Task Force on the Establishment of a Statewide Spay/Neuter Fund

FINAL REPORT

Annapolis, Maryland
December 2012
Task Force on the Establishment of a Statewide Spay/Neuter Fund

Department of Legislative Services
Office of Policy Analysis
Annapolis, Maryland

December 2012
Contributing Staff

Writers
Andrew D. Gray
T. Patrick Tracy

Reviewers
Lesley G. Cook
Ryane M. Necessary

For further information concerning this document contact:

Library and Information Services
Office of Policy Analysis
Department of Legislative Services
90 State Circle
Annapolis, Maryland 21401

Baltimore Area: 410-946-5400 ● Washington Area: 301-970-5400
Other Areas: 1-800-492-7122, Extension 5400
TTY: 410-946-5401 ● 301-970-5401
Maryland Relay Service: 1-800-735-2258
E-mail: libr@mlis.state.md.us
Home Page: http://mgaleg.maryland.gov

The Department of Legislative Services does not discriminate on the basis of age, ancestry, color, creed, marital status, national origin, race, religion, gender, sexual orientation, or disability in the admission or access to its programs, services, or activities. The Department's Information Officer has been designated to coordinate compliance with the nondiscrimination requirements contained in Section 35.107 of the Department of Justice Regulations. Requests for assistance should be directed to the Information Officer at the telephone numbers shown above.
December 18, 2012

The Honorable Martin J. O’Malley, Governor
The Honorable Joan Carter Conway, Chair, Senate Education, Health and Environmental Affairs Committee
The Honorable Maggie L. McIntosh, Chair, House Environmental Matters Committee

Dear Governor O’Malley, Senator Conway, and Delegate McIntosh:

On behalf of the Task Force on the Establishment of a Statewide Spay/Neuter Fund, we respectfully submit the task force’s final recommendations and accompanying report.

The Task Force on the Establishment of a Statewide Spay/Neuter Fund was established by Chapter 266 of 2011 and extended by Chapters 273 and 274 of 2012. The task force’s charge is as follows: (1) to collect and review data on the number of spay/neuter services performed each year in the State and the unmet need for the services; (2) to review ongoing successful local spay/neuter programs in the State; (3) to review spay/neuter programs in other states and identify best practices; (4) to review and make recommendations regarding the most appropriate funding mechanism for a spay/neuter fund; and (5) to make recommendations regarding the establishment of a spay/neuter fund that best meets the needs of the State.

The work of the task force over the past year has culminated in the following recommendations concerning the establishment of a spay/neuter fund that best meets the needs of the State.

- **Funding Source** – The task force decided upon a pet food surcharge of approximately $100 annually on the pet food brand registration.

- **Program Type** – The task force decided upon the combination of both a statewide veterinarian reimbursement voucher program for low-cost spay/neuter surgeries and a competitive grant program. The voucher program would allow a person to have a cat or dog spayed/neutered at a participating veterinarian once the person has submitted an application, a nominal copayment, and proof of participation in a State public assistance program.
**Program Characteristics** – In addition to the features noted above, the task force decided upon a voucher program that is to be used only for owned animals and that includes a free rabies vaccine. The combined voucher and competitive grant program would be placed in a State agency and be advised by a volunteer oversight board, which would have the flexibility to determine reimbursement costs. The competitive grant program would be restricted to funding applications that comply with local jurisdiction laws as they relate to feral cat colonies. In order to determine effectiveness, the task force decided upon a requirement that county and municipal animal control shelters and organizations that contract for animal control submit annual intake and euthanasia data. The task force also decided upon a five-year sunset evaluation provision.

**Other Recommendations** – The task force recommends that the Maryland General Assembly consider ways to improve pet licensing compliance and rabies vaccination reporting.

We would like to express our appreciation to the members who served on the task force. We are truly proud of the hard work that the task force members have put in on the important but difficult work of protecting animals. We would also like to recognize the valuable staff support provided to the task force.

On behalf of the task force, we would like to thank you for providing the opportunity to address this important animal welfare issue. We look forward to working with you to implement the recommendations contained in this report.

Sincerely,

Joanne C. Benson  
Co-Chair

Barbara A. Frush  
Co-Chair

JCB:BAF/ADG/km

cc:  President Thomas V. Mike Miller, Jr.  
Speaker Michael E. Busch
## Contents

Transmittal Letter ........................................................................................................ iii

Background .................................................................................................................. 1

Spay/Neuter Services and Unmet Need ........................................................................ 1

Successful Local Spay/Neuter Programs in the State .................................................. 3
  Frederick County ........................................................................................................ 3
  Wicomico County ...................................................................................................... 3
  Prince George’s County ............................................................................................. 3
  Howard County .......................................................................................................... 4
  Baltimore City ............................................................................................................. 4
  Statewide .................................................................................................................. 4

Spay/Neuter Programs in Other States and Best Practices .......................................... 5
  New Jersey ............................................................................................................... 6
  New Hampshire ....................................................................................................... 6
  Delaware ................................................................................................................... 6
  Maine ....................................................................................................................... 6

Funding Mechanism Recommendation ....................................................................... 7

Statewide Spay/Neuter Fund Recommendations ....................................................... 8

Conclusion .................................................................................................................. 9
Task Force on the Establishment of a Statewide Spay/Neuter Fund

Background

The Task Force on the Establishment of a Statewide Spay/Neuter Fund was established by Chapter 266 of 2011 and extended by Chapters 273 and 274 of 2012. The task force’s charge is as follows: (1) to collect and review data on the number of spay/neuter services performed each year in the State and the unmet need for the services; (2) to review ongoing successful local spay/neuter programs in the State; (3) to review spay/neuter programs in other states and identify best practices; (4) to review and make recommendations regarding the most appropriate funding mechanism for a spay/neuter fund; and (5) to make recommendations regarding the establishment of a spay/neuter fund that best meets the needs of the State. The task force held seven meetings at which it discussed the task force’s charges and heard expert testimony. This report provides background information, findings, and/or recommendations in response to each of the task force’s five charges.

The task force found that an avoidable occurrence of euthanasia in the State exists due to shelter overpopulation. This overpopulation and subsequent euthanasia places significant cost burdens on local governments and trauma on the staff of animal welfare facilities, in addition to causing unnecessary loss of animal life. For instance, the Professional Animal Workers of Maryland, Inc. (PAWS) -- the state association of animal control agencies and humane organizations -- estimates that it costs $175 to $200 per animal for intake, housing, and disposition. The task force found that increasing the amount of animals that are spayed/neutered by subsidizing the cost of spay/neuter surgeries would facilitate the reduction or elimination of overpopulation and euthanasia rates in Maryland animal shelters. This finding was largely based on the experiences of and research by spay/neuter programs in other states as well as information presented about the Pets for Life Program of the Humane Society of the United States. The task force further found that in recent years, animal shelters in Maryland have hit a plateau with regard to the number of animals spayed/neutered leading to the unnecessary euthanasia of thousands of animals. The task force found that cost is a major barrier for low-income pet owners in having their animals sterilized and that targeting animals in low-income households can reduce intake and euthanasia rates of unwanted animals at animal shelters.

Spay/Neuter Services and Unmet Need

The task force was charged with collecting and reviewing data on the number of spay/neuter services performed each year in the State and the unmet need for the services. Based on data from the 2010 U.S. Census and the 2011/2012 American Pet Products Association’s National Pet Owners Survey, an estimated 104,625 dog and 133,046 cat spay/neuter surgeries are performed annually in the State. This estimate assumes there are 1.3 million dogs and 1.5 million cats in Maryland and is derived by:
Department of Legislative Services

- multiplying the number of estimated pets in Maryland by the percent of owned pets spayed/neutered – 78% for dogs and 88% for cats (2011/2012 American Pet Products Association’s National Pet Owners Survey); and

- dividing the number of spayed/neutered cats and dogs by the estimated average pet lifespan – 10 years for dogs and cats (Department of Legislative Services estimate).

This analysis assumes that Maryland is similar to the United States as a whole in terms of both the percent of households owning cats or dogs and the average number owned per household. In addition, this estimate does not reflect feral or stray animals that have been spayed/neutered through trap-neuter-release or similar programs.

To gauge the unmet need for spay/neuter services, the task force relied on data from two surveys of PAWS members and an estimating methodology developed by Mr. Peter Marsh, founder of Solutions to Overpopulation of Pets. The first PAWS survey of major shelters in Maryland was an informal email survey that found that annually:

- 38,414 dogs and 57,556 cats enter shelters;
- 10,677 dogs and 34,860 cats are euthanized in shelters; and
- 27,737 dogs and 22,696 cats are adopted out of shelters.

The second PAWS survey of spay/neuter services reflected responses from 26 of 51 animal control and welfare agencies contacted. The results of the survey are reflected in the document presented to the task force titled Overviewing Key Issues of Maryland’s Unwanted Dog and Cat Population and the Current Status of ‘Spay/Neuter’ Operations Within a Sample of Maryland Animal Control and Welfare Facilities written by Dr. E. Joseph Lamp, Ph.D. The survey found:

- only 9% of incoming cats and 14% of incoming dogs were spayed/neutered;
- 82% of the agencies spayed/neutered dogs/cats in custody before adoption;
- 80% of agencies that do not spay/neuter cats or dogs before release require pets to be altered after the adoption process; and
- only 44% of the agencies offered spay/neuter financial incentives.

One approach to determining the unmet need for spay/neuter services is offered by Mr. Marsh and supported by the task force. Mr. Marsh has compiled data showing that the rate of sterilized animals drastically decreases as income decreases and has found that programs targeting low-income residents have the most significant impact on pet overpopulation. Assuming that 1.85 million State residents are low-income and there are 10 new unsterilized pets entering homes
per thousand people annually, 18,500 new unsterilized pets enter low-income homes in Maryland every year.

To make a difference in the shelter overpopulation problem, Mr. Marsh recommends targeting half of the 18,500 new unsterilized pets entering low-income homes annually. Thus, taking this approach, the unmet need for spay/neuter service in Maryland is a minimum of 9,250 surgeries annually. It is estimated that a minimum of $837,080 in funding (plus additional funding for administrative costs) would be required, assuming that approximately 45% of companion animals are dogs (4,162 surgeries), 55% are cats (5,088 surgeries), and spay/neuter services cost approximately $50 per cat and $140 per dog. This is the target that the task force set out to reach with its recommendations.

Successful Local Spay/Neuter Programs in the State

The task force was charged with reviewing successful spay/neuter programs in the State. Overall, the task force found that the most successful programs all had low-cost components. Several successful programs are summarized below.

**Frederick County** – The Frederick County shelter contracts with a veterinarian to perform spay/neuter services. The Frederick County Humane Society (FCHS) runs a low-cost spay/neuter service program called Quick Fix. Eligibility for low-cost spay/neuter services is determined by the federal Women, Infants, and Children Program guidelines. The Snyder Foundation for Animals provides grant money for the services. The Quick Fix program also provides a rabies shot. While the Quick Fix program does require copayments, it is less than the cost of a regular veterinarian visit. FCHS uses a mobile vet center for spaying purposes but would like to build a permanent facility to run the Quick Fix program. FCHS would also like to provide more access to spay/neuter services for feral cats.

**Wicomico County** – The Humane Society of Wicomico County (HSWC) runs an open admission shelter and contracts with Wicomico County for animal control. It opened an onsite clinic that uses a list of rotating veterinarians. All animals leaving the shelter are spayed or neutered. The spay/neuter costs are reduced for pit bulls (half price), animals that have had three or more litters, and animals of a certain age. At full-cost veterinary hospitals in the area, average spay/neuter costs for dogs is $300 to $600, and the spay/neuter cost for cats is $100 to $200. Most of the spay/neuter services are provided to cats. HSWC has flexible spay/neuter charges but in general they are as follows: $55 for male cats, $70 for female cats, $110 to $130 for male dogs, and $130 to $160 for female dogs. HSWC does not euthanize adoptable animals.

**Prince George’s County** – The Prince George’s County shelter used to have a voucher/deposit type spay/neuter program. This program required pet adopters to leave a refundable deposit as security that the animal has been spayed/neutered. The shelter now partners with the Spay Spot Spay/Neuter Clinic, which provides low-cost spay/neuter service at the time of adoption. As a result of the partnership, there is a 98% compliance rate with
spay/neuter requirements for shelter adoptions. Between July 2011 and June 2012, 3,000 spay/neuter services were performed.

**Howard County** – Animal Advocates of Howard County’s (AAHC) spay/neuter program provides free spay/neuter services including rabies and distemper vaccines – which are all funded by donations and grants. The program has no paid staff, but it does use the services of veterinarians from private veterinary practices and clinics. In terms of qualifying for AAHC’s program, people need to fill out an application and provide proof of income for means testing purposes. Program users also need to transport their pets, although transportation can be provided on a very limited basis. Of note, the program receives 34% of its intakes from Baltimore City and Baltimore County. Over the last 15 years, AAHC has performed 30,000 spay/neuter surgeries at an average cost of $89,000 per year. If funding is available, AAHC will provide assistance to well-managed feral cat colonies.

**Baltimore City** – The SPCA in Baltimore City operates a high-volume spay/neuter clinic that provides 9,000 spay/neuter services annually. The low-cost program limits eligibility to the following persons: a Baltimore City resident earning less than $25,000 annually or a household earning less than $42,000 a year, an animal welfare group with 501(c)(3) status, a feral cat caretaker, or a Baltimore City pit bull owner (no income requirements). The current spay/neuter costs are as follows: (a) over five months of age – male cat ($50), female cat ($60), male dog ($75), and female dog ($95); and (b) under five months of age – male cat ($40), female cat ($50), male dog ($65), and female dog ($75). As a result of its high volume status, several veterinarians are needed.

**Statewide** – Spay Neuter All Pets is a nonprofit low-cost spay/neuter certificate program operating in Delaware, Maryland, New Jersey, and Pennsylvania. Since its inception, the program has issued 305,000 certificates – which basically function as vouchers – for low-cost spay/neuter surgeries. In recent years the program has issued close to 4,000 certificates per year. The program has a two-part structure: (1) a program where people pay Spay Neuter All Pets $45 for a male cat, $60 for a female cat, $60 for a male dog, and $75 for a female dog and receive a certificate that may be used at 93 participating veterinarians (80 in Maryland) who then seek reimbursement from Spay Neuter All Pets; and (2) a Rescue and Relief Fund supported by public donations that provides free spay/neuter services for those in financial need. While the Spay Neuter All Pets program is available on a limited basis statewide, it is not adequate for the needs of Maryland’s low-income citizens because the copayment is more than a nominal amount. Furthermore, the Spay Neuter All Pets certificates do not necessarily cover all services generally provided by a veterinarian.
Spay/Neuter Programs in Other States and Best Practices

The task force was charged with reviewing successful spay/neuter programs in other states and identifying best practices. More than half of the 50 states have a statewide spay/neuter program. There are three main types of programs being implemented, as shown in Exhibit 1. Generally, the three models are funds returned, organization grants, and veterinarian reimbursement. Overall, the task force found that the most successful programs in other states all had the veterinarian reimbursement model in common. Funding sources for the programs varied by state, although a number of states used license plates and tax check-offs. Several successful veterinarian reimbursement model programs are summarized in Exhibit 1, all of which are partially funded by copayments made by program participants in addition to the main funding sources shown. Program purposes delineated by the various states include reducing the stray and unwanted pet population, reducing shelter impoundments and euthanasia rates, reducing animal control costs, reducing dog bites, and reducing threats to public health and safety.

---

**Exhibit 1**

**Spay/Neuter Program Models**

<table>
<thead>
<tr>
<th>Program Model</th>
<th>Description</th>
<th>Example States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds Returned</td>
<td>Funds collected by the state – from income tax check-offs, license plate fees, or other sources – applied in counties in which collected.</td>
<td><strong>North Carolina</strong> – license plate and rabies tag surcharge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Virginia</strong> – license plate and tax check-off.</td>
</tr>
<tr>
<td>Organization Grants</td>
<td>Organizations apply to the state for grants.</td>
<td><strong>Arizona</strong> – license plate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>California</strong> – tax check-off.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Florida</strong> – license plate and direct-support organization.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Louisiana</strong> – license plate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Ohio</strong> – license plate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Texas</strong> – license plate.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Utah</strong> – license plate and tax check-off.</td>
</tr>
<tr>
<td>Veterinarian Reimbursement</td>
<td>Veterinarians are reimbursed for surgeries by a statewide fund.</td>
<td><strong>Connecticut</strong> – license plate, spay/neuter deposits, dog license fees, and license surcharge for intact dogs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Delaware</strong> – license plate and rabies surcharge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Maine</strong> – license plate, surcharge on pet food registration, surcharge on sale of unaltered cats or dogs sold in pet shops; and tax check-off.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>New Hampshire</strong> – $2 surcharge for dog licenses and proceeds in animal fighting cases after local jurisdiction reimbursed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>New Jersey</strong> – license plate, surcharge for licenses for intact dogs, fees from owner for spay/neuter, and tax check-off.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Vermont</strong> – $3 surcharge on dog (or wolf-hybrid) licenses.</td>
</tr>
</tbody>
</table>

Source: Humane Society of the United States
New Jersey – New Jersey’s program began in 1984 and supported 189,103 spay/neuter surgeries through 2008. Program funding is based on unaltered dog license revenues, copayment fee revenues, license plate revenues, and a one-time state budget appropriation. Under the current program, low-income residents can have their pets sterilized by applying and paying a $10 copayment if the resident receives support from any number of public assistance programs. The program also provides for sterilization of pets adopted by a resident from an eligible shelter or pound, with a $20 copayment. Veterinarians are reimbursed at 80% of the base rate determined for each of the counties involved in the program. A sample of reimbursement rates varies from year to year. Inoculations are included if necessary. This program is overseen by the Department of Health and Senior Services, and there is a Domestic Companion Animal Council that provides recommendations regarding the program. The New Jersey spay/neuter program’s budget has averaged approximately $800,000 per year and has led to a 42% reduction in the dog and cat impoundment rate and a 61% reduction in the dog and cat euthanasia rate as of 2010.

New Hampshire – New Hampshire established a $2 surcharge on statewide dog license fees as the primary funding source for its spay/neuter program and allows for 80% fee recovery by the more than two-thirds of veterinarians in the state who participate in the program. Rabies vaccines are included if necessary. The program has two components: (1) a $25 spay/neuter copayment program for dogs and cats adopted from shelters by New Hampshire residents; and (2) a $10 copayment spay/neuter and pre-surgical vaccination program for dogs and cats owned by low-income residents receiving state assistance. The program currently averages approximately $338,000 a year for surgical costs and has led to a 77% reduction in the pet euthanasia rate since its inception in 1994. This program is administered by the Department of Agriculture, Markets and Food and overseen by a legislative Pet Overpopulation Committee.

Delaware – Delaware also runs a statewide spay/neuter program that is funded by a $3 surcharge on rabies vaccines and overseen by the Department of Agriculture. The law governing the program requires that all shelters spay/neuter and microchip adopted animals. Rabies vaccines are included if necessary. Approximately $275,000 annually is generated by the rabies vaccine surcharge. Secondary funding has also come from copayment revenues and a one-time state budget appropriation. Currently, 27% of companion animal veterinary practices in the state participate in the program, which is administered in two parts as follows: (1) 75% of the funding is assigned to the $20 copayment component of the program for income eligible applicants who qualify under various public assistance programs as evaluated by the human services department; and (2) 25% of the program funding is assigned to 24 nonprofit organizations that provide vouchers for spaying/neutering of abandoned, free roaming, homeless, stray, or unwanted animals, which works out to approximately $600 per quarter per organization.

Maine – Maine has a statewide spay/neuter program that enables low-income residents to obtain spay/neuter surgery for their pets with a $10 copayment for cats and $20 for dogs. This includes a rabies vaccine if necessary. The program is administered by the Department of Agriculture with oversight by an Animal Welfare Advisory Council. Approximately 75% of veterinary hospitals participate in the program with funding of approximately $185,000 per year.
for surgical costs. Funding is primarily from a surcharge on pet food distribution registrations with additional funding sources from pet store fees, a dog license surcharge, and a tax check-off box.

**Funding Mechanism Recommendation**

In response to its mandate to review and make recommendations regarding the most appropriate funding mechanism for a spay/neuter fund, the task force considered a variety of potential funding sources. Specifically, the following revenue sources were considered: a pet food surcharge, an income tax check-off, a pet license surcharge (including a statewide requirement for cat licenses), a statewide spay/neuter license plate subject to a surcharge, a surcharge on intact pets sold from pet stores, a surcharge on penalties from animal control/cruelty violations, enhanced enforcement of pet licensing requirements, and a rabies vaccine surcharge. The task force determined that any potential funding source had to be substantial, reliable, and sustainable in order to support a spay/neuter program that would have a significant impact on intake and euthanasia in Maryland shelters.

After considering these options, the task force recommends that a surcharge on pet food be adopted to finance a spay/neuter program. The pet food surcharge would be implemented as an annual $100 fee on each commercial feed (pet food) registration in the State. The task force determines that pet food sales are very stable, even in economic downturns, and would be reliable and sustainable. In addition, as the Maryland Department of Agriculture registered 10,699 pet food brands in fiscal 2012, the task force determined that the approximately $1 million that the surcharge would raise annually would be substantial enough to properly finance the spay/neuter program. In addition, the program would be funded by nominal copayments made by specified persons participating in the program.
Statewide Spay/Neuter Program Recommendations

In response to its mandate to make recommendations regarding the establishment of a spay/neuter fund that best meets the needs of the State, the task force considered a variety of program characteristics used in Maryland and elsewhere, including the distribution of aid through State vouchers or competitive grants; subjecting the program to periodic, formal evaluation; targeting aid to low-income communities; providing free or largely subsidized surgery; and including free or reduced-cost rabies vaccinations with the program.

After considering a variety of options, the task force recommends that Maryland adopt a hybrid program including State vouchers financed by a spay/neuter fund and competitive grants distributed from the fund. The State voucher program would target owned animals of low-income residents, as determined by participation in State public assistance programs. A person would obtain a voucher by submitting an application, proof of participation in a State public assistance program, and a nominal copayment. The person would use the voucher to have the cat or dog spayed/neutered at a participating veterinarian. The veterinarian would be reimbursed by the State for the spay/neuter surgery at a previously negotiated rate. The competitive grant program would allow local governments and animal welfare organizations to apply for grants to finance local spay/neuter programs. A grant application would be required to detail in what manner the grant would be used to target low-income pet owners, if appropriate. Grants could also be used to target local feral cat populations as long as the State has checked to make sure the potential grant recipient’s proposed project is legal in that particular jurisdiction. The voucher program and any grant proposal would include public education and outreach components to the extent possible.

The task force further determined that the program should be placed in a State agency and be advised by a volunteer oversight board. The State agency, in consultation with the volunteer oversight board, would maintain the spay/neuter fund, determine eligibility for and distribute vouchers, collect copayments and deposit them into the spay/neuter fund, negotiate rates to be paid to veterinarians for redeemed vouchers (including variations based on age, weight, and gender; additional rates for old, pregnant, or sick cats or dogs; and rates for the provision of the rabies vaccine), and set standards for and approve competitive grants. The State agency and advisory board would require a grant recipient to report specific data on how the funding is used as they determine necessary. Finally, county and municipal animal control shelters and organizations that contract for animal control would be required to report data on animal intake and disposition, including euthanasia, to assist in monitoring and assessing the performance of the program (the task force also recommended a five-year sunset on the program to facilitate this assessment).

The task force finally recommended that the Maryland General Assembly consider legislation to (1) enhance the efficiency of and compliance with pet licensing requirements; and (2) improve reporting requirements with respect to rabies vaccination compliance.
Conclusion

The need for affordable spay/neuter services is a statewide concern. While the recommendations of this report are not intended to be exhaustive, they are intended to make significant progress towards reducing the avoidable occurrence of euthanasia in the State due to shelter overpopulation.

The task force appreciated the opportunity to develop this report and looks forward to implementing the various recommendations.