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TECHNICAL REPORT

Measuring the Effectiveness of Border Security Between Ports-of-Entry

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Sponsored by the Department of Homeland Security



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Summary

Strategic planning is necessary if the U.S. Department of Homeland Security (DHS) is to carry out its border-security missions effectively and efficiently. As part of that, DHS leadership must define concrete and sensible objectives and measures of success. These can be used to assess results along the way, to guide allocation of resources, and to inform programming and budgeting for future capabilities and functions.

The U.S. Coast Guard (USCG), Customs and Border Protection (CBP), and Immigration and Customs Enforcement (ICE) have each developed measures to support their own operational planning and evaluation processes. Many of these measures are viewed by the DHS components to be useful for these purposes. However, the department is interested in continuing the development of its measures as a way to better inform its decisionmaking processes across the department. For instance, DHS has stated that CBP's measure of "miles of border under effective control" is in need of continued development in order to better evaluate border-security efforts in the land domain (DHS, 2008). USCG, in contrast, evaluates border control in the sea domain by measuring the probability of interdicting drugs and migrants, a method that could also be employed in the land domain. Thus, the DHS Office of Program Analysis and Evaluation asked RAND Corporation for research and recommendations on ways to measure the overall efforts of the national border-security enterprise between ports of entry.

Criteria For Good Measures

To be meaningful, the set of measures for effectiveness of border security should be

- *sound*: the measures reflect what is important
- *reliable*: the measures are easy to interpret and are difficult to manipulate
- *useful*: the measures can be feasibly monitored
- *general*: where possible, the measures can be broadly applied to DHS border-security efforts.

To identify measures that meet these criteria, we first developed a conceptual model of border phenomena. This reflected discussions with DHS component agencies engaged in border-security efforts, review of prior studies of border security, and field visits to the southwestern U.S. border during the past year.

A Conceptual Model of Border Security

DHS border-security missions are diverse and include efforts to prevent crime, maintain safety around borders, protect natural resources, and facilitate the legitimate movement of goods. All of these missions are important and enduring, but three missions appear to currently be of special interest to DHS leadership because they are especially problematic: illegal drug control, counterterrorism, and illegal migration. We treated these as “focus missions” in our study.

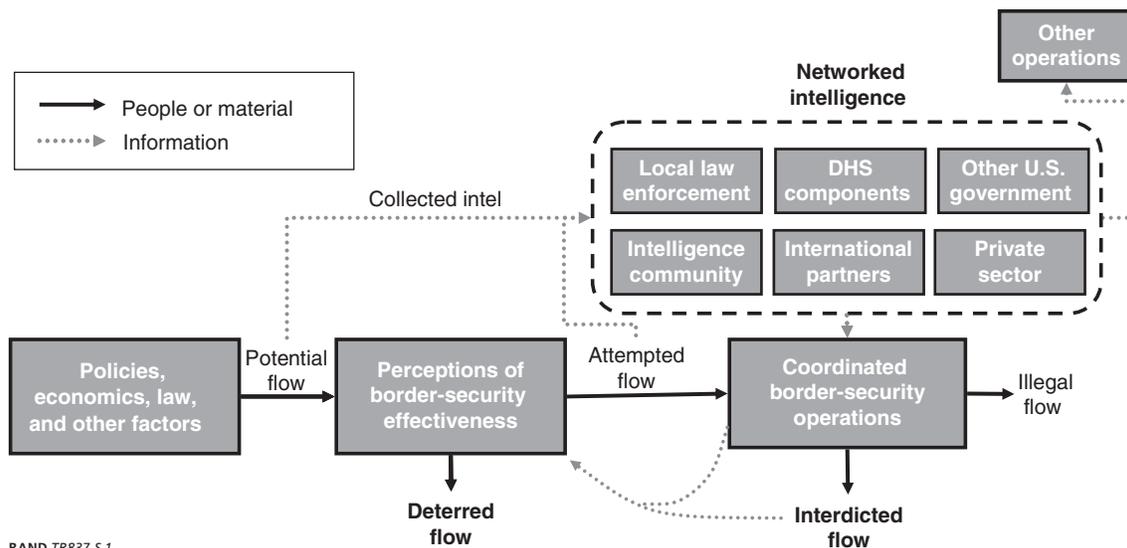
From examining each of them separately, we were led to a common conceptual model of how border-security efforts contribute to missions: essentially by controlling illegal flows, as indicated in Figure S.1.

As suggested by this model, we recommend measuring performance of three fundamental functions that border-security efforts contribute to achieving national policy objectives:

- *interdiction*: disrupting illegal movements across borders
- *deterrence*: convincing would-be smugglers, criminals, or terrorists not to attempt to illegally cross borders
- *exploiting networked intelligence*: contributing to and using shared intelligence information across organizational boundaries.

Measuring these functions requires specification of submeasures or indirect measures for each function. To measure interdiction, we recommend approximating interdiction rate by estimating the percentage of attempted flow that is nominally covered by border-security efforts (i.e., coverage) and the probability of interdiction for the flow that is covered. Reliable direct measurement of deterrence is not feasible, but deterrence is a real and important consequence of border-security effects on the decisions of would-be border crossers. Thus, we suggest measuring the quality of related efforts by the extent to which border-security agencies adhere to identified best practices for influencing decisions of smugglers, terrorists, and other criminals. Similarly, to measure networked intelligence, we recommend measuring the extent

Figure S.1
Conceptual Model of Border Security



to which border-security agencies adhere to identified best practices for collection, sharing, and exploitation of intelligence.

Finally, each of the three focus missions raises issues related to measurement and estimation of interdiction, deterrence, and networked intelligence. Table S.1 summarizes these issues, each of which is discussed further in the report.

Table S.1
Candidate Measures, Measurement Issues, and Approaches for Estimation

Objective	Measure	Submeasure or Indirect Measure	Measurement Issues and Approaches for Estimation
Interdict flow	Interdiction rate	Probability of interdiction for covered and lightly covered borders Coverage	<ul style="list-style-type: none"> • Where applicable, decompose into component probabilities (i.e., detect, respond, identify, and interdict). • Use empirical information (including red-team methods) and appropriately validated computer models to help support performance evaluation and planning. • For terrorism, estimate subjectively the likelihood of terrorist intrusion efforts for lightly covered routes (with updates to reflect anticipated adaptations where shortcomings are observable). • For drug control, estimate the percentage of drug flow currently covered to nominal levels by border-security systems. • For illegal migration, estimate percentage of illegal migration covered to nominal levels by border-security systems. • For all, distinguish cases based on, e.g., terrain, relative knowledge, tactics.
Deter flow	Effects on border-crosser decisionmaking	Indirect measure: adherence to “best practices” for deterrence	<ul style="list-style-type: none"> • Best practices should reflect knowledge about deterring factors, such as <ul style="list-style-type: none"> – probability of capture – consequence of capture – complexity of tactics required to succeed – cost of necessary assets – uncertainties – availability of alternatives. • Importance of the factors will vary across missions, regions, and modes. • Decisionmakers must identify practices that are judged to have positive effects on outcomes. • These “best practices” should be routinely reviewed and updated and their value to improved outcomes estimated. • Adherence to “best practices” can be measured. • Program options can be assessed for value in permitting best practices.
Exploit networked intelligence	Effective collection, use, and sharing of intelligence	Indirect measure: adherence to best practices	<ul style="list-style-type: none"> • Best practices should reflect knowledge of DHS, intelligence, and law-enforcement communities. They should involve <ul style="list-style-type: none"> – information collection (biographic, biometric, links) – sharing with other agencies – practiced cooperation with other agencies – practiced operational use of networked intelligence. • Importance of practices may differ for drug control, counterterrorism, and illegal migration, and across regions and modes. • Decisionmakers must identify practices that are judged to have positive effects on outcomes. • These “best practices” should be routinely reviewed and updated and their value to improved outcomes estimated. • Adherence to “best practices” can be measured. • Program options can be assessed for value in permitting best practices.

Implementing Steps to Measure Border Security

To the extent that the conceptual model captures the essence of border security, the proposed measures for these functions are sound and reliable. Furthermore, application of these proposed measures to the three focus missions suggests that they can be generally applied to DHS border missions. However, practical implementation would require a number of steps.

A first step toward implementing this approach to measuring border security will be to understand how data that are currently collected by DHS map to the functions of interdicting illegal flows, deterring illegal flows, and exploiting networked intelligence. This could be the focus of a straightforward follow-on study.

Other steps will require more concerted analytic effort. These include the following:

- Develop a range of models to support planning (and performance evaluation, in some instances), primarily in the context of exploratory analysis under uncertainty.
- Identify and exploit opportunities to estimate attempted illegal crossings.
- Translate studies of adversary decisionmaking into doctrine for deterrence.
- Identify best practices for exploiting networked intelligence.
- Use layered portfolio-analysis methods to evaluate past or ongoing border-security efforts, to evaluate forward-looking border-security options to improve performance, and to relate results to the levels of success in other agencies' efforts.

If the steps described here are taken, DHS and its components will be in a better position to discuss past performance and to provide reasoned justifications for future allocation of resources. Furthermore, they will be able to relate their efforts to those of other agencies in pursuit of national objectives.