. For example, in January 2015, DHS commissioned the Institute for Defense Analyses (IDA) to conduct a validation and verification of draft metrics for the Southern Border and Approaches Campaign, which was announced in 2014. U.S. Government Accountability Office, *Border Patrol: Goals and Measures Not Yet in Place to Inform Border Security Status and Resource Needs*, GAO-13-330T, February 26, 2013; and U.S. Department of Homeland Security, *An Outcome-Based Approach to Border Security Performance Measurement,* November 9, 2015.

[86] U.S. Department of Homeland Security, *An Outcome-Based Approach to Border Security Performance Measurement,* November 9, 2015.

[87] Ibid.

[88] U.S. Customs and Border Protection & U.S. Border Patrol, *2012-2016 Border Patrol Strategic Plan*, 2012.

[89] Robert D. Schroeder, *Holding the Line in the 21st Century*, U.S. Customs and Border Protection, 2014, https://www.cbp.gov/sites/default/files/documents/Holding%20the%20Line_TRILOGY.pdf.

[90] U.S. Department of Homeland Security, *An Outcome-Based Approach to Border Security Performance Measurement,* November 9, 2015.

[91] Although this report focuses on metrics pertaining to migrants, the Border Patrol's risk methodology also includes a review of the seizure of marijuana.

[92] The indicators are standardized by converting them to z-scores, which is a statistical measure representing how far a score is from its mean, or average. Additionally, the metrics are weighed according to subject matter experts' input (at the sector level) as to what indicators are most important in their sector and by the relative contribution of sectors (with

> average measure for each indicator is noted and if there is a significant deviation from that norm in the wrong direction, meaning it is noticeably different from that sector's average, it is determined to be risky. Depending on how different the measure is from its average, the Border Patrol determines whether the risk is classified as low, medium, or high.[93] Therefore, in this methodology, risk is determined by detecting variations or changes from the norm for each sector.[94]

Though intelligence, situational awareness, and the risk methodology are all important to determining risk, when intelligence contradicts the risk methodology's findings, intelligence holds more weight.[95] This is because the risk methodology's indicators examine past information while intelligence focuses on the future.

Select Issues for Congress to Consider

In reviewing current metrics and those under development, Congress may consider whether these metrics adequately measure border security. For example, is DHS's new metric in development, unauthorized entry of migrants into the United States, satisfactory or will additional metrics be needed to sufficiently measure border security? Furthermore, is a comprehensive border security metric, like operational control, still desirable or necessary or can border security be measured by other metrics that look at different components of security?

A clear measure of border security is an important tool to help Congress conduct oversight and evaluate if CBP is reaching its intended goals. Congress may want to consider what type of review and oversight should be required with respect to measurement of performance. For the purposes of maintaining accountability within DHS and the Border Patrol, Congress may also want to review what it means to be "effective," and more specifically what the targets or meaningful thresholds for different metrics should be. For example, what is an acceptable level of risk at the border?

An evaluation of metrics, at the strategic and operational levels, may also help Congress analyze how to most efficiently use resources at the border. For example, should enforcement expenditures be maintained, increased, or decreased? Furthermore, Congress could consider whether the allocation of funding between different enforcement programs should remain the same or be adjusted. Congress may also be interested in the implementation of metrics at operational and strategic levels and how they interact with one another. For instance, what changes are happening at the departmental level and how do they affect the day-to-day work of Border Patrol agents? In theory, metrics should be used not only to hold DHS accountable but also to inform decisionmaking and the development of strategies for improvement. Therefore, implementation of metrics and how they are used may be of interest to Congress.

Congress could consider whether other data and methodologies should be used to measure border security. For instance, the unintended consequences and secondary effects of border security demonstrate some of the tradeoffs present in maintaining or changing the level of security present at the border. This calls into question whether certain secondary effects are negative and acceptable and whether they impact what is considered to be effective border security. Furthermore, additional or improved data and methodologies could be used to adjust

respect to their apprehension activities). Ibid.

[93] U.S. Border Patrol, briefing conducted for CRS, November 19, 2015.

[94] Findings from the risk methodology are shared at the sector level quarterly. Ibid.

[95] Ibid.

measurements to incorporate shifting migrant demographics, such as increases in unaccompanied child migrants, asylum claims, and migrants from countries other than Mexico.

Some migrants coming from countries not adjacent to the United States also face border security and immigration enforcement in transit countries, such as Mexico. Therefore, Congress may also consider whether DHS's metrics account for the actions of transit countries and whether DHS is capturing the correct data. For example, a decrease in apprehensions at the Southwest border may not be only a result of successful deterrence by the Border Patrol, it may also be the result of increased apprehensions of unauthorized migrants in Mexico, who are therefore prevented from reaching the U.S. border.[96]

Several pieces of legislation have been introduced in the 114th Congress that include reporting and measurement requirements.[97] For example, some legislation would direct DHS to submit a Northern border threat analysis.[98] Other legislation would require the Secretary of Homeland Security to gain and maintain operational control and situational awareness of the Northern and Southern borders of the United States, while also strengthening DHS's measurement and evaluation of its activities and progress.[99]

[96] For example, see CRS In Focus IF10215, *Mexico's Recent Immigration Enforcement Efforts*, by Clare Ribando Seelke.

[97] For more information see CRS Report R44230, *Immigration Legislation and Issues in the 114th Congress*, coordinated by Andorra Bruno.

[98] For example, see Northern Border Security Review Act (H.R. 455) and a similar bill by the same name (S. 1808).

[99] For examples, see Secure Our Borders First Act of 2015 (H.R. 399) and Department of Homeland Security Border Security Metrics Act of 2015 (S. 1864).

Appendix. Additional Data and Methodologies

Research by scholars and think tanks has recommended the collection of additional data and the use of varied methodologies in order to obtain meaningful performance-based metrics to measure border security. Some have suggested collecting data other than enforcement data in order to view a greater breadth of factors impacting border security. Additionally, expanding on the types of methodologies with which enforcement and other data are collected and analyzed can allow for broader perspectives and new findings. New data and methodologies also allow for inclusion of metrics that may be able to provide a more complete or holistic view of border security.

Data

In addition to traditional enforcement statistics, survey data based on interviews with migrants and potential migrants are additional sources of information on unauthorized migration. Surveys can collect different information about their subjects than is found in enforcement data. This is because they can be conducted within the United States as well as in migrant countries of origin, and they may capture more information about successful unauthorized inflows and the deterrent effects of enforcement.[100] In 2011, DHS commissioned a comprehensive study by the National Research Council (NRC) on the use of surveys and related methodologies to estimate the number of unauthorized U.S.-Mexico border crossings. The NRC recommended that DHS use survey data along with enforcement data to measure unauthorized flows and the effectiveness of border enforcement.[101]

RAND has recommended the use of respondent-driven sampling for migrant surveys. This method would involve a nonrandom sample of individuals from the population of interest who invite others to participate, and they would invite more individuals to participate. Researchers can account for social networks and recruitment patterns in order to obtain estimates of population characteristics. To account for potential inaccurate responses from migrants, RAND also suggested the use of "group answers" that group illicit and licit activities together, therefore allowing migrants to answer questions without revealing any unlawful activities.[102] This suggestion responds to migrants' possible hesitation to participate in a survey or provide accurate information for fear of subsequent law enforcement action. Surveys also pose certain limitations, such as issues about whether samples are representative of the overall migrant population, which

[100] Scholars and think tanks have recommended the use of different surveys. For example, the Mexican Migration Project (MMP), co-directed by professors at Princeton University and the University of Guadalajara, collects social and economic information on Mexican-U.S. migration through ethnographic fieldwork and representative survey sampling. The Mexican Migration Field Research and Training Program (MMFRP), led by the University of California San Diego, collects information on migration and health indicators through in-depth survey and qualitative interviews in Mexico and the United States. *Encuesta Nacional de la Dinámica Demográfica* (ENADID) is a national demographic survey in Mexico, which was conducted in 1992, 1997, 2006, 2009, and 2014. The survey includes information on migration, which could serve to estimate the size of migrant and potential migrant populations. *Encuestas sobre Migración en la Frontera Norte de Mexico* (EMIF Norte), conducted by the *Colegio de la Frontera Norte* (COLEF) and other agencies of the Mexican government, samples potential migrants in Mexico and migrants removed from the United States. *Encuesta Nacional de Ocupación y Empleo* (ENOE) is a Mexican representative household survey that identifies newly departed and arrived household members and whether they have come from or left for another state or country.

[101] Roberts et al., *Managing Illegal Immigration to the United States*; Panel on Survey Options for Estimating the Flow of Unauthorized Crossings at the U.S.-Mexico Border, *Options for Estimating Illegal Entries at the U.S.-Mexico Border*, Washington, DC: National Research Council, 2012.

[102] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

is related to who is surveyed and where. Similarly, the composition of the migrant populations can also affect the ability of a survey to fully capture migration metrics. For instance, recent decreases in the proportion of unauthorized Mexican migrants entering the United States may call for the development of survey methodology that accounts for different source countries.[103]

Survey Data Findings

The Mexican Migration Field Research and Training Program (MMFRP) and Mexican Migration Project (MMP) binational surveys ask a number of questions about U.S. immigration enforcement and how it affects respondents' migration histories and future plans. Social science research has been used to account for the likelihood that unauthorized migrants may be less than forthcoming with interviewers and may be under-represented in certain survey samples. MMFRP and MMP findings include the following:

Probability of Apprehension: According to MMP data, the probability of being apprehended on any given crossing attempt averaged about 37% in the two decades before the Immigration Reform and Control Act of 1986's (IRCA's) passage, and it was somewhat lower in the 10 years after IRCA's passage (between 1986 and 1995), averaging 26% for the decade. Between 1996 and 2010, the apprehension rate returned to an average of 36%. The MMFRP suggested slightly higher apprehension rates and shows broadly similar trends. According to these data, the probability of being apprehended on any given crossing averaged 51% between 1974 and 1983. After peaking at 67% in 1981, the probability of apprehension fell steadily to a low of 34% in 1992-1993. Since 1994, the probability of apprehension has averaged 49%. The MMFRP and MMP estimates of apprehension rates are substantially lower than the Border Patrol's current estimate, which is between 67% and 86%.

Border Deterrence: MMP and MMFRP surveys found that unauthorized migrants are apprehended about one-third to one-half of the time on any given crossing attempt. Both surveys also found that most unauthorized migrants who attempt to cross eventually succeed, meaning border deterrence rates are low. According to the MMP data, between 75% and 90% of migrants apprehended at the border between 1965 and 2009 made a subsequent attempt to re-enter the United States and between 55% and 88% eventually succeeded. Border deterrence averaged 37% in the two decades before IRCA's passage; averaged 26% between 1986 and 1995, reaching an all-time low of 21% in 1989; and averaged 34% from 1996 to 2009. MMFRP finds at-the-border deterrence rates below 10% for the entire post-1980 period.

Smuggling Fees: MMP and MMFRP surveys indicate that the majority of unauthorized migrants to the United States make use of human smugglers (often referred to in Mexico as "coyotes" or "polleros") to enter the country. About 80% of unauthorized migrants from Mexico reportedly relied on human smugglers during the 1980s, and about 90% did so from 2005 to 2007, though the use of smugglers may have declined a bit during the recent economic downturn. According to data, smuggling fees were mostly flat between 1980 and 1993, at about $600-$850, with an average annual real growth rate of 1.5%-2.0%. In both samples, fees began to rise beginning around 1994. They climbed by an average of 11% per year between 1994 and 2002, reaching about $2,000 by 2002, according to both samples. Growth in smuggling fees has been slower since then, averaging 3.7% per year in the MMP sample and 1.8% in the MMFRP sample (excluding data from 2010, a year in which a small sample may have resulted in an unreliable annual estimate).

Sources: CRS calculations of MMFRP and MMP data; Estimates from CBP Office of Congressional Affairs, April 24, 2013; Princeton University MMP, "Access to Border-Crossing Guides and Family/Friends on First Undocumented Trip."

Since migrant flows cannot be measured directly, some have suggested the use of models that create estimates of unauthorized entry using proxy data. With respect to migrant flows, researchers have suggested human smuggler fees as a possible proxy for border control effectiveness. In theory, more effective border enforcement would make it more difficult for a smuggler to pass the border; this additional cost to them could be passed on to migrants through higher fees.[104] However, smuggling fees are also sensitive to other factors, such as the risks and

[103] Bryan Roberts, *Measuring the Metrics: Grading the Government on Immigration Enforcement*, Bipartisan Policy Center, February 2015.

[104] U.S. Congress, House Committee on Homeland Security, Subcommittee on Border and Maritime Security, *What Does a Secure Border Look Like?* Testimony of Congressional Research Service Specialist in Immigration Policy Marc

costs associated with providing "coyote" services, the cost of attempting to cross the border without a coyote, migration alternatives, the size and structure of the coyote service industry, migrants' ability to afford services, and the specific services the coyote is contracted to provide.[105] A model using proxy data would need to account for other influencing factors in order to create a more reliable flow estimate.[106]

Methodologies

Different methodologies can employ the use of enforcement data and other data in order to analyze the effectiveness of border security. For example, population surveys can be used to estimate flows of migrants to and from countries. Similar to the residual method used to estimate the undocumented population in the United States,[107] Mexico's *Censo de Población y Vivienda*[108] could be used to identify emigration risk factors by monitoring annual changes in population demographics that are not explained away by births or deaths.[109] Additionally, comparisons across each country's population surveys could produce broad estimates of unauthorized migrant flows to and from each country.[110] However, population surveys do have limitations, such as their relatively high costs, infrequent administration, and the possibility of undercounting those without stable housing.[111]

Regression models could be used to estimate the size of the population that is likely to migrate and the proportion that will attempt to enter the United States.[112] Models can account for and link changes in the risk population to economic, demographic, and social factors that may influence the decision to migrate. In order to obtain statistically significant results in a regression model, a sizable sample would be needed. Furthermore, the model would need to be sensitive to specific time periods and certain migrant cohorts.[113]

Stratified sampling of border crossers would involve the Border Patrol randomly placing resources across sectors, taking into account the likelihood of resources being placed in a certain region and the number of apprehensions made there. This methodology could be used to estimate total apprehensions that would have been made if resources were placed in all sectors. Incidentally, this method could also assist in improving Border Patrol performance by increasing the chance of detecting new transportation routes and strategies by allowing for random

R. Rosenblum, 113th Cong., 1st sess., June 2013.

[105] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

[106] Ibid.

[107] See "Estimating Unauthorized Residents in the United States."

[108] Mexico's Population and Housing Census. For more information, see http://www.inegi.org.mx/est/contenidos/proyectos/ccpv/.

[109] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

[110] Randy Capps, Doris Meissner, and Michael Fix, *Measuring Effective Border Control - What Can We Know?* Migration Policy Institute, August 14, 2012.

[111] Ibid.

[112] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

[113] U.S. Congress, House Committee on Homeland Security, Subcommittee on Border and Maritime Security, *What Does a Secure Border Look Like?* Testimony of Congressional Research Service Specialist in Immigration Policy Marc R. Rosenblum, 113th Cong., 1st sess., June 2013.

placement.[114] Another method for estimating detection in a sampled area would involve "red teaming," where migrants or agents are recruited to attempt crossing the border in order to establish the probability of interdiction.[115]

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[114] Andrew R. Morral, Henry H. Willis, and Peter Brownell, *Measuring Illegal Border Crossing Between Ports of Entry: An Assessment of Four Promising Methods*, RAND Corporation, Santa Monica, CA, 2011.

[115] Ibid.