User Guide
Interactive Tool to Assess Impact of Increasing Use of Highly Effective Reversible Contraception Methods among Medicaid Beneficiaries (ROI Tool)
Version 1.0

User Manual, Current Edition: 1.0

If you have any comments, please contact DRHINFO@CDC.GOV for further information and/or assistance.

* This is a BETA TEST version and is not considered a finished product. The materials embodied in this tool/program are "as-is" and without warranty of any kind, express, implied, or otherwise, including without limitation any warranty of fitness for a particular purpose.
ACKNOWLEDGMENTS

The Centers for Disease Control and Prevention (CDC), Office of the Associate Director for Policy (OADP), Division of Reproductive Health (DRH), in collaboration with the U.S. Department of Health and Human Services, Office of Population Affairs (OPA), developed this tool to aid states in conducting customized budgetary impact analyses of increased uptake of long-acting reversible contraception (LARC) among Medicaid beneficiaries. We would like to thank states participating in the Association of State and Territorial Health Officials (ASTHO) Increasing Access to Contraceptives Learning Community that engaged in user-testing that helped refine the tool (Georgia, Iowa, and Massachusetts); this current beta-testing version incorporates their feedback.

CONTACT

For additional help or feedback, please email your comments or questions to DRHINFO@CDC.GOV.
DISCLAIMER
This software is a beta version, and the authors encourage the reporting of bugs and suggestions for improvements.

The numbers generated using this tool cannot be interpreted as predictions of what will occur if policies increasing LARC access are implemented. Rather, they should be treated as estimates of hypothetical scenarios of increased utilization of LARC which might happen in the context of increased access to LARC. These estimates are based on the assumptions and modeling strategies used by this software package.

The contents of this manual do not necessarily represent the official views of the Centers for Disease Control and Prevention, the Department of Health and Human Services, or the U.S. government.

SYSTEM REQUIREMENTS
The software program requires the use of the Windows* operating system (Microsoft Windows XP or higher) and the Excel program (Microsoft Office 2003 or higher). We recommend using a computer that has at least a processor with a minimum of 1GB of RAM (operating memory), a 2.5 GHZ speed, and at least 15 GB of free storage memory on the computer’s hard drive. The ROI Tool 1.0 will probably not run adequately on machines with slower processors and older versions of Windows (e.g. Windows 2000). The ROI Tool 1.0 is not designed to run on Apple* or machines that use other operating systems such as Linux*.

*The use of trade-named products is for information purposes only. The U.S. Federal Government or its agencies do not endorse any specific computer or operating system.

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PURPOSE OF TOOL
This tool was designed to provide state Medicaid programs and other public health practitioners with a user-friendly and customizable tool to assess the impact of increased utilization of long-acting reversible contraception (LARC) among Medicaid beneficiaries. It projects the estimated number of unintended pregnancies averted and related Medicaid spending in the context of increased LARC utilization over a specified implementation period (intervention scenario) compared to status quo (no intervention scenario).

INSTRUCTION OVERVIEW
The Interactive Tool to Assess Impact of Increased Use of Highly Effective Reversible Contraception among Medicaid Beneficiaries (which will be referred to as the ROI Tool) is an interactive Microsoft Excel spreadsheet-based tool designed to assist state Medicaid programs and other public health practitioners with a user-friendly and customizable calculator to estimate the impact of potential increases in utilization of LARC among women of reproductive age who are Medicaid beneficiaries.

Users of the tool can specify the proposed increase in LARC use over a specified implementation period, as well as the analytic horizon for projecting costs and outcomes. The tool allows states to include customized reimbursement for LARC devices and related professional services, as well as program costs such as spending on outreach activities. The tool estimates the cost of the intervention, unintended pregnancies prevented, and the resulting net costs (savings) for Medicaid by comparing the intervention scenario with status quo. In addition, the ROI Tool 1.0 calculates the return-on-investment from the Medicaid budgetary impact perspective over a specified analytic horizon, reported in yearly increments.

This current beta testing version (1.0) of the tool assesses the projected impact of increasing utilization of LARC among women enrolled in Medicaid at risk of unintended pregnancy.
BEFORE YOU USE THE ROI TOOL

**Input Parameter Preparation:** Before using the tool, users should reference the User Input Parameters Worksheet (Appendix 1) and gather the information necessary and available for their state.

Default input parameters are already pre-loaded in the tool. States are encouraged to review these input values and modify them if state-specific data are available.

The required parameters include:

1. Total number and age distribution of women of reproductive age who are Medicaid beneficiaries.
2. Specific population for which the projected increases will be modeled. The current beta testing version only allows assessment of the projected impact of increasing utilization of LARC among women enrolled in Medicaid at risk of unintended pregnancy.
3. Projected increase in LARC utilization over the implementation period. This increase should be expressed as an absolute percentage point increase, as opposed to a relative increase.
4. Analytic horizon over which the state Medicaid program prefers to project health outcomes and costs.
5. Reimbursement rates for LARC devices and related services at baseline (**status quo**) and during implementation (**intervention** scenario).
6. Additional program costs that may be incurred over the implementation period of the intervention.
7. Advanced inputs such as contraceptive profile at baseline or state-specific costs for births covered under Medicaid.
The Title panel provides the caveats of using the tool, disclaimer, and tips for using the tool. These include guidance on how to respond to the Excel system prompts, hot keys to control the buttons, how to adjust the text box size to fit the computer screen, and how to use the “?” button, which provides immediate explanation for the text in front of it.
II. Overview panel

This panel describes the purpose of the Tool and outlines the steps to provide the required inputs and generate expected outputs (results) from the Tool.

Following the Overview panel, there are three Input panels. Users will be asked to enter characteristics of the target population on the Target Population panel; specify the intervention on the Define the Intervention panel; and set program (e.g., operational) and reimbursement (i.e., for LARC devices and related services) costs on the Intervention Cost panel.

Following the Input panels, there are three Output panels. The Health Impact panel reports the number of LARC inserted and unintended pregnancy outcomes. The Budgetary Impact panel reports the estimated intervention costs, net costs (savings), and return-on-investment from the Medicaid perspective. The Yearly Summary panel summarizes the health and budgetary impacts by year.

Note: The user can choose to print any panel by clicking on the Print button on the lower left side of the panel.
III. Target Population panel

1. Enter the **baseline target population size**, which is the number of women you want to assess the intervention for that are of reproductive age (15-44 years old) and are representative of Medicaid beneficiaries. The default value is 10,000 and could be replaced with the real baseline population size in the user’s state.

2. Enter the **baseline age composition** of the target population using the following 5-year age groupings: 15-19, 20-24, 25-29, 30-34, 35-39, and 40-44. This information can be obtained from the state Medicaid program enrollment data.

After the user enters the target population size and age composition, the tool will automatically provide the number of women at risk for unintended pregnancy (see text in red circle in screenshot above). The number of women at risk of unintended pregnancy are defined as women who have 1) ever had sex, 2) fecund, 3) not in pregnancy or postpartum status 4) not trying to become pregnant.
This number is calculated based on the distribution of these parameters, target population size, and age composition. The user can click on the Default Parameter button on this panel to view the parameters, which were based on the estimates of national Medicaid-enrolled or low-income (<138 FPL%) subsample from the 2011-2013 National Survey of Family Growth. The user can also modify the default parameters using the state-specific estimates if such data is available.

The user can also indicate whether there will be a future population change and input the projected target population size and time period the user would expect the change to happen. This option may be useful if your state is planning to increase the number of women of reproductive age covered for family planning services under Medicaid by state Medicaid expansion, Family Planning Waiver or State Plan Amendment, or some other factors will cause a future target population change. The default value is specified as “change to 20,000 over 3 years,” which means “the target population will increase from 10,000 at baseline to 20,000 over the next 3 years.” The tool assumes a linear change of the population over the 3 years. These values can be changed based on your state’s context.
In the Default Parameters panel, the user can modify the parameters in the white cells. The grey cells cannot be modified—they are automatically calculated from other parameters by the tool (values add up to 100%).

There are two groups of parameters on this panel.

1. **Age-specific reproductive health profile.** The user can input specific estimates for those that are infecund, seeking pregnancy, or never had sex among all women of reproductive age covered by Medicaid programs who are not pregnant or postpartum (defined as within 60 days after delivery). The proportion of women at risk for unintended pregnancy was automatically calculated from these parameters and are presented in the greyed out cells.
Here, the user can also change the contraception profiles among those at risk for unintended pregnancy, including the proportion that use permanent sterilization, LARC, moderately effective method (defined as injectable, pill, patch, ring, and diaphragm), less effective method (defined as condom, female condom, withdrawal, sponge, awareness-based methods, and spermicide), and no method. The user can also modify the distribution of IUD and implant among LARC users in your state.

All default values in this group are based on data estimates from the National Survey of Family Growth 2011-2013. States can adapt with their own data if available.

2. Age-specific probabilities of pregnancy outcomes. The user can input state specific estimates of pregnancy outcomes (live birth, induced abortion, and miscarriages/fetal loss) for intended and unintended pregnancies, respectively. Default values are a synthesis of values reported in the cited literature.

The user can either cancel the changes made without saving, or save or return, either of these actions will lead you back to the Target Population panel. You can also choose the reset to default option while remaining on this panel.
V. Define the Intervention panel

On this panel, the user will be asked to choose the specific population for which the projected increases will be modeled and to enter the projected intervention effect size.

1. Select a specified population for which the projected increases will be modeled. In the current beta version, users may only choose to increase LARC for women at risk of unintended pregnancy. The option to model increase in immediate postpartum LARC utilization is still under construction and not selectable.

After selecting the option 'increased access to LARC for women at risk of unintended pregnancy', users are asked to enter i) a projected intervention effect size in terms of the absolute percentage point change in LARC use among women at risk of unintended pregnancy, and ii) the implementation period in which the projected increase will occur.
The default setting of the intervention is an increase in LARC use by 15 percentage points over the next 3 years among women at risk of unintended pregnancy.

**NOTE 1**: Users can choose “to” or “by” when entering the projected intervention effect size. Assuming a LARC uptake of 6.3 percentage points at baseline and 15 percentage points as the effect size, “to” will increase the percentage point from 6.3 to 15, whereas “by” will increase from 6.3 to 21.3 (15+6.3).

**NOTE 2**: To account for the uncertainty of projected effect size, users are encouraged to rerun the model multiple times to test a range around the point estimate of effect size.

**NOTE 3**: The tool assumes a linear increase of LARC use over the **implementation period**.

2. Enter the **analytical horizon** in which the model will project the health and budgetary impact of the policy change.

The analytical horizon does not have to be the same as the **implementation period** and can be longer than the implementation period. The default settings assumes that the increase in LARC utilization occurs over a specified 3 years, but calculated the health and budgetary impact over a 5 year period. These values can be adjusted to a longer or shorter period. Because untended pregnancies will be prevented for years after the implementation period, this allows the user to customize the budgetary period for which the tool will project.

Analytical horizon can be set up to 10 years, though longer term projections could suffer from a higher level of uncertainty.

**Note**: When **analytical horizon** is longer than **implementation period**, it is assumed that there is no further change (increase or decrease) in LARC utilization beyond **implementation period**.

3. **Switching Pattern**

The tool assumes that only women who would otherwise use i) a less effective method, ii) a moderately effective method, or iii) no method in status quo would switch to LARC under in the intervention scenario (no switch from women for whom they or their partner are permanently sterilized). The default setting assumes a switching pattern that women who switched to LARC under ‘intervention’ scenario followed the distribution of users in status quo (in other words, a distribution proportional to baseline contraception use). An example of calculating the default proportional distribution of switching pattern is as follows:

Using NSFG 2011-2013 data, the default assumes 21.8% of women at risk for unintended pregnancy used a moderately effective method, 20.8% of women at risk used a less effective method, and 13.7% of women at risk used no method (a total of 56.3% of women at risk were in the group who would be eligible to switch to LARC). It is assumed women would
switch proportional to their distribution at baseline – that is, among the women who are eligible to switch to LARC, their
distribution would mirror those eligible to switch. That is 38.8% (21.8%/56.3% = 38.8%) switching from a moderately
effective method, 36.9% (20.8%/56.3% = 36.9%) switching from a less effective method, and 24.4% (13.7%/56.3%
=24.4%) switching from no method use.

The user may want to set up their own pre-switching distribution of contraceptive methods for women who switch to LARC in
the intervention scenario. This input will affect projected return on investment (ROI) estimates. More specifically, if more women
who switch to LARC would be otherwise users of less effective or no methods, the ROI would be higher than women who
switched from moderately effective methods.

If the state has a different contraception distribution at baseline than the default values, this can be changed with the default
parameters on the Target Population panel. Users can choose the option “user specific distributions” and input their own pre-
switching distribution of contraception for women who switched to LARC. Users are encouraged to test different switching
patterns to assess its impact on the resulting ROI metrics.

Default Parameters Button on Define the Intervention panel
The “Default Parameters” button on this panel can be used to modify the parameters for 3-year LARC continuation rates and yearly reinsertion rates.

**NOTE**: The current version does not consider the fact that LARC reinsertion rates may be higher for women with postpartum insertion.

Failure rate by contraception type of is based on the latest estimates available in the literature (Trussell et al. 2011). Because most of the states do not have data for state-specific failure rates, it is not user modifiable at this time and those cells are grayed. In addition, these estimates do not account for differential failure rate by user characteristics such as age.

The user can either cancel the changes made without saving, or save or return, either of these actions will lead you back to the Define the Intervention panel. You can also choose the reset to default option while remaining on this panel.
VI. Intervention Cost panel

On this panel, the user is asked to enter costs Medicaid may incur over the implementation period. There are three types of costs the user may choose from (the user may select more than one option):

1) **Program cost**: Examples may include personnel and administrative costs to coordinate implementation, or consumer or provider outreach activities. This can be input as an annual total cost or annual per woman cost for those at risk of unintended pregnancy.

   If this option is not chosen, the default value for program cost is $0.

2) **Reimbursement rate change for LARC devices**: This cost option is relevant if the intervention involves an increase in reimbursement rates for LARC devices. The value shown in the option is the average per-device difference between
intervention scenario and status quo. Users may change this value by setting reimbursement rates by LARC brand type (or CPT) in the “Help me to estimate this number” tab. (See more details on the topic “Worksheet: LARC Device Reimbursement Rates.”)

The default value is $67. This value is the difference in reimbursement rates from the Illinois Medicaid fee schedules before and after its 2014 policy change increasing the reimbursement rates. Payment rates for LARC-related Healthcare Common Procedure Coding System codes are from the Illinois 2014 fee schedules, including IUD (Liletta, Paragard, Mirena, and Skyla) and implant (Nexplanon) devices.

3) Reimbursement rate change for LARC insertion services: Users may choose this option if the reimbursement rate for LARC insertion services changes in the intervention scenario. The default value is $40, derived from the difference between current Medicaid average payments for LARC insertion (estimated from Marketscan Medicaid 2013 data) and the Illinois Medicaid reimbursement rate for Non-340 B providers. Users may enter a different value based on current and planned reimbursement rates by clicking on “Help me to estimate this number” tab below the default number. In addition, users may also enter customized values for LARC removal and insertion rates by selecting the option ‘LARC removal/reinsertion reimbursement rates also change’.

Note: In the current version, the option to modify payment rates for LARC removal and/or removal and reinsertion is only available if the user chooses the Reimbursement rate change for LARC insertion services option on the Intervention Cost panel.

Once completed, click on “Analyze This Intervention” to advance to the Health Impact panel.
1. Users will have two parallel panels to enter device-specific reimbursement rates in the intervention (right) and status quo (left) scenarios.

2. Select **Option 1** to enter reimbursement rates (cells highlighted in red rectangle) for each LARC brand and distribution among IUD brands (cells highlighted in green rectangle). In the two scenarios, both the reimbursement rate and the distribution among IUD brands may be set differently.

   **Note 1**: Users want to make sure distribution among IUD brands sum up to 100% (the model does not automatically correct).

   **Note 2**: By default, 78.1% of LARC are IUDs and 21.9% are implants. If the state has a different composition than the default, go to the “Default Parameters” on the **Target Population** panel to make the change.

3. Users can select **Option 2** (yellow rectangle in the picture above) to enter average cost of IUD and implants. No distribution among IUD brands is needed.
4. Under **Option 1**, users can take into account the drug discount program 340B by choosing the option **Consider 340B** under **Option 1**. The default assumes 33% of LARC are provided by 340B providers, i.e., 33% of the 340B providers pay the discounted rate, and the other 67% pay the regular Medicaid reimbursement rate. Users can customize these variables based on their state’s context (e.g. expected increases in proportion of LARC devices covered by 340B pricing).

5. After selecting the desired option and completing each cell, click the **Calculate the difference** button on the left side below the inputs. The tool will then calculate the weighted average difference in LARC device reimbursement rates.

6. Click on the **Use this estimate** button to go back to the previous **Intervention Cost** panel. Verify that the number for payment rate change for LARC devices has been changed to the calculated value. If the user wishes to revert back to the default value, please click on the **Help me to estimate this number** button and select the **Abandon** button to return to the previous **Intervention Cost** panel with the default value of $67 for the payment rate change.

**Worksheet: LARC Insertion Service Rates**

1. Users will have two parallel panels to enter LARC service-related reimbursement rates in the intervention (right) and status quo (left) scenarios.
2. Enter the reimbursement or payment rates for LARC insertion-related services (office visits, enhanced counseling, dispensing fee, IUD insertion, and implant insertion) before (Status Quo header, left side) and during (Intervention header, right side). The user can use CPT codes provided in parentheses to search for payment rates in your state Medicaid fee schedule or reference Medicaid policy documents for increased rates.

3. After completing each cell, click the Calculate the difference button to calculate the average difference in LARC insertion services reimbursement rates. The average difference is calculated as: office visit + enhanced counseling + dispensing fee + frequency weighted IUD and implant insertion fee.

4. Click on the Use this estimate button to go back to the previous Intervention Cost panel. Verify that the number for payment rate change for LARC insertion services has been changed to the calculated value.

Worksheet: LARC Removal/Reinsertion

1. Users will have two parallel panels to enter reimbursement rates for LARC reinsertion/removal in the intervention (right) and status quo (left) scenarios.

   NOTE: Because reinsertion/removal do not happen as frequently as insertion, the inputs in this worksheet may not affect result significantly.
2. Here, users can change the payment values for LARC removal and/or LARC removal and reinsertion before and during implementation period. Again, the user can use the CPT codes provided in the parenthesis after each service to estimate the payment rates.

Once all cells are complete, choose **Use this estimate** or **Abandon** to return to the **Intervention Cost** panel.

On the **Default Parameters** panel, the user can view the default Medicaid reimbursement for pregnancy outcomes (live birth, abortion, and miscarriage/fetal loss) as well as per person per month (PPPM) reimbursement rates for moderately and less effective contraceptive methods. It will lead to the screen shot below:

The user can change the default parameters to state-specific reimbursement rates, if state-level data are available.

![Default Parameters: Costs](image)

The default estimates are based on the literature cited. The default cost for abortion is set to 0, as Medicaid does not ordinarily cover abortion services.

The **Intervention Cost** panel is the last input panel. The user can use the “back” button to check the other input parameters in the previous panels. After all the input parameters are accurately completed, click on “Analyze this intervention”.

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1. Medicaid Reimbursement for pregnancy outcomes and contraceptive methods

<table>
<thead>
<tr>
<th>Cost Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>$13,945</td>
</tr>
<tr>
<td>Abortion</td>
<td>10</td>
</tr>
<tr>
<td>Miscarriage/fetal loss</td>
<td>$1,987</td>
</tr>
<tr>
<td>Moderately effective method (PPPM)</td>
<td>$17.2</td>
</tr>
<tr>
<td>Less effective method (PPPM)</td>
<td>6.3</td>
</tr>
</tbody>
</table>

Note on Default Value:
2. Medicaid spending on contraceptive coverage and pregnancy-related care. Assumed not to be reimbursed by Medicaid.

The user can change the state-specific reimbursement rates, if state-level data are available.
VII. **Health Impact panel**

As the first panel for output parameters, the Health Impact panel displays the health impact of the intervention at baseline and by fiscal year.

On the top of the panel, there is a summary (circled in red below) of the total number of unintended pregnancies and unintended live births prevented over the 5 years (default **analytical horizon**).
The table provides four types of information, outlined in red, green, yellow, and orange rectangles, respectively.

1. **Red rectangle** provides annual estimates (including i. number of LARC insertions, ii. number of unintended pregnancy (UP), iii. number of births from UP, and iv. number of abortions from UP) under the **Status Quo** scenario where there is no increase in LARC utilization.

   Despite no increase in LARC, number of LARC insertions is a positive number. It is because the model assumes that new LARC insertions are needed to replace those discontinued, in order to maintain a dynamic equilibrium in the population (‘dynamic equilibrium’ in the sense that proportion of LARC use stays unchanged at any given time).

2. **Green rectangle** provides estimates under **Intervention** scenario parallel to **Red rectangle**.

3. **Yellow rectangle** provides annual difference between **Status Quo** and **Intervention** scenarios in unintended pregnancies ($\triangle$UP) and births from unintended pregnancy ($\triangle$ Births from UP). These estimates are presented as negative values given the **Intervention** scenario prevented unintended pregnancies (the intervention scenario has fewer unintended pregnancies).

4. **Orange rectangle** provides the cumulative number of unintended pregnancies and live births avoided at the end of each fiscal year. The number was calculated by adding the number of unintended pregnancies in the previous fiscal years and the current year together. For example, cumulative unintended pregnancies prevented in year 5 is equal to the sum of the numbers of unintended pregnancies in fiscal year 1, 2, 3, 4, and 5.

**Note:** As noted in the ‘Define the intervention’ panel, implementation period is defined as the time frame in which the increase in LARC utilization will occur, while analytical horizon is the time period that health and budgetary impact of the intervention is projected. For instance, the default settings assumes that the increase in LARC utilization occurs over a specified 3 years, but calculated the health and budgetary impact over a 5 year period. These values are user-adjustable. Because untended pregnancies will be prevented for years after the implementation period, this allows the user to customize the budgetary period for which the tool will project.
VIII. Budgetary Impact panel

As the second panel of output parameters, the Budgetary Impact panel displays the budgetary impact of the intervention. Three types of information are provided (red circle, green and yellow rectangles).

1. **Red circle** provides a summary of the estimated costs of increased LARC use (e.g. 1.2 million) and the medical costs avoided (e.g. $3.3 million) through unintended pregnancies prevented over the pre-defined analytical time horizon (e.g. at default value of 5 years).
2. **Green rectangle** provides Medicaid cost difference between **Status Quo** and **Intervention Scenarios**, in annual and cumulative formats. Itemized Medicaid costs are:

   Column 1 displays year number (default analytical time horizon is 5 years).

   Column 2 displays the changes in cost of contraception (labeled as A). It equals the cost difference pertaining to contraception and related services between **Intervention** and **Status Quo** scenarios for each fiscal year. If user chooses reimbursement rate change for LARC devices and/or LARC insertion related services in the **Intervention Cost** panel, it will be captured in this column.

   Column 3 displays the annual program cost (B) – staffing, administration, education, etc. - apart from costs of LARC devices and services. The choice on program cost in the **Intervention Cost** panel will be captured here.

   Column 4 displays the annual difference in unintended pregnancy-related Medicaid spending (C). It is equal to the difference between unintended pregnancy-related Medicaid spending between **Intervention** and **Status Quo** scenarios. Unintended pregnancy-related Medicaid spending include medical costs for live births, miscarriages/fetal losses, and abortions (default reimbursement rate for abortion is 0). Data in parentheses represent negative values and indicate cost savings.

   Column 5 displays the net Medicaid spending each year, which equals to the sum of cost differences in contraception, program, and unintended-pregnancy related spending (A+B+C). Data in parentheses represent negative values and indicate cost savings.

   Column 6 displays the cumulative cost difference in in contraception and program cost (A+B since year 1).

   Column 7 displays the cumulative savings from averted unintended pregnancies (C since year 1).

3. **Yellow rectangle** shows the return on investment (ROI) of the intervention. The user can choose the year (fiscal year) of interest by sliding the bar underneath the **5-year ROI** text, i.e., 1-year ROI, 2-year ROI, 3-year ROI, 4-year ROI, and 5-year ROI. Note: ROI is provided for the cumulative analytical horizon the user chooses.

   **Note**: A return on investment (ROI) analysis is a way to calculate your net financial gains (or losses), taking into account all the resources invested and all the amounts gained through increased revenue, reduced costs, or both. Here, ROI is defined as the following:

   \[
   \text{ROI} = \frac{\text{Net savings}}{\text{cost of the intervention}}
   \]
A negative ROI means that the cost of the intervention is higher than the net savings. A positive ROI means that the cost of the intervention is offset by the net savings (cost saving). An ROI of 0 means the intervention is break-even, intervention cost equals net savings.

For this model, Net savings are defined as the sum of changes in the cost of contraception, program cost (A + B) and reductions in unintended-pregnancy related Medicaid spending (C) between the Intervention and Status Quo scenarios.

In general, results show that the longer the time horizon, the higher the ROI as additional unintended pregnancies are prevented and the benefits accumulates even after the implementation period ends.
IX. Yearly Summary panel

This panel provides information on LARC insertions, health outcomes, and annual Medicaid spending by cost type under the Status Quo and Intervention scenarios, for each user-specified year (not cumulative, except for cumulative ROI value).

First, the user can choose a specific year of interest, by selecting from the drop box in the red rectangle.

The default value is baseline, which provides information on number of LARC insertions, health outcomes, and annual Medicaid spending by cost type in the target population before intervention. It is the same between Intervention and the Status Quo scenarios. Hence all comparison-natured estimates are N/A (not applicable) for baseline year.

For demonstration purposes, screen shots in the following description use “Year 1” as the example.

1. Yellow rectangle provides a summary description for the information shown in the two tables on the Yearly Summary panel using 3 summary statements.
The first paragraph summarizes the proportion of LARC use among the target population (women of reproductive age at risk of unintended pregnancy covered by Medicaid) in fiscal year 1 comparing the Intervention and Status Quo scenarios. This information is shown in row 1 “LARC insertions” under the table on the lower left part of the panel: LARC Use and Health Outcomes in year 1.

The second paragraph specifies number and rate of unintended pregnancies and live births comparing the Intervention and Status Quo scenarios in fiscal year 1, as well as the percent reduction of these health outcomes. This information is shown in rows 2-6: Health Outcomes under the table on the lower left part of the panel: LARC Use and Health Outcomes in year 1.

The third paragraph provides the reduction in unintended pregnancy-related Medicaid spending as well as increased spending on program and reimbursement costs with resulting net costs. This information is found in the table on the lower right side of the panel: Medicaid Spending in year 1. This includes spending by cost type including costs for unintended pregnancy, contraception, and program costs, if any. The table compares the Intervention and Status Quo scenarios. It also provides a Cumulative ROI at the end of year 1.

2. Orange rectangle, the LARC Use and Health Outcome table, presents the LARC Use and Health Outcomes under the Status Quo and Intervention scenarios for year 1. The table provides two types of outcome measures for Status Quo (the scenario without intervention, column A), scenario with the Intervention (column B), the absolute difference between the Intervention and the Status Quo scenarios (column 4, the number in column B minus the number in column A), and relative change of the outcomes between the Intervention and the Status Quo scenarios (number in column 4 divided by number in column A).

Health outcomes, including total number (value at the top) and rate (value in parentheses expressed as rate per 1,000 women in the target population) of unintended pregnancies, birth, abortion, and miscarriage in the year selected.

Note: Numbers of birth, abortion, and miscarriage/fetal loss may not add up to the number of unintended pregnancies, especially for the first 1 to 3 years. It is because unintended pregnancy at late months of a year could result in birth, abortion, or miscarriage/fetal loss in the subsequent year.

Numbers in column 4 and 5 are also relevant, which indicate the impact of increased LARC utilization and unintended pregnancy outcomes avoided.

3. Green rectangle provides estimates on Medicaid spending under status quo (i.e., without intervention) and with intervention for fiscal year 1. This table provides two types of economic measures for the Status Quo (scenario without intervention,
column A), scenario with **Intervention** (column B), absolute difference between the **Intervention** and the **Status Quo** scenarios (column 4, the number in column B minus the number in column A), and relative change of the outcomes between the **Intervention** and the **Status Quo** scenarios (number in column 4 divided by number in column A).

Annual Medicaid spending in the fiscal year selected by cost type, including unintended pregnancies-related Medicaid spending, Medicaid spending on contraception, and program cost (default value is 0). Total costs is the sum of i. unintended pregnancies-related Medicaid spending, ii. Medicaid spending on contraception, and iii. program cost.

Numbers in column 4 and 5 are also relevant, which indicate the impact of increased LARC utilization and on Medicaid spending.

4. **Light blue circle** provides the cumulative ROI by the end of the specified year. ROI became nearly break-even (0) at the end of fiscal year 2, and became positive in fiscal year 3. At the end of fiscal year 5, the cumulative ROI is 4.2 (graphs below).
You've now reached the last panel of the ROI Tool 1.0. Users can review previous panels by clicking on Back button, or click the Start Over button to return to the first panel.
## APPENDIX 1. USERS’ INPUT

<table>
<thead>
<tr>
<th>Category</th>
<th>Parameter</th>
<th>Description</th>
<th>Potential Data Sources</th>
<th>State Input (Enter your data here)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics of target population</td>
<td>1. Baseline population Size</td>
<td>Number Medicaid- enrolled women of reproductive age</td>
<td>- State Medicaid Enrollment Data - BRFSS, PRAMS or similar statewide or population-based survey</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Baseline age composition</td>
<td></td>
<td>- State Medicaid Enrollment Data - BRFSS, PRAMS or similar statewide or population-based survey</td>
<td></td>
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<td></td>
<td>3. Future population changes</td>
<td>Option to project change in enrollment and/or change in age distribution of target population expected during the implementation period, e.g., increases due to Medicaid expansion</td>
<td>- State Medicaid Eligibility Data¹ - US Census Data</td>
<td></td>
</tr>
<tr>
<td>Intervention effect</td>
<td>4. Specific population for which the projected increases will be modeled</td>
<td>Option to choose target population. Note: At this time, the model cannot assess increases specific to postpartum LARC insertions</td>
<td>User Specified</td>
<td></td>
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<td></td>
<td>5. Increase in LARC uptake</td>
<td>Projected percentage points of increase in LARC uptake Can increase by absolute percentage point value or increase up to a pre-determined value</td>
<td>User specified</td>
<td></td>
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<td>Category</td>
<td>Parameter</td>
<td>Description</td>
<td>Potential Data Sources</td>
<td>State Input (Enter your data here)</td>
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<td></td>
<td>6. Implementation period</td>
<td>Projected time over which the increase in LARC use will be realized</td>
<td>User Specified</td>
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<td></td>
<td>7. Analytical Horizon</td>
<td>Projected time over which the projected health and budgetary outcomes will be assessed</td>
<td>User Specified</td>
<td></td>
</tr>
<tr>
<td>Intervention</td>
<td>8. Program cost</td>
<td>Resources needed for non-clinical aspect of the intervention (e.g., enhanced counseling, personnel, or outreach activities). Can be entered as either fixed annual or per woman per year cost</td>
<td>State Medicaid Program</td>
<td></td>
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<td>Category</td>
<td>Parameter</td>
<td>Description</td>
<td>Potential Data Sources</td>
<td>State Input (Enter your data here)</td>
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<tr>
<td>Intervention cost</td>
<td>9. Reimbursement rate for LARC devices</td>
<td>Increase in reimbursement for LARC devices before and during implementation period</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
<td></td>
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<td></td>
<td></td>
<td><strong>Option1:</strong></td>
<td>- State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
<td></td>
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<td></td>
<td></td>
<td>- Reimbursement rate by Brand</td>
<td>- State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>- Distribution of IUDs by brand</td>
<td>- State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
<td></td>
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<td></td>
<td></td>
<td>- Proportion covered by 340B pricing</td>
<td>- State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
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<td></td>
<td>10. Reimbursement rate for LARC insertion services</td>
<td>Increase in reimbursement rate for LARC insertion services before and during the implementation period</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Option 2:</strong> Average reimbursement rate by LARC type (IUD versus Implant)</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
<td></td>
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<tr>
<td></td>
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<td>Reimbursement rate for LARC insertion services before and during the implementation period</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
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<td></td>
<td></td>
<td>Office Visit</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
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<td>Enhanced Counseling</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
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<td>Dispensing Fee</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
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<td></td>
<td></td>
<td>IUD insertion</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
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<td></td>
<td></td>
<td>Implant insertion</td>
<td>State Medicaid Program Reimbursement or Fee Schedule - CMS Website</td>
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<td>Parameter</td>
<td>Description</td>
<td>Potential Data Sources</td>
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<tr>
<td>Advanced Input</td>
<td>Estimes needed to change default parameters as needed</td>
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<td>Age-specific reproductive health profile</td>
<td></td>
<td>Proportion of that is not pregnant or in postpartum status that is</td>
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<tr>
<td></td>
<td></td>
<td>• Infecund</td>
<td></td>
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<td></td>
<td></td>
<td>• Seeking pregnancy</td>
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<td></td>
<td></td>
<td>• Never had sex</td>
<td></td>
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<td></td>
<td></td>
<td>Contraceptive profile of women at risk of unintended pregnancy</td>
<td></td>
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<td></td>
<td></td>
<td>• Report use of permanent contraception</td>
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<td></td>
<td>• Report use of LARC</td>
<td></td>
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<td></td>
<td></td>
<td>• Report use of moderately effective methods (e.g., OCPs, patch, ring, etc.)</td>
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<td></td>
<td>• Report use of less effective methods (e.g., condoms, withdrawal, etc.)</td>
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<tr>
<td></td>
<td></td>
<td>Among LARC users</td>
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<tr>
<td></td>
<td></td>
<td>• Implant</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• IUD</td>
<td></td>
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<tr>
<td>Input Aide: 10.b. WORKSHEET TO CALCULATE RATE CHANGE FOR LARC REINSERTION SERVICES</td>
<td>Reimbursement rates before and after implementation for LARC removal/reinsertion to include</td>
<td>- State Medicaid Program Reimbursement or Fee Schedule</td>
<td>- CMS Website</td>
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<tr>
<td></td>
<td></td>
<td>• IUD removal</td>
<td></td>
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<td></td>
<td></td>
<td>• IUD removal &amp; reinsertion</td>
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<td></td>
<td></td>
<td>• Implant removal</td>
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<tr>
<td></td>
<td></td>
<td>• Implant removal &amp; reinsertion</td>
<td></td>
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<tr>
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</tbody>
</table>
| Distribution of pregnancy outcomes by intention status |                              | • Intended pregnancy  
• Live birth  
• Abortion from unintended pregnancy  
• Miscarriage/fetal loss  
• Unintended pregnancy  
• Live birth  
• Abortion from unintended pregnancy  
• Miscarriage/fetal loss | --Vital Statistics data  
--Abortion Surveillance data  
--BRFSS, PRAMS or similar statewide or population-based survey | (Enter your data here) |
| LARC reinsertion and continuation rates      | 3 year continuation rate         | • IUD  
• Implant  
Annual reinsertion rate  
• IUD  
• Implant | State Medicaid Program | |
| Switching Patterns                           | Switching patterns are set to be proportional to contraceptive profile of women eligible to switch at baseline (users of moderately effective, less effective, or no methods). User can specify alternate switching pattern to assess ranges of ROI | User Specified | |
| Medicaid Reimbursement for Pregnancy and contraception |                              | • Delivery  
• Abortion  
• Miscarriage/fetal loss  
• Moderately effective contraception, per person per month (PPPM)  
• Moderately effective contraception, per person per month (PPPM) | State Medicaid Program | |