



# Prescription Drugs Online

---

**One in four Americans have looked online  
for drug information, but few have ventured  
into the online drug marketplace**

Embargoed until 4pm Eastern on 10 October 2004

---

**Susannah Fox, Director of Research**

# Summary of Findings

---

## **Sixty-four percent of American households are regular consumers of prescription drugs.**

Forty-five percent of American adults, or about 91 million people, take prescription drugs on a regular basis. Forty-one percent of American adults live with someone who regularly takes prescription drugs. In total, 64% of American households have a regular connection to the prescription drug marketplace.

---

## **One in four American adults has searched online for information about prescription drugs.**

Twenty-six percent of American adults have researched prescription drugs online – 21% have personally done so and 5% have had it done for them by someone else. Those groups most likely to have personally searched for drug information include: internet users with high-speed connections at work and at home; internet users who have been online for six or more years; Americans with a college degree; and Americans in the Baby Boom generation. Americans living with a disability or chronic illness are no more likely than other Americans to search for prescription drug information online.

---

## **Most Americans do not fully trust the online prescription drug marketplace.**

Sixty-two percent of Americans think purchasing prescription drugs online is less safe than purchasing them at a local pharmacy. Twenty percent of Americans think such online purchases are as safe as local purchases. Eighteen percent of Americans responded that they did not know or that it depends on the situation.

---

## **A fraction of Americans has ever bought prescription drugs online.**

Only 4% of Americans have ever purchased prescription drugs on the internet. Three percent of Americans placed the order themselves and 1% had someone else do it. Our survey of 2,200 American adults yielded just 93 people who had purchased prescription drugs online, so this small sample of buyers is subject to a much larger sampling error than applies to the total sample of respondents. Americans living in higher-income

This Pew Internet & American Life Project report is based on the findings of a daily tracking survey. All numerical data was gathered through telephone interviews conducted by Princeton Survey Research Associates between May 14 and June 17, 2004, among a sample of 2,200 adults, aged 18 and older. For results based on the total sample, one can say with 95% confidence that the error attributable to sampling and other random effects is +/- 2%. For results based Internet users (n=1,399), the margin of sampling error is +/- 3%.

## Summary of Findings

households (\$50,000+ annually) and internet users with six or more years of online experience are more likely to have made such a purchase.

Rx purchasers – Americans who answer yes to the following question: “Have you ever purchased prescription drugs on the internet, whether you placed the order yourself or someone else did it for you?”

---

### Convenience is the top reason for online prescription-drug purchasing.

The small number of Americans who have ordered prescription drugs online are likely to cite convenience and cost savings as the main reasons why they decided to take the leap. Privacy is the least likely factor of the choices offered in the survey.

---

### The typical online transaction includes a doctor’s prescription, a U.S.-based pharmacy, and satisfied customers.

When asked about the last time they purchased prescription drugs online, the vast majority of Rx purchasers say the site required a prescription and nearly all Rx purchasers say they had a prescription from their doctor. The vast majority of Rx purchasers visited a site that was based in the United States; a few visited a site based in another country and a few do not know where the site is based.

In addition:

- Three-quarters of Rx purchasers say the last time they purchased prescription drugs online, they bought a drug for a chronic medical condition such as high blood pressure or arthritis.
- One quarter of Rx purchasers say their last purchase at an online pharmacy was for some other purpose, such as weight loss or sexual performance.
- Most Rx purchasers were satisfied with their last contact with an online pharmacy and plan to order prescription drugs online in the future.

---

### Few respond to email advertisements, but drug spam continues to pile up.

A tiny percentage of Rx purchasers say their last trip to an online pharmacy was in response to an email advertisement. Many more internet users have received unsolicited email advertising drugs, however.

- 63% of internet users say they have received an unsolicited email advertising a sexual health medication like Viagra.

## Summary of Findings

- 55% of internet users say they have received an unsolicited email advertising a prescription drug.
- 40% of internet users say they have received an unsolicited email advertising an over-the-counter drug.

---

### **Ignorance and mistrust of the online prescription drug market may be dispelled by further research and good experiences.**

There are indications that Americans could change their minds about the safety of online prescription drug purchases. Those who research a product online often become customers. Convenience is the number one reason why banking became the fastest-growing activity between 2000 and 2002 – and it is the main reason why current Rx purchasers made the switch from off-line to online ordering. Most Rx purchasers are satisfied customers and plan to continue buying prescription drugs online.

<b>Prescription Drugs Online: Summary of Findings at a Glance</b>
Sixty-four percent of American households are regular consumers of prescription drugs.
One in four American adults has searched online for information about prescription drugs.
Most Americans do not fully trust the online prescription drug marketplace.
A fraction of Americans has ever bought prescription drugs online.
Convenience is the top reason for online prescription-drug purchasing.
The typical online transaction includes a doctor's prescription, a U.S.-based pharmacy, and satisfied customers.
Few respond to email advertisements, but drug spam continues to pile up.
Ignorance and mistrust of the online prescription drug market may be dispelled by further research and good experiences.
Source: Fox, Susannah. <i>Prescription Drugs Online</i> . Washington, DC: Pew Internet & American Life Project, October 10, 2004.

# Contents

**Summary of Findings**

**Acknowledgements**

**Part 1. Prescription drug information searches**

**Part 2. The prescription drug marketplace**

**Part 3. Drug advertising via email**

**Part 4. Implications for the future**

**Methodology**

# Acknowledgements

About the Pew Internet & American Life Project: The Pew Internet Project is a nonprofit, non-partisan think tank that explores the impact of the internet on children, families, communities, the work place, schools, health care and civic/political life. The Project aims to be an authoritative source for timely information on the internet's growth and societal impact. The project is part of the Pew Research Center and support for the project is provided by The Pew Charitable Trusts. The project's Web site: [www.pewinternet.org](http://www.pewinternet.org)

About Princeton Survey Research Associates: PSRA conducted the survey that is covered in this report. It is an independent research company specializing in social and policy work. The firm designs, conducts, and analyzes surveys worldwide. Its expertise also includes qualitative research and content analysis. With offices in Princeton, New Jersey, and Washington, D.C., PSRA serves the needs of clients around the nation and the world. The firm can be reached at 911 Commons Way, Princeton, NJ 08540, by telephone at 609-924-9204, by fax at 609-924-7499, or by email at [ResearchNJ@PSRA.com](mailto:ResearchNJ@PSRA.com)

# Part 1.

## Prescription drug information searches

---

### The prescription drug market is enormous.

Forty-five percent of American adults take prescription drugs on a regular basis, 27% occasionally take prescription drugs, and an additional 27% say they never take prescription drugs. In addition, 41% of American adults live with someone who takes prescription drugs on a regular basis. When the two groups of regular users are combined, 64% of American households can be described as “Rx households.”

Rx households – American households with at least one regular prescription drug user.
---

According to IMS Health, a company that tracks the pharmaceutical market, over 3 billion prescriptions are filled in the U.S. each year, totaling sales of over \$200 billion. Chain drug stores garner the most sales of prescription drugs (36.2%), followed by independent drug stores (14.4%), and mail services (13.8%).<sup>1</sup>

Over the last five years, the Pew Internet & American Life Project has tracked significant increases in the number of Americans seeking health information online.<sup>2</sup> Thus, we felt it was important to study the situation with online medicine purchases because of the significant interest that grew around the subject after recent changes in federal policy.

In the spring of 2004, the federal government announced changes to the Medicare system, including the publication of prescription drug prices online. In addition, there has been a recent effort to legalize the importation of prescription drugs from Canada, where prices are significantly lower. In August, Illinois joined Minnesota, Wisconsin, and New Hampshire in launching online directories of recommended Canadian pharmacies.<sup>3</sup> The U.S. House of Representatives passed a bill in July that would allow for prescription drug imports from Canada and other countries.<sup>4</sup>

---

<sup>1</sup> IMS Health industry data. Available at: <http://www.imshealth.com/media>

<sup>2</sup> “Internet Health Resources: Health searches and email have become more commonplace but there is room for improvement in searches and overall Internet access.” (Pew Internet Project: July 16, 2003) Available at: [http://www.pewinternet.org/PPF/r/95/report\\_display.asp](http://www.pewinternet.org/PPF/r/95/report_display.asp)

<sup>3</sup> “Ill. Gov. Unveils Online Pharmacy Network” (ABCNews.com: August 17, 2004) Available at: [http://abcnews.go.com/wire/US/ap20040817\\_1531.html](http://abcnews.go.com/wire/US/ap20040817_1531.html)

<sup>4</sup> “Drug Import Bill Clears House” (SFGate.com: July 14, 2004) Available at: <http://www.sfgate.com/cgi-bin/article.cgi?file=/news/archive/2004/06/14/national2137EDT0814.DTL>

## Part 1. Prescription drug information searches

But there is strong opposition from the pharmaceutical industry, and the U.S. Food and Drug Administration, both of which claim that they cannot guarantee the safety of imported drugs. However, a June 2004 study conducted by the General Accounting Office found that Canadian online pharmacies were just as likely as U.S.-based sites to adhere to safety standards.<sup>5</sup>

We undertook this study in order to measure Americans' current interest in online prescription drug research and purchasing.

---

### **One in four American adults has searched online for information about prescription drugs.**

Twenty-six percent of American adults have researched prescription drugs online – 21% have personally done so and 5% have had it done for them by someone else. Those groups most likely to have personally searched for drug information include: internet users with high-speed connections at work and at home; internet users who have been online for six or more years; Americans with a college degree; and Americans in the Baby Boom generation.

#### **Internet use**

Not surprisingly, internet users are more likely than non-users to have personally researched prescription drugs online. Thirty percent of internet users have done so. Four percent of non-internet users have personally researched prescription drugs online. (Another 4% of internet users and 7% of non-users have had someone else perform such a search on their behalf.)

#### **Connection speed**

Broadband users are among the most likely Americans to have searched for prescription drug information online. Forty-one percent of internet users with fast connections at both home and work have personally looked for prescription drug information online. Twenty-nine percent of dial-up users have done so.

#### **Years of experience online**

The longer someone has had access to the internet, the more likely he or she is to have searched for information about prescription drugs. Thirty-eight percent of internet users with six or more years of experience have personally looked for prescription drug information online, compared to 28% of those who have been online for four to five years. Just 13% of internet users with one to three years of experience have done this type

---

<sup>5</sup> "Internet Pharmacies: Some Pose Safety Risks for Consumers" (United States General Accounting Office: June 17, 2004) Available at: <http://www.gao.gov/new.items/d04820.pdf>



## Part 1. Prescription drug information searches

of research online. Thirteen percent of newcomers (those with less than one year of online experience) have searched for prescription drug information.

### Education

College graduates are more likely to have internet access and, once online, are more likely to have done health searches. Therefore it is not surprising that 32% of college graduates have personally gone online to search for prescription drug information, compared to 23% of American adults who attended college, but did not graduate. Just 15% of high school graduates have personally done this type of search online.

### Age

Younger baby boomers – those born between 1955 and 1964 – are the most likely to have personally searched online for prescription drug information. Some 28% of these 40-49 year-olds have done so. Twenty-four percent of older baby boomers (50-58 year-olds) have done so. Twenty-three percent of the Gen X generation (28-39 year-olds) have searched for prescription drug information, compared to 17% of Gen Y (18-27 year-olds). Eighteen percent of 59-68 year-olds have personally searched for this type of information, compared to just 8% of internet users age 69 and older.

### Household use of prescription drugs

Members of an Rx household are more likely to have searched for drug information online than Americans who are not part of a household so dependent on prescription drugs. Twenty-four percent of members of an Rx household have personally done this type of research online, compared to 15% of Americans who do not live in a household where prescription drugs are taken on a regular basis.

### Race

Twenty-four percent of whites have personally done this type of research online, compared to 12% of blacks. Fourteen percent of English-speaking Hispanic or Latino Americans have personally gone online to look for information about prescription drugs.

### Health insurance

According to the latest Census Bureau estimates, 15.6% of Americans lack health insurance.<sup>6</sup> In our survey of U.S. adults, 13% say they lack health insurance.

Americans with health insurance are more likely to take prescription drugs on a regular basis than those who lack insurance, but we do not know whether it is because insured

---

<sup>6</sup> “Income, Poverty, and Health Insurance Coverage in the United States.” (Census Bureau: August 26, 2004)  
Available at: <http://www.census.gov/prod/2004pubs/p60-226.pdf>

## Part 1. Prescription drug information searches

Americans are more likely to have the need or simply the means to do so. Forty-nine percent of Americans who have health insurance take prescription drugs on a regular basis, 26% do so occasionally, and 24% never do. Twenty percent of Americans who do not have health insurance take prescription drugs on a regular basis, 35% do so occasionally, and 45% never do. Americans with health insurance are also more likely than the uninsured to have visited a doctor or medical clinic in the past year. Eighty-one percent of insured Americans did so, compared to 57% of uninsured Americans.

American adults covered by some form of health insurance, including Medicare or Medicaid, are more likely to have personally searched for prescription drug information online. Twenty-two percent of insured Americans have done so, compared to 14% of Americans who do not have any type of health insurance coverage.

It is important to note that 34% of uninsured American adults are between 18 and 27 years old – the most likely age group to report “excellent” health and the least likely age group to have searched online for prescription drug information. By comparison, 14% of Americans with some form of health insurance are 18-27 years old.

---

### **Health status has little to do with a person’s likelihood to have personally researched prescription drug information.**

#### **Overall health**

Americans in excellent health are only slightly more likely than those in poor health to have personally searched online for prescription drug information – 21% of those in the best of health and 17% of those who describe their health as “fair” or “poor” have done so. However, people in poor health are more likely to have been the subject of a search – 11% have had a prescription drug information search done on their behalf. By comparison, 5% of those in excellent health have been the subject of such a search.

#### **Disability status**

Americans living with a disability are just as likely as other Americans to have personally searched for prescription drug information online – 19% and 21% respectively. Eleven percent of Americans living with a disability have had someone else look on the internet for prescription drug information, compared to 5% of Americans who are not living with a disability. It is important to note that only 38% of Americans living with a disability go online, compared to 69% of other Americans. This may explain why more Americans living with a disability have been the subjects of a search for information – they are more likely to need someone else to go on the internet for them.

Internet user – defined as those answering “yes” to the following question: “Do you ever go online to access the internet or the World Wide Web or to send and receive email?”
--

## Part 2.

### The prescription drug marketplace

---

#### **Most Americans do not fully trust the online prescription drug marketplace.**

Sixty-two percent of Americans think purchasing prescription drugs online is less safe than purchasing them at a local pharmacy. Twenty percent of Americans think such online purchases are as safe as local purchases. Eighteen percent of Americans responded that they did not know or that it depends on the situation.

Sixty-eight percent of Americans agree with the following statement: “Some argue that allowing people to purchase prescription drugs online makes it too easy to obtain drugs illegally, without a prescription.” Seventy-one percent of Americans agree with a second statement: “Others argue that people should not be allowed to purchase prescription drugs online because not all pharmacies are licensed in the United States, and there’s no way to guarantee the safety of drugs that come from other countries.”

A handful of states encourage their residents to purchase lower-cost prescription drugs from Canada, despite opposition from the pharmaceutical industry and the FDA.

“Show me the dead Canadians.” –  
Minnesota Gov. Tim Pawlenty (R) in  
response to the federal government’s safety  
concerns about the importation of drugs  
from Canada<sup>7</sup>

---

#### **Few health plans require mail order or online purchasing.**

Of the 86% of Americans who are covered by a health plan, 5% report that they are required to order certain prescription drugs by mail or online. Eighty-nine percent of insured Americans are allowed to order all of their prescription drugs at a local pharmacy, if they wish. Six percent of insured Americans do not know if there is such a requirement associated with their health plan.

---

<sup>7</sup> “Pawlenty pitches prescription plan to Congress” (Stateline.org: November 20, 2003) Available at: <http://www.stateline.org/stateline/?pa=story&sa=showStoryInfo&print=1&id=335987>

## Part 2. The prescription drug marketplace

IMS Health estimates that 13.8% of prescriptions are fulfilled by mail. Most are filled by chain drugstores (36.2%), independent drug stores (14.4%), or non-federal hospitals (10.5%).<sup>8</sup>

---

### A fraction of Americans has ever bought prescription drugs online.

According to our survey, just 4% of Americans have ever purchased prescription drugs on the internet. Three percent of Americans placed the order themselves and 1% had someone else do it. Not surprisingly, internet users are more likely to have bought prescription drugs online but a small number of non-internet users have done so. Americans living in higher-income households (\$50,000+ annually) are more likely than those living in lower-income households to have done so. Internet users with six or more years of online experience are also more likely to be “Rx purchasers.”

Rx purchasers – Americans who answer yes to the following question: “Have you ever purchased prescription drugs on the internet, whether you placed the order yourself or someone else did it for you?”
---

Americans who perceive buying drugs online as safe are more likely to have actually made a purchase. Americans who are on prescription medication, or live with someone who is, are more likely to have bought prescription drugs online. Americans who have gone on the internet to look for information about prescription drugs are more likely to have made such a purchase online.

---

### Convenience is the top reason for online prescription-drug purchasing.

The small number of Americans who have ordered prescription drugs online are likely to cite convenience, time savings, and cost savings as the main reasons why they decided to take the leap. Privacy is the least likely factor of the four offered in the survey.

---

### The typical online purchase includes a doctor’s prescription and U.S.-based pharmacy.

When asked about the last time they purchased prescription drugs online, vast majority of Rx purchasers say the site required a prescription and near majority of Rx purchasers say they had a prescription from their doctor. The vast majority of Rx purchasers visited a site that was based in the United States; a few visited a site based in another country and a few do not know where the site is based.

---

<sup>8</sup> IMS Health, “U.S. Purchase Activity by Channel, June 2004.” Available at: <http://www.imshealth.com/media>

## Part 2. The prescription drug marketplace

---

### **Three in four online drug purchases are for a chronic medical condition.**

Three-quarters of Rx purchasers say the last time they purchased prescription drugs online, they bought a drug for a chronic medical condition such as high blood pressure or arthritis. One quarter of Rx purchasers say their last purchase at an online pharmacy was for some other purpose, such as weight loss or sexual performance.

---

### **Most are satisfied customers, few report bad experiences.**

Most Rx purchasers were satisfied with their last contact with an online pharmacy and plan to order prescription drugs online in the future. The quality of the drugs purchased online garnered the most positive feedback – the vast majority of Rx purchasers said they were “very satisfied” with the quality. A large majority of Rx purchasers were “very satisfied” with the customer service they received and about half were “very satisfied” with the price they paid.

Nine in ten Rx purchasers plan to go online to fill a prescription in the future. However, a small group of Rx purchasers reported a bad experience ordering prescription drugs online. Most had to do with shipping problems – packages lost in the mail or routed to the wrong address.

## Part 3.

### Drug advertising via email

---

#### **Few respond to email advertisements, but drug spam continues to pile up.**

A tiny percentage of Rx purchasers say their last trip to an online pharmacy was in response to an email advertisement. Many more internet users have received unsolicited email advertising drugs, however.

In October 2003, the Pew Internet Project reported that longtime internet users, those who have been online at least 6 years, are significantly more likely to have heard or read about spam than anyone else. These veteran users are also more likely than less-experienced internet users to say that spam is a big problem. Despite sophisticated efforts to avoid it, longtime internet users get just as much spam as everyone else, possibly because their email address may have been circulating for many years before they learned how to protect it.<sup>9</sup> In this study, we find that men and the most veteran internet users are the most likely to report receiving drug spam. Statistical analysis shows that these traits – being a man and being a longtime internet user – are independent predictors of receiving drug spam. That is, holding all variables constant, men are more likely than women to report a heavy volume of drug spam. Longtime internet users – whether they are men, women, young, middle-aged, etc. – are also more likely than other internet users to receive drug spam.

#### **Sexual health medication spam**

Sixty-three percent of internet users say they have received an unsolicited email advertising a sexual health medication such as Viagra. Seventy-one percent of male internet users say they have received such an ad, compared to 56% of female internet users. Seventy-two percent of internet users with six or more years of experience online say they have received sexual health drug spam, compared to 59% of those who have been online 4-5 years, 53% of those who have been online 2-3 years, and 30% of those who got online within the past year.

---

<sup>9</sup> “Spam: How It Is Hurting Email and Degrading Life on the Internet.” (Pew Internet Project: October 22, 2003) Available at: [http://www.pewinternet.org/PPF/r/102/report\\_display.asp](http://www.pewinternet.org/PPF/r/102/report_display.asp)

## Part 3. Drug advertising via email

### Prescription drug spam

Fifty-five percent of internet users say they have received an unsolicited email advertising a prescription drug. Sixty percent of male internet users say they have received prescription drug spam, compared to 50% of female internet users. Sixty-five percent of internet users with six or more years of experience online say they have received prescription drug spam, compared to 47% of those who have been online 4-5 years, 44% of those who have been online 2-3 years, and 20% of those who got online within the past year.

### Over-the-counter drug spam

Forty percent of internet users say they have received an unsolicited email advertising an over-the-counter drug. Forty-nine percent of male internet users say they have received over-the-counter drug spam, compared to 32% of female internet users. Forty-seven percent of internet users with six or more years of experience online say they have received over-the-counter drug spam, compared to 36% of those who have been online 4-5 years, 32% of those who have been online 2-3 years, and 19% of those who got online within the past year.

## Part 4.

### Implications for the future

---

#### **Ignorance and mistrust of the online prescription drug market may be dispelled by further research and good experiences.**

Only 4% of Americans have purchased prescription drugs online. A majority of Americans profess fear and mistrust of the online pharmaceutical market. However, there are indications that Americans could change their minds about the safety of online prescription drug purchases, especially as the debate heats up nationwide.

#### **Window shoppers may become buyers**

The online travel industry saw a 90% growth rate between 2000 and 2002.<sup>10</sup> Internet users who have done travel-related research online are more likely to have made a travel purchase on the internet than those who have not done such a search. If an increasing number of Americans goes online to research prescription drugs, online pharmacies may see an accompanying increase in customers.

#### **Convenience is a strong selling point online**

Convenience is the number one reason why banking became the fastest-growing online activity between 2000 and 2002, when the industry saw a 164% growth rate. The same trend may hold true for online pharmacies since 84% of Rx purchasers say that convenience was important to their decision to buy online for the first time.

#### **Satisfied customers say they will return**

Nine out of ten Americans who have purchased prescription drugs online say they plan to do so again. Those who were dissatisfied with their purchase are unlikely to cite reasons related to fears about drug safety. As more municipalities and states encourage online prescription drug purchases, it seems likely that the universe of potential satisfied customers will grow.<sup>11</sup>

---

<sup>10</sup> "Online Banking" (Pew Internet Project: November 17, 2002) Available at: [http://www.pewinternet.org/PPF/r/77/report\\_display.asp](http://www.pewinternet.org/PPF/r/77/report_display.asp)

<sup>11</sup> "Montgomery Passes Drug Import Plan" (Washington Post: September 22, 2004) Available at: <http://www.washingtonpost.com/wp-dyn/articles/A39932-2004Sep21.html>



# Methodology

The results in this report are based on data from telephone interviews conducted by Princeton Survey Research Associates from May 15 to June 17, 2004, among a sample of 2,200 adults, 18 and older. For results based on the total sample, one can say with 95% confidence that the error attributable to sampling is plus or minus 2 percentage points. For results based internet users (n=1,399), the margin of sampling error is plus or minus 3 percentage points. In addition to sampling error, question wording and practical difficulties in conducting telephone surveys may introduce some error or bias into the findings of opinion polls.

The sample for this survey is a random digit sample of telephone numbers selected from telephone exchanges in the continental United States. The random digit aspect of the sample is used to avoid “listing” bias and provides representation of both listed and unlisted numbers (including not-yet-listed numbers). The design of the sample achieves this representation by random generation of the last two digits of telephone numbers selected on the basis of their area code, telephone exchange, and bank number.

New sample was released daily and was kept in the field for at least five days. This ensures that complete call procedures were followed for the entire sample. Additionally, the sample was released in replicates to make sure that the telephone numbers called are distributed appropriately across regions of the country. At least 10 attempts were made to complete an interview at every household in the sample. The calls were staggered over times of day and days of the week to maximize the chances of making contact with a potential respondent. Interview refusals were re-contacted at least once in order to try again to complete an interview. All interviews completed on any given day were considered to be the final sample for that day. The final response rate to this survey was 30.9%.

Non-response in telephone interviews produces some known biases in survey-derived estimates because participation tends to vary for different subgroups of the population, and these subgroups are likely to vary also on questions of substantive interest. In order to compensate for these known biases, the sample data are weighted in analysis. The demographic weighting parameters are derived from a special analysis of the Census Bureau’s March 2003 Annual Social and Economic Supplement Survey. This analysis produces population parameters for the demographic characteristics of adults age 18 or older, living in households that contain a telephone. These parameters are then compared with the sample characteristics to construct sample weights. The weights are derived using an iterative technique that simultaneously balances the distribution of all weighting parameters.