Abortion Incidence and Severity of Complications in Liberia

Key Findings from the 2021 National Study

April 2023

Table of Contents

List of Tables
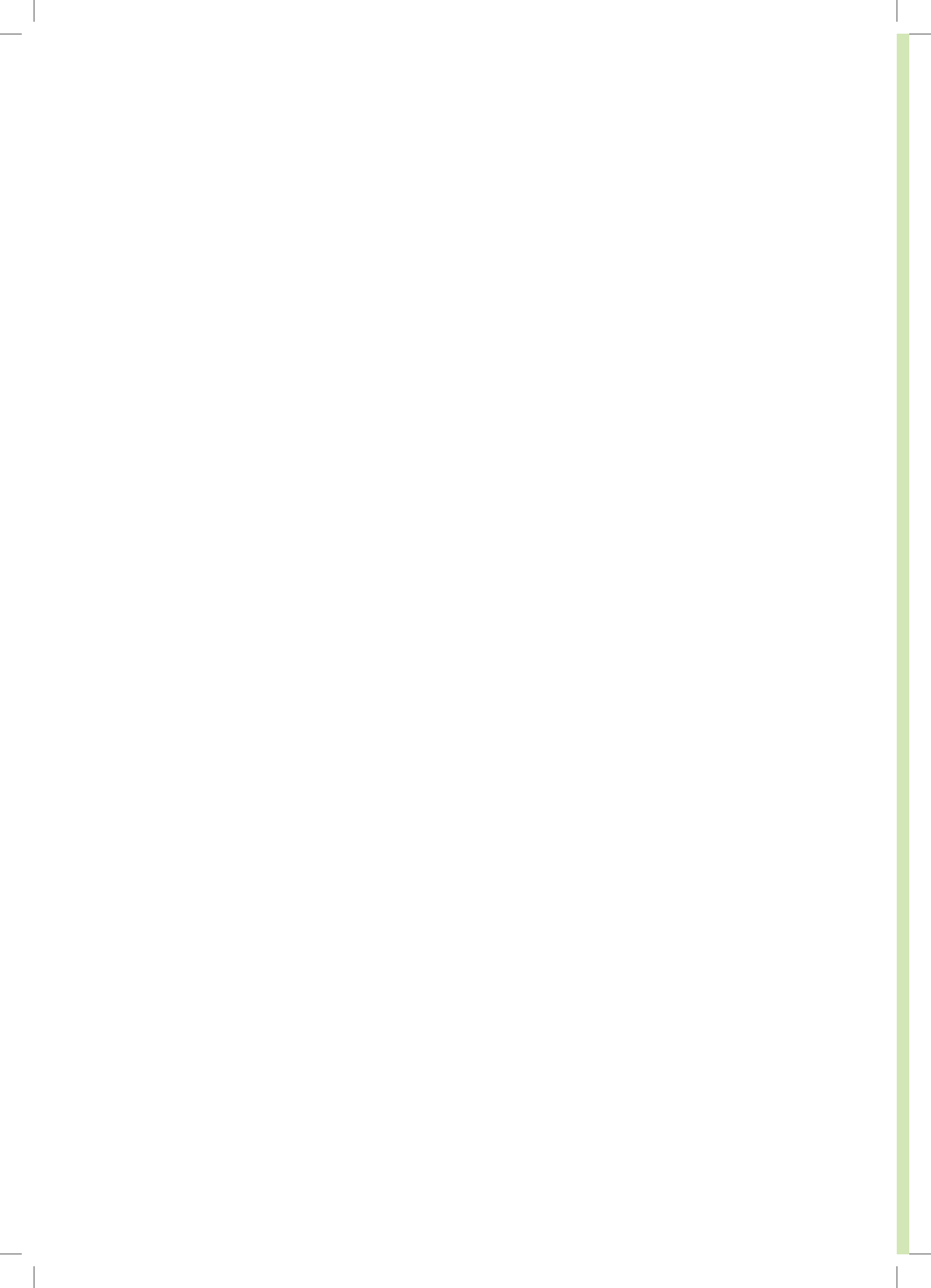
List of Figures

Acknowledgments

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Our profound gratitude goes out to health providers, women, and girls who agreed and trusted our team with the data contained in this report.

My sincere thanks and appreciation to the Minister of Health for her leadership in strengthening the health system.

Finally, I want to express my sincere gratitude on behalf of the Ministry of Health to the various County Health Teams for supporting data collection at their respective health facilities and to Mrs. Bentoe Z. Tehoungue and her staff in the Family Health Program – Mr. Luke Bawo and his team in the Health, Monitoring, Evaluation, and Research (HMER) Department.

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Foreword

Although unsafe abortion and abortion-related deaths are a substantial contributor to maternal mortality in the country, Liberia's routine abortion-related data are largely incomplete. As a result, there are significant evidence gaps in the documentation of abortion incidence and abortion-related morbidity. Also, there is significant sociocultural sensitivity surrounding induced abortion in Liberia, making it difficult to ascertain any reliable data on the incidence of abortion, the burden of unsafe abortions and complications, and the number of women and girls who seek PAC. Women continue to die from preventable and manageable complications because of unsafe abortions due to a combination of factors, including lack of facility/provider readiness for CAC services, lack of patient awareness of available services, and lack of community-facility linkage for services. There has been little to no data available on the health system cost of providing PAC, which is necessary to allocate government and donor resources for RMNCAH services effectively.

The completion of this abortion incidence study is a significant milestone to provide additional evidence to advocate for prompt passing of the revised Public Health Law (PHL). The PHL would expand access to safe abortion for women and girls and have the opportunity to significantly reduce morbidity and mortality from unsafe abortions, thereby reducing overall maternal mortality. Therefore, these results support policy engagement, inform campaigns and activism by change agents, and contribute to discourse and advocacy efforts to support legal and policy reform in Liberia. Also, the findings from the study will support health program managers and health facilities to improve the quality of PAC services based on facility gaps identified (infrastructure, commodities, and equipment) and provider gaps identified (i.e., number of trained/mentored providers, provider attitude).

We commend the team for the completion of this study and emphasize that the results be used for planning abortion-related programs and advocacy.

A. Vaifee Tulay, BSC., BPharm, MSC.
Deputy Minister for Policy, Planning and Monitoring and Evaluation

List of Acronyms

ACRE	Atlantic Center for Research and Evaluation
AICM	Abortion Incidence and Complications Methodology
APHRC	African Population and Health Research Center
CHAI	Clinton Health Access Initiative
FP	Family Planning
GFF	Global Financing Facility
HFS	Health Facility Survey
KIS	Knowledgeable Informant Survey
LISGIS	Liberia Institute of Statistics and Geo-Information Services
LDHS	Liberia Demographic and Health Survey
MOH	Ministry of Health
MPI	Multidimensional Poverty Index
PAC	Post-Abortion Care
PMS	Prospective Morbidity Survey
RMNCAH	Reproductive maternal, newborn, child and adolescent health
SGBV	Sexual and Gender-Based Violence
UL-PIRE	University of Liberia-Pacific Institute for Research and Evaluation
WHO	World Health Organization

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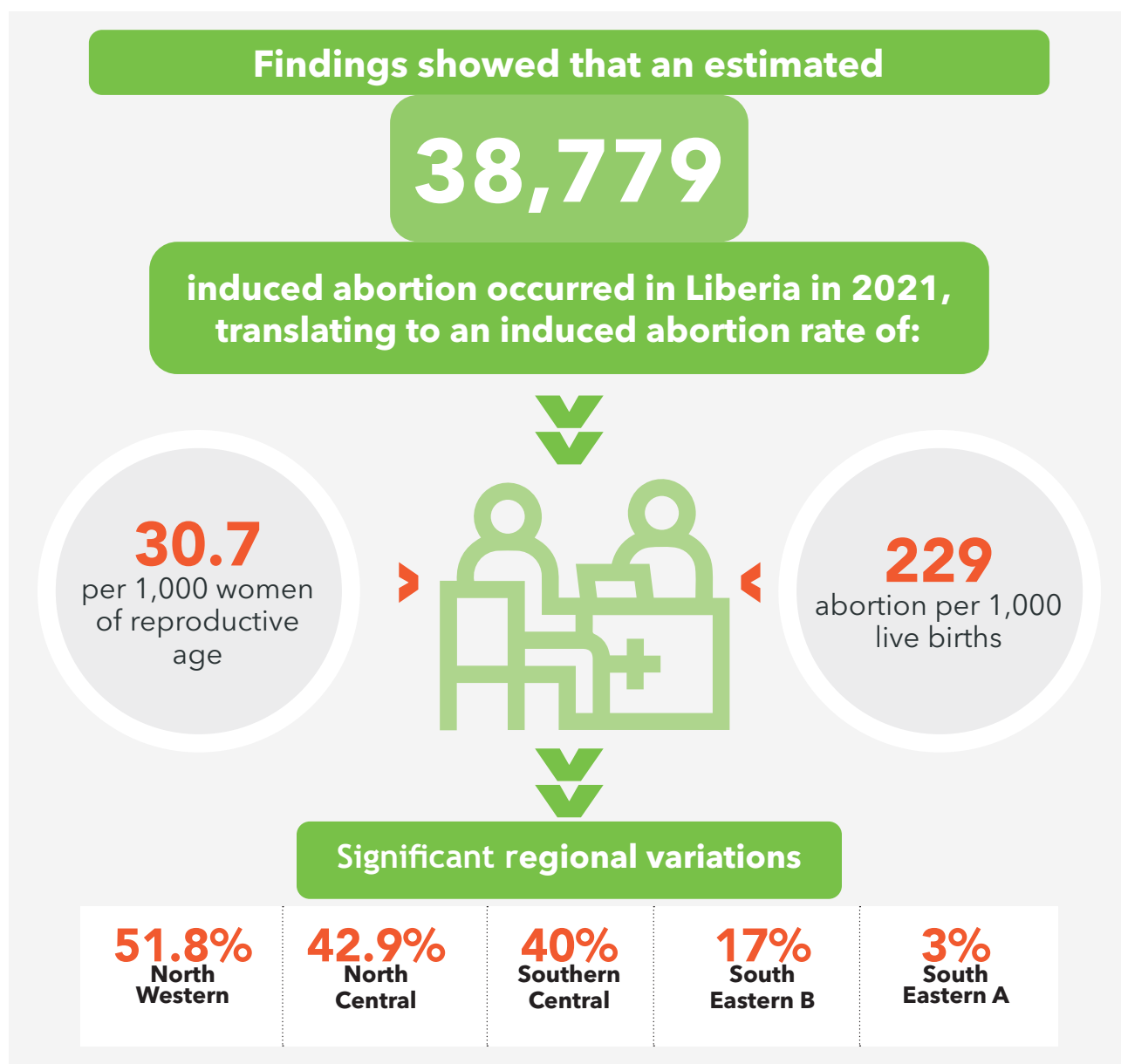
Executive Summary

The World Health Organization (WHO) defines unsafe abortion as a procedure for terminating a pregnancy performed by persons lacking the necessary skills or an environment not in conformity with minimal medical standards, or both. Based on the current Liberian laws, abortion is only allowed under a limited set of conditions, including to save the life of a woman and to preserve physical or mental health, and when the pregnancy results from rape or incest or other felonious intercourse, and when the pregnancy has fetal impairment. Unsafe abortion remains a leading cause of maternal morbidity and death in Liberia while the treatment of resultant complications drains significant amounts of financial and material resources from the health system.

This report presents findings from a 2021 nationwide abortion study in Liberia, that aimed to estimate the incidence and severity of related complications. We conducted the study across all regions and counties in Liberia between September 2021 and March 2022, and in a nationally representative sample of public and private health facilities, including clinics, health centers and hospitals. The study used the abortion incidence complications methodology (AICM) to estimate abortion incidence and the severity of abortion complications in the country.

Findings showed that an estimated 38,779 induced abortion occurred in Liberia in 2021, translating to an induced abortion rate of 30.7 per 1,000 women of reproductive age, and an induced abortion ratio of 229 abortion per 1,000 live births. There were significant regional variations in the abortion rates, with North Central having the lowest abortion rate (6.6/1000) and South-Central having the highest (49.7/1000). In the same year, approximately 14,555 women received care for complications resulting from induced and spontaneous abortion in health facilities. The vast majority of women who sought post-abortion care services did so in public (67%) and primary-level health facilities (74%). The national unintended pregnancy rate was 86.5 per 1,000 WRA, with wide regional differences. The high abortion rates and unintended pregnancy rates in the South-Central region may imply that many women and girls have a high unmet need for family planning. According to the 2019-2020 Liberia Demographic and Health Survey, one-third of married women had an unmet need for family planning, 21% for spacing and 13% for limiting number of children. In line with expectations, the incidence rate is highest in regions with the highest unintended pregnancy rate further reinforcing the argument that legal restrictions do not reduce the occurrence of abortion, instead restrictions drive women toward unsafe abortion.

Findings also showed that women seeking abortion-related care in Liberian health facilities were socially and demographically diverse. Almost half of all patients seeking post-abortion care presented with either severe (37%) or near miss (11%) complications, and this varied widely by region. North-Western (52 %), North Central (43 %), and South-Central (40%) regions had the highest proportions of women with severe complications. South-Eastern B (17%) and South Eastern A (3%) regions had the lowest proportion of women with severe abortion-related complications, even though these two regions had the highest proportions of women with moderately severe complications. Most common complications reported among post-abortion patients were infections and sepsis (59%), hemorrhage (31%) and systolic blood pressure less than 91 mmHg (24%), and temperatures higher than 37.3°C (22%). There was one death during the study period.

Interventions to increase family planning while eliminating barriers to access especially for adolescents, reduce unmet need, and increasing use of safe abortion methods (e.g. using manual vacuum aspiration [MVA], misoprostol, or combipack) are effective approaches to reduce abortion-related morbidity and mortality. There is also great consensus that strengthening the ability of health facilities, especially the low-level health facilities to provide the basic post-abortion care services yields greater return on investment since the women who present at these facilities can get appropriate levels of quality care. Finally, there is need to reform the current abortion law to facilitate the reduction of unsafe abortion and also strengthen the fidelity of implementation of the clinical standards and guidelines for managing abortion-related complications within health facilities.

Findings showed that an estimated

38,779

induced abortion occurred in Liberia in 2021, translating to an induced abortion rate of:

30.7
per 1,000 women of reproductive age

229
abortion per 1,000 live births

Significant regional variations

51.8% North Western	**42.9%** North Central	**40%** Southern Central	**17%** South Eastern B	**3%** South Eastern A

Background

The evolution of safe and effective medical procedures to perform safe abortion, along with providing universal access to such services, has the potential to eliminate unsafe abortion and related deaths entirely (1). However, unsafe abortion contributes about 13% of maternal death (2), with 25 million unsafe abortion occurring annually worldwide (3), majority of which are recorded in low and middle-income countries. Irrespective of the nature of abortion (spontaneous and or induced), and regardless of a country's abortion legal framework, post-abortion care (PAC) is endorsed globally as an essential emergency obstetric intervention to address complications associated with abortion (4,5).

Liberia, for a long time has had the highest maternal mortality ratios globally at 1,072 deaths per 100,000 live births in 2013 (6), and 742 deaths per 100,000 live births in the latest demographic and health survey (7). Most of these deaths are attributed to preventable and treatable complications, including hemorrhage (25%), hypertension (16%), unsafe abortion (10%), and sepsis (10%) (8). Deaths associated with unsafe abortion are often grossly underestimated, partly because of the social stigma that surrounds abortion and the fact that some deaths are not necessarily reported as linked to abortion (9). Under the Liberian penal code, abortion is only allowed under a limited set of conditions, including to save the life of the pregnant woman and to preserve her physical or mental health, when the pregnancy results from rape or incest or other felonious intercourse, and when the pregnancy has fetal impairment. However, two doctors must certify that a woman/girl meets these conditions before a pregnancy can be terminated, and only a doctor can perform the procedure.

Even with these restrictions, abortion, especially unsafe abortion remain common in Liberia, and previous abortion incidence estimates have ranged from 6% (Demographic and Health Survey) in 2007 (10) to 32% (population-based study) in 2015 (11). In Liberia, adolescent pregnancy rates remain high (30% adolescent pregnancy rate) (7), and is a contributor to unsafe abortion rates in the country, as unintended pregnancy is a precursor to induced abortion (12), and adolescents are particularly vulnerable to lack of safe abortion access (13).

There have been high-level commitments by the Government of Liberia and stakeholders to address the high rates of maternal deaths in the country. Part of these commitments are reflected in the inclusion of unsafe abortion-related maternal morbidity and mortality as a priority investment area under the Liberia Reproductive Maternal Newborn Child and Adolescent Health (RMNCAH) Investment Case of 2016-2020 (8). In December 2019, the Liberia MOH, with support from the CHAI, World Bank/GFF, and UNFPA, developed the first-ever National Comprehensive Abortion Care Guidelines that specify programmatic and clinical interventions for safe and legal abortion and PAC (14). Nevertheless, there still exist several gaps and weaknesses in addressing sexual and reproductive health (SRH) issues that contribute to abortion, such as limited access to modern and effective contraception and absence of comprehensive sexuality education. In 2019, stakeholders in Liberia (including lawmakers) began revisions to the country's Public Health Law (Title 33), that includes provisions on expanding access to safe abortion. As of July 2022, the revised Public Health Law had passed the Lower House of Parliament. If passed by the Upper House and assented into law, the Public Health Law will effectively repeal the 1976 Liberia Penal Code, thereby expanding access to safe abortion.

It is important to note that unsafe abortion is a significant contributor to maternal morbidity and mortality in Liberia (8). However, there is lack of comprehensive data on abortion and post-abortion care (PAC) in the country. This means that little is known about the incidence of abortion and abortion-related morbidity, as well as the number of women and girls who seek PAC. This information is crucial for effective planning, budgeting, and implementation of reproductive, maternal, newborn, child, and adolescent health (RMNCAH) intervention.

Moreover, ongoing legal reforms around the public health law in Liberia provide an opportunity to address unsafe abortion. Having robust and up-to-date evidence on the incidence of induced abortion, the severity of complications due to unsafe abortion, and the quality of abortion-related care in Liberia is necessary to consolidate gains made through the ongoing legal reforms. This information can also facilitate stronger campaigns and advocacy around the abortion discourse in Liberia and increase policy engagement to increase budgeting and investment in maternal health and post-abortion care.

This report presents the first national representative estimates of the incidence of induced abortion and the severity of abortion-related complications in Liberia. We have excluded data related to the quality of post-abortion care and the health system costs of providing post-abortion care from this report. This data will be presented later.

Data & Methods

Data Sources and Sampling Procedure

Data used to estimate induced abortion incidence, the magnitude, and the severity of abortion complications was generated from three (3) surveys that make up the Abortion Incidence and Complications Methodology (AICM). These are the Health Facilities Survey (HFS), Knowledgeable Informant Survey (KIS), and Prospective Morbidity Survey (PMS). All fieldwork was conducted between September 2021 and March 2022.

Health Facility Survey (HFS)

The HFS is a national representative, stratified and randomly sampled survey of health facilities capable of providing PAC services as per the current National Guidelines for Comprehensive Abortion Care (2019). Thus, the sample frame included all clinics, health centers, and hospitals. Stratification was done by the five (5) geographical regions (South Central, North Western, North-Central, South Eastern A and South Eastern B), then by level of health facility (clinic, health center, hospital). These sampled public facilities were supplemented by purposely sampled private facilities (including private-for-profit, faith-based, and concession facilities) across the five (5) regions. The MOH Master Facility List obtained May 31, 2021, was used to identify eligible facilities from both the public and private sector. The universe included 894 facilities comprising clinics (802), health centers (59), and hospitals (34). We sampled a total of 132 health facilities for the HFS component of study, that included 31 hospitals (91.2%), 41 health centers (69.4%) and 60 clinics (7.5%). One hundred and twenty-eight (128) (97%) of the sampled facilities completed the HFS. We excluded three (3) hospitals because one burnt down during the study while two (2) were specialized hospitals.

The HFS interviews were conducted with a health professional who is knowledgeable about post-abortion care at each selected facility. In large facilities, such as hospitals, the HFS was completed by the head of the maternal health or labor and delivery unit or an obstetrician/gynecologist who oversees PAC services. In lower-level facilities, we administered the HFS to a nurse, midwife, officer in charge (OIC), or health worker who was able to provide information about abortion-related care in that facility. Each respondent was interviewed using a face-to-face structured questionnaire.

The HFS collected retrospective estimates of the number of in- and out-patient PAC cases treated at each facility in the past month and typical month, which helped in generating facility caseloads. In the event the respondent was unable to give the monthly estimates, retrospective estimates of the past year and typical year were requested. We used the average or typical month (year) to iron out the seasonality in abortion. Other information captured in the survey included the health facilities' provision of PAC services, including PAC management approaches, provider knowledge on CAC, and PAC family planning.

Knowledgeable Informants Survey (KIS)

The KIS involved in-person structured interviews with a sample of purposively selected respondents with knowledge about the provision of abortion and PAC in the country (nationally or pertaining to specific regions). Informants were not restricted to clinicians providing direct CAC services to patients. Potential key informants were identified through purposeful and snowball sampling.

The initial list included individuals who had one or more of the following roles:

1. Key MOH/County Health Team staff involved with SRH programs;

2. Head/informed member(s) of partner organizations implementing SRH programs;

3. Head/informed member(s) of SRH advocacy groups;

4. Researchers of sexual and reproductive health and rights (SRHR) from different regions of Liberia. The selected individual were asked to list up to two (2) referrals they believed were knowledgeable on the provision of abortion and PAC in Liberia.

A total of 89 key informants were interviewed on topics ranging from their perception regarding the type of providers women seek abortion from, the likelihood women will experience complications that require treatment in a facility according to the type of abortion provider used, to the likelihood that women who need treatment will receive it at a health facility. These questions were asked for four (4) major sub-groups of women within the population: rural poor, rural non-poor, urban poor, and urban non-poor. This information was used in the calculation of the multiplier. The multiplier is the number of women/girls who have induced abortion who either did not have complications, or had complications that were not treated in the formal health system, for everyone that received facility-based care.

Other data sources used for calculating abortion incidence were the 2019/2020 Liberia Demographic and Health Survey (LDHS) (7), which provided information on fertility, contraceptive prevalence, unmet need for contraception, birth wantedness, and measures of access to health care. We also drew data from 2021 population projection for the number of women aged 15-49 in the different regions of Liberia. We used the Poverty & Equity Brief for Liberia 2021(15) and the Global Multidimensional Poverty Index (MPI) Country Briefing 2021: (16), to estimate the proportion of poor/non-poor in urban/rural settings in Liberia.

Prospective Morbidity Survey (PMS)

The PMS is a nationally representative survey that targeted a sub-sample of the HFS sample. One hundred (100) health facilities were selected from the HFS sample of 128 to participate in the PMS.

The PMS captured data on each woman who obtained post-abortion care (and their provider) at the selected health facilities during a 30-day period, for the women who consented. The inclusion criteria were all women seeking treatment for post-abortion complications and whose pregnancy termination occurred at 28 weeks or lower gestational age. However, we excluded all women who presented with ectopic and molar pregnancies, blighted ovum, and threatened abortion. These cases were excluded because the clinical management of the first three (3) is evacuation (we did not want to confuse that with abortion) and the last because a woman with threatened abortion may still leave the facility with her pregnancy continuing.

Trained clinicians and a few non-clinicians were trained and stationed at each selected facility for the 30 days of observation to collect data as women prospectively presented and were treated for PAC. In high-volume facilities, more than one enumerator was trained to collect data.

The PMS collected information on PAC patients' socio-demographic characteristics, reproductive and clinical histories, diagnosis, clinical procedures, and other services performed to treat the woman at the facility, post-abortion contraception provision, and clinical management outcomes. Data from the PMS is specifically applied to the classification of the severity of abortion complications. Data was collected from 401 PAC patients and 432 PAC providers across these 100 health facilities.

Data Analysis

Incidence of Induced Abortion

To estimate the incidence of induced abortion, we used the HFS to first obtain the number of women treated for abortion-related complications in a year in each facility by averaging the yearly estimates of the number treated in the past month and an average month for in-patients and out-patients and adding the two estimates. These facility-level estimates were then weighted to generate national representative data, accounting for sampling proportions and non-response. Table 2 shows the annual caseloads by facility level and region, after which we excluded the referrals to avoid double counting PAC cases. Next, we adjusted the PAC case totals to exclude cases of spontaneous abortion (i.e. miscarriages) at the regional level, using the assumption that 3.41% of live births in each of the five (5) geographic regions are due to late-term miscarriages (at 13-24 weeks) (17), which are the ones that are likely to require facility-based treatment, to estimate the number of miscarriages per region (Appendix 1). We then subtracted that number (miscarriages) from the total number of PAC cases to obtain the number of PAC cases due to induced abortion. Finally, the weighted regional estimate of the number of women treated for induced abortion complications are added to generate the total number of women treated in health facilities for complications resulting from induced abortion in Liberia in 2021.

Responses from the KIS were used to calculate the "multiplier", which represents the estimated proportion of all women who had an induced abortion that received treatment for abortion-related complications, including considerations that some women may not have complications, or may not seek care in the formal health system. The multiplier or adjustment factor is obtained as the inverse of that weighted proportion who seek care. The multiplier indicates, for every woman who had induced abortion complications and received care from a health facility, the number of additional women who had induced abortion who did not have complications or had complications but did not seek PAC in a health facility. Applying the multiplier to the facility PAC cases due to induced abortion provides the total estimated number of women who obtained an induced abortion in Liberia in 2021. From this number, the abortion incidence (number of induced abortion per year), abortion rate (number of induced abortion per 1,000 women of reproductive age [15-49]), and abortion ratio (number of induced abortion per 1,000 live births).

Severity of Abortion Complications

To calculate the severity of abortion complications, we used data from the PMS as well as the categorization of complications based on prior studies in the region on abortion-related complications (Box 1) (18–21). Each patient's clinical signs and symptoms, diagnosis, and interventions are examined to generate five (5) distinct categories of complications – mild, moderately severe, severe, near-miss, and death, and this is presented by regions.

Box 1: *Criteria for classification of abortion-related morbidity*
Mild morbidity (requires all criteria)
Temperature 35.1°C-38.9°C with no clinical signs of infection* No system or organ failure Systolic blood pressure ≥90mm Hg Hemorrhage not requiring any transfusion
Moderately severe morbidity (requires ≥1 criterion)
Temperature 37.3°C-38.9°C Clinical signs of infections No organ or system failure No signs of shock Hemorrhage not requiring any transfusion
Severe morbidity (requires ≥1 criterion)
Temperature ≥39°C or ≤35°C and a clinical sign of infection Sepsis/septicemia with no signs of septic shock Pelvic abscess or pelvic peritonitis with no sign of shock Clinical anemia without hemorrhagic shock Uterine perforation without laparotomy, repair of uterine perforation, gut perforation, hysterectomy
Near-miss (requires ≥1 criterion)
Hemorrhagic shock Septic shock Generalized peritonitis Uterine perforation with laparotomy, repair of uterine perforation, gut perforation, or hysterectomy Organ/system failure Massive blood transfusion
Death
Loss of the life of a woman because of an abortion complication

Ethical Approval

This study was approved by the University of Liberia-Pacific Institute for Research and Evaluation Institutional Review Board (UL-PIRE) (now the Atlantic Center for Research and Evaluation (ACRE) Institutional Review Board, Protocol #21-07-275. In line with CHAI's internal policy, the study protocol and materials were also approved by the Clinton Health Access Initiative's internal Scientific and Ethical Review Committee (SERC). The APHRC Institutional Review Board also reviewed and approved the study. All investigators who worked on the team completed the human subjects' protection training before engaging in the study. All respondents provided signed (HFS and KIS) or verbal (PMS) informed consent before participation.

Findings

PAC Caseload

Table 1 presents the universe of health facilities with the potential to provide PAC in Liberia, the health facilities sampled, those that declined, and the total health facilities that participated in the HFS. Of the 894 unweighted universe of health facilities, 132 were sampled and 128 participated in the HFS. All sampled hospitals participated (100%), while health centers had a response rate of 97.6% and clinics (95.0%).

Table 1: *Health facilities sampled in the Health Facility Survey, Liberia, 2021*

Facility Type	Universe of health facilities with potential capacity to provide PAC	Health facilities sampled	Health facilities that declined participation	Health Facilities participating
Hospital	34	31	0	31 (100%)
Health center	59	41	1	40 (97.6%)
Clinic	802	60	3	57 (95.0%)
Total	**894**	**132**	**4**	**128 (97.0%)**

Findings from the HFS showed that 14,555 women received post-abortion care, including for induced and spontaneous abortion within health facilities in Liberia in 2021 (Table 2). Across regions, South Central (Montserrado, Margibi and Grand Bassa) had the highest number of cases (7,462), while the least PAC cases were seen in Southeast B (702). After excluding referrals and miscarriages (spontaneous abortion) from the total PAC caseloads, we estimated that the total number of women treated for induced abortion complications at health facilities was 8,461 (Table 2). Figure 1 shows the regional distribution of PAC cases due to induced abortion.

Table 2: *Estimated number of women treated for PAC in 2021 by regions in Liberia*

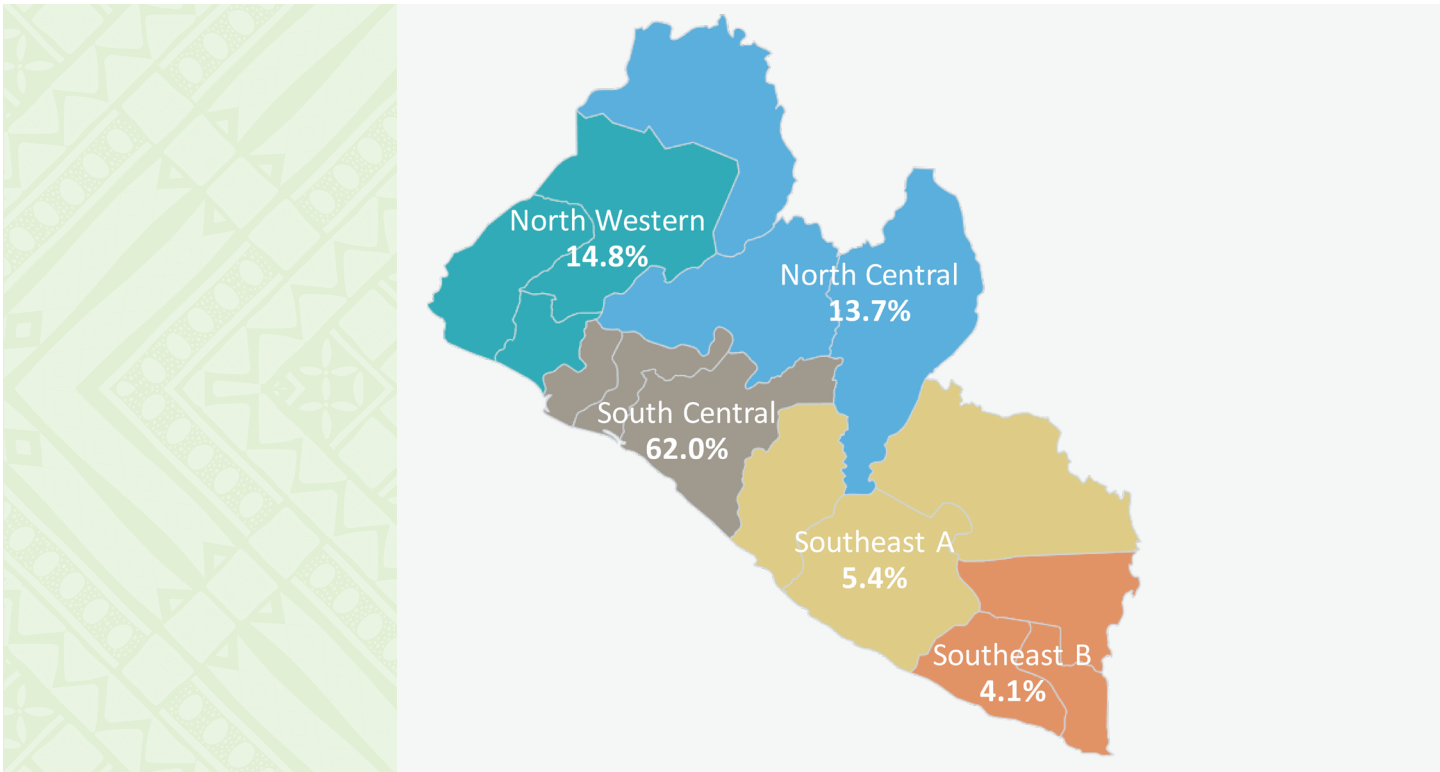|	Total # PAC cases (a)	# referrals (b)	# miscarriages (c)	# PAC cases due to induced abortion (a-b-c)
National	14,555	332	5,762	8,461
North Central	3,593	149	2,287	1,157
North Western	1,885	50	581	1,254
South Central	7,462	115	2,104	5,243
Southeast A	913	15	442	456
Southeast B	702	3	348	351

Figure 1: *Regional distribution of PAC cases treated in health facilities*

Most women presenting for PAC (74% or 10,767 cases) were treated at lower-level facilities (clinics), followed by hospitals (13.9% or 2,025 cases) (Figure 2). In addition, most women were treated in public health facilities (67% or 9,752 cases) compared to 33% or 4,803 cases in private facilities, highlighting that it is the public facilities that are common access points for patients seeking PAC services in Liberia.
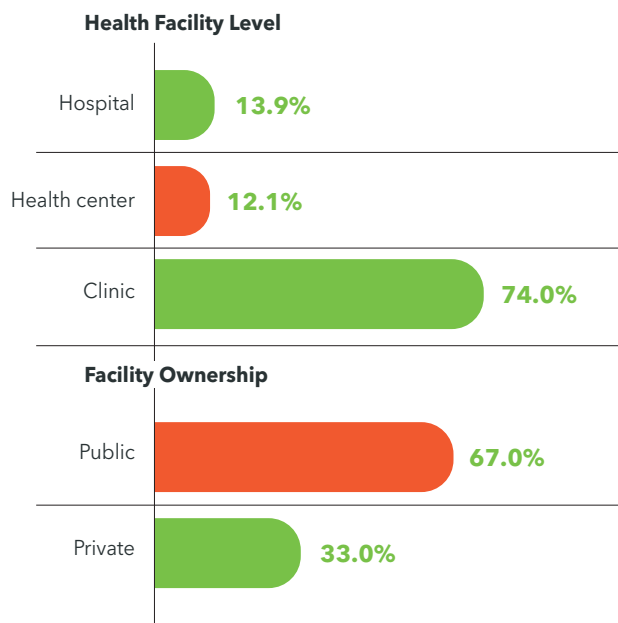

Figure 2: *Estimated proportion of women treated for PAC in 2021 by facility level and ownership*
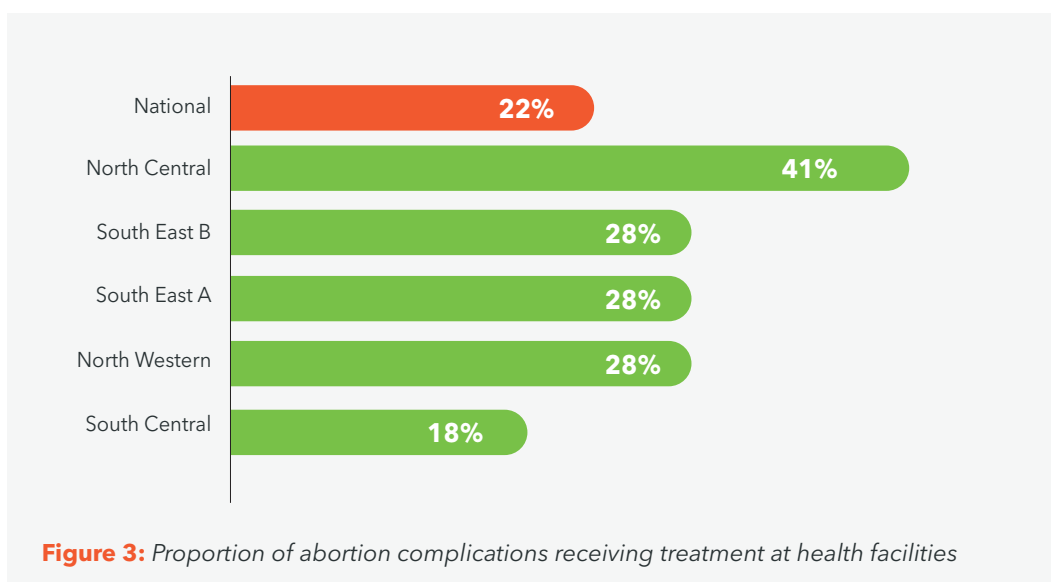
Post-abortion Care-seeking

Figure 3 shows the proportion of women with complications from induced abortion in Liberia who received post-abortion care in health facilities in 2021 by region of care. Just under a quarter of women (22%) at the national level with induced abortion complications received care in a facility.

Across the regions, North Central region (Bong, Lofa, Nimba counties) had the highest proportion of induced abortion complications treated in a facility (41%), and this could possibly be linked to more abortion induced through 'traditional' methods (known to be unsafe) within rural settings. At the same time, the South-Central region (Montserrado, Margibi, GB) had only 18% of induced abortion complications treated in a facility. This low proportion of women with induced abortion complications seeking care in South Central could reflect the large proportion of women in urban settings who have no complications from induced abortion (i.e. because safe abortion methods are more readily accessible).

38,779
incidence of induced abortion in Liberia in 2021. This translates to an abortion rate for Liberia at

30.7 per

1,000
women of reproductive age.

Figure 3: *Proportion of abortion complications receiving treatment at health facilities*

Incidence of Induced Abortion

The national multiplier was 4.5, indicating that approximately 22% of all women who had induced abortion in Liberia experienced complications and sought treatment at a health facility.

Once we applied the multiplier to the PAC caseload numbers, we estimated that the incidence of induced abortion was 38,779 in Liberia in 2021. This translates to an abortion rate for Liberia at 30.7 per 1,000 women of reproductive age.

Figure 4 presents the regional estimates of the incidences of induced abortion in Liberia in 2021.

There exist substantial regional variations in the abortion rate, with the highest rate seen in the South Central region (49.7 per 1,000 women in reproductive age), followed by

North Western (42.5 per 1,000 women in reproductive age); and the lowest incidence was seen in North Central (6.6 per 1,000 women in reproductive age). However, we note that the regional incidence must be cautiously interpreted because it does not necessarily mean that the people who had these induced abortion are domicile in South Central; for example, it is possible that South Central may see more induced abortion due to accessible, safe abortion services, whether performed formally or informally.
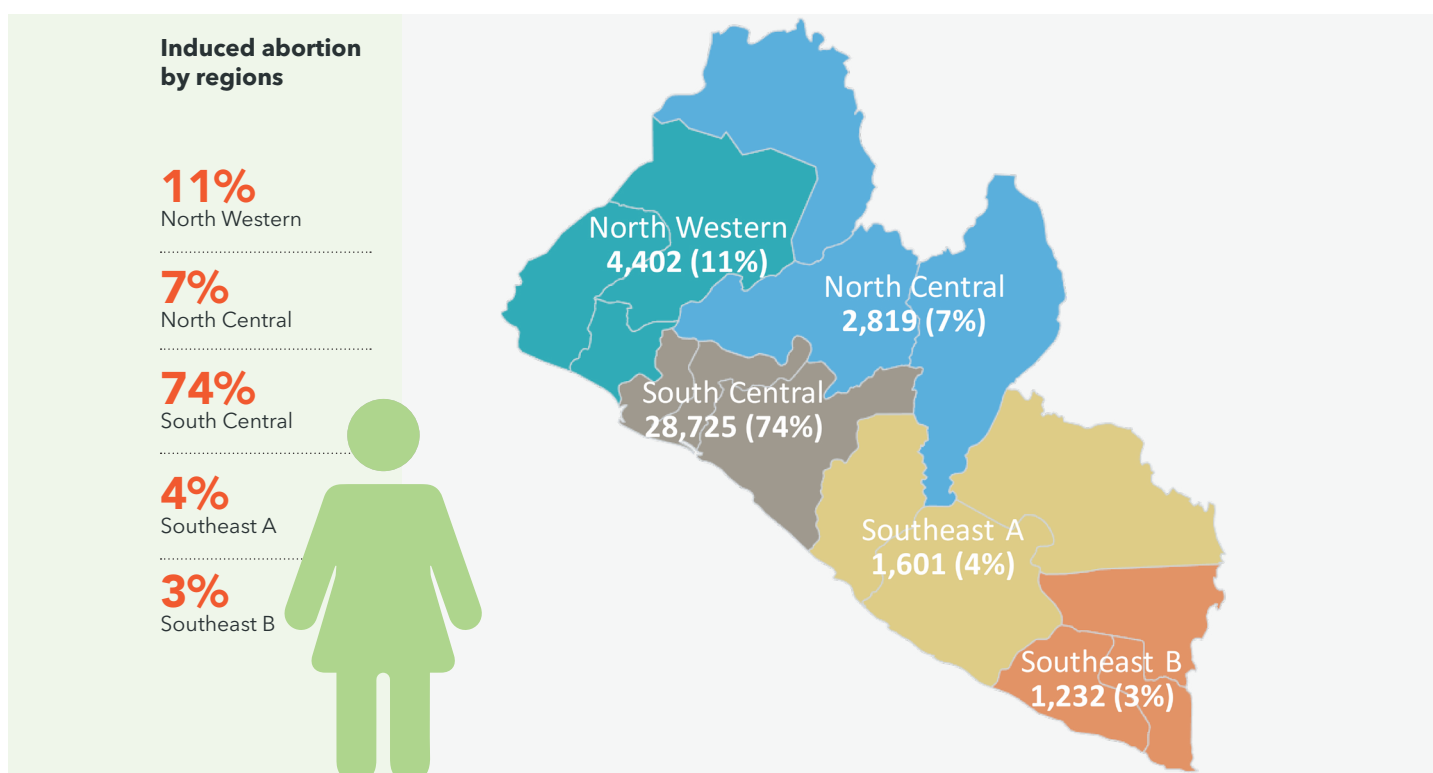

Induced abortion by regions

11%
North Western

7%
North Central

74%
South Central

4%
Southeast A

3%
Southeast B

North Western
4,402 (11%)

North Central
2,819 (7%)

South Central
28,725 (74%)

Southeast A
1,601 (4%)

Southeast B
1,232 (3%)

Figure 4: *Incidence of induced abortion by regions, Liberia, 2021*

Abortion Rate and Ratios in Liberia

Figure 5 shows the abortion incidence rates. Liberia's abortion rate is 30.7 abortion per 1,000 women of reproductive age (WRA). There are substantial regional variations in the abortion incidence. The abortion rates were highest in the South Central (49.7/1,000), perhaps due to accessible safe abortion services, whether performed formally or informally. North Western also recorded a high abortion rate (42.5/1,000) possibly because of the low regional family planning (FP) use, a high unmet need for FP, a high unintended pregnancy rate, and service inaccessibility.

Figure 6 shows the abortion ratios in Liberia – that is, the number of induced abortion per 1,000 live births. Liberia's abortion ratio is 229 abortion per 1,000 live births and there are significant regional variations in the abortion ratios.
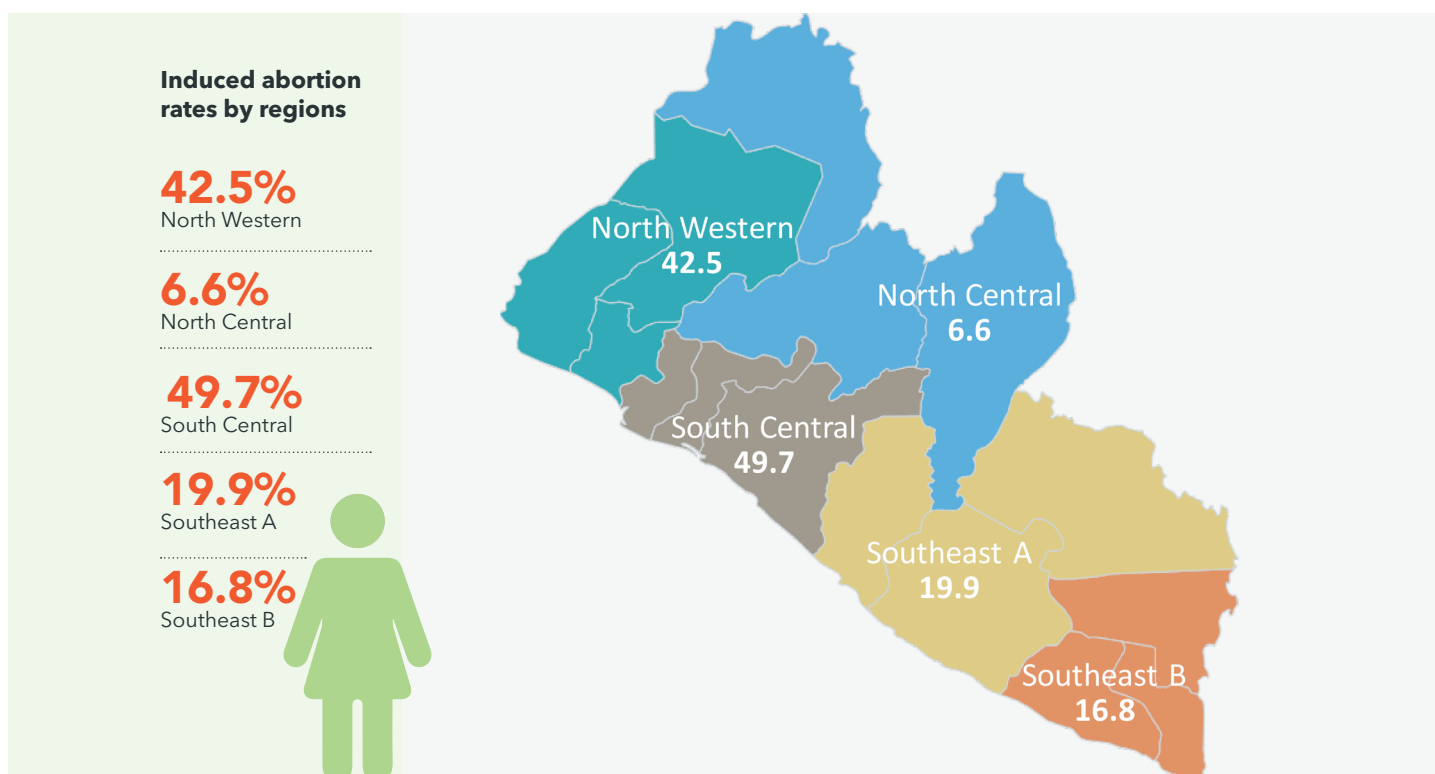
Induced abortion rates by regions

42.5%
North Western

6.6%
North Central

49.7%
South Central

19.9%
Southeast A

16.8%
Southeast B

Figure 5: *Abortion rate in Liberia (Number of induced abortion per 1,000 WRA)*

Induced abortion ratios by regions

258
North Western

42
North Central

464
South Central
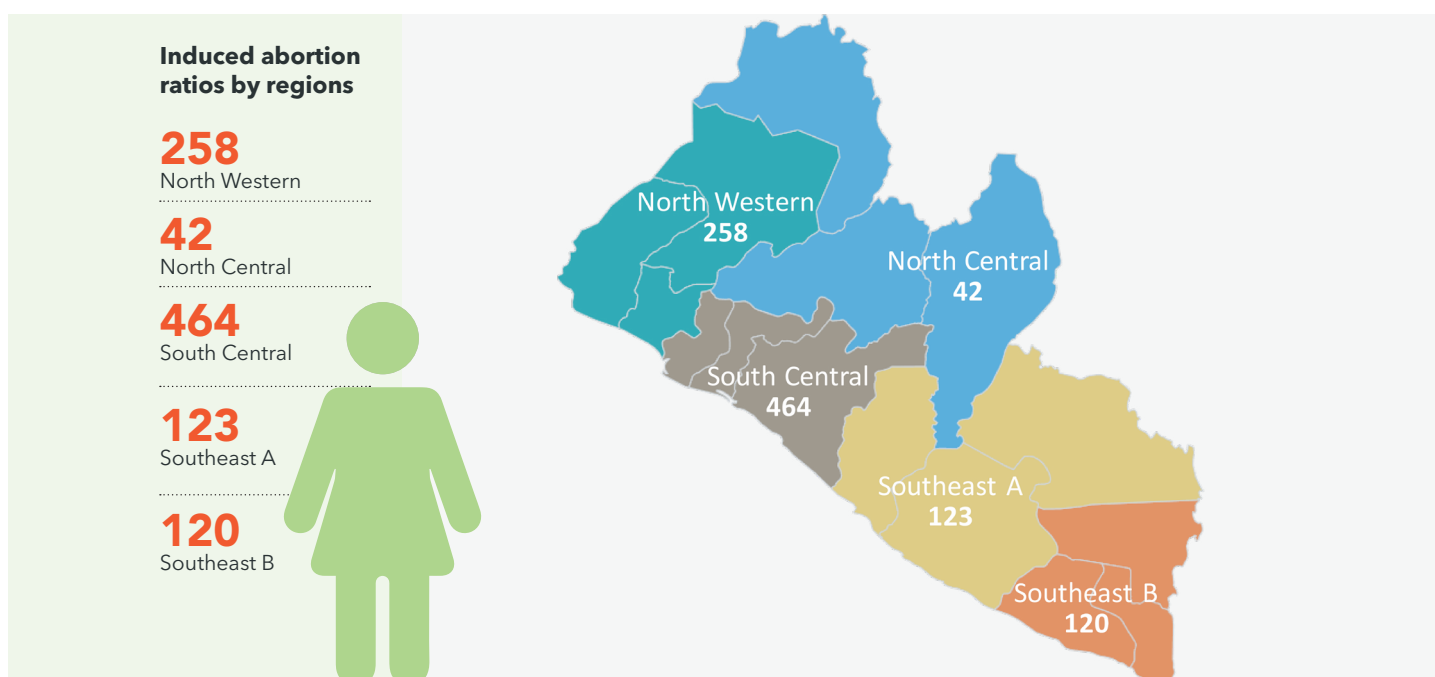
123
Southeast A

120
Southeast B

Figure 6: *Abortion ratio in Liberia (Number of induced abortion per 1,000 live births)*

[1] Number of pregnancies per 1,000 WRA
[2] Number of unintended pregnancies per 1,000 WRA, with unintended pregnancies defined as unintended births plus abortion

Unintended Pregnancy Rates and Induced Abortion

Table 3 presents the comparison between pregnancy rates , unintended pregnancy rates , proportion of pregnancies that are unintended, and the proportion of unintended pregnancies ending in abortion.

Of all pregnancies in Liberia in 2021, 52% were unintended, and of all these unintended pregnancies, 35% ended in abortion (Table 3). The national unintended pregnancy rate was 86.5 per 1,000 WRA. The highest unintended pregnancy rates were in North-Western (118.0 per 1,000 WRA) and South Central (99.8 per 1,000 WRA) regions. Similarly, South Central (Montserrado, Margibi, GB) had the highest proportion of pregnancies that are unintended, compared to the national estimate (64% vs. 52%). South Central also had the highest proportion of unintended pregnancies ending in abortion, above the national estimate (50% vs. 35%). *Appendix 2 details the outcomes of all pregnancies in Liberia in 2021*.

Table 3: *Unintended pregnancy and abortion*

	Pregnancy rate	Unintended pregnancy rate	Proportion of pregnancies that are unintended	Proportion of unintended pregnancies ending in abortion
National	194.7	86.5	52%	35%
North Central	195.6	66.0	40%	10%
North Western	244.9	118.0	57%	36%
South Central	183.3	99.8	64%	50%
Southeast A	215.5	78.3	43%	25%
Southeast B	186.5	65.3	42%	26%

Characteristics of PAC Patients

A total of 401 women were interviewed during the 30-day PMS data collection. Table 4 presents the socio-demographic characteristics of the respondents. Half (50%) of all PAC patients were young women aged (< 25 years), while about 10% were 35 years or older. Most women were from urban settings (63%), married or in a union (67%), were working (employed/self-employed) (56%), and had primary-level education (39%).

Table 4: *Socio-demographic characteristics of PAC patients*

Patient's Background History (n=401)		%
Age	13-19	23%
	20-24	27%
	25-34	40%
	35 and above	10%
Residence	Urban	63%
	Rural	37%
Marriage	In union	67%
	Not in union	32%
	Refused to disclose	1%
Employment/Work	Working, employed or self-employed	56%
	Unemployed	35%
	Other (housewife; student)	9%
Highest level of education	No education	20%
	Primary	39%
	Secondary	27%
	Tertiary	14%

*Weighted percentages

Table 5 presents the reproductive health characteristics of women seeking PAC in Liberian health facilities. Most women reported one or two total pregnancies (44%). Among 275 women with previous deliveries, 56% reported having had between 1-2 total live births. Among women with biological living children, the majority had one or two biological living children (54%). Further, of the 119 women with previous experience of spontaneous abortion, 61% reported once, while 39% had at least two episodes of spontaneous abortion. About 36% of the women in the study did not want the current pregnancy for which they were seeking PAC as at the time they became pregnant, and a majority (53%) were not doing something to prevent or delay the pregnancies.

**Table 5:** *Reproductive health characteristics of women seeking PAC, Liberia 2021*

Reproductive health history (n=401)	Response options	%
Total pregnancies (n=401)	1-2	44%
	3-4	35%
	5-6	12%
	7 and above	10%
Total number of children given birth to previously (n=275)	1-2	56%
	3-4	28%
	5 and above	17%
Total biological living children (n=271)	None	4%
	1-2	54%
	3-4	27%
	5 and above	14%
Previous spontaneous abortion (n=119)	1	61%
	2	28%
	3 and above	11%
Previous induced abortion (n=67)	1	51%
	2	41%
	3 and above	8%
Pregnancy Wantedness (n=401)	Wanted the pregnancy and to carry it to term	60%
	Wanted but changed mind	4%
	Did not want it at all	30%
	Had no choice	6%
Doing something to delay/prevent pregnancy (n=401)	No	53%
	Yes	47%

Weighted percentages

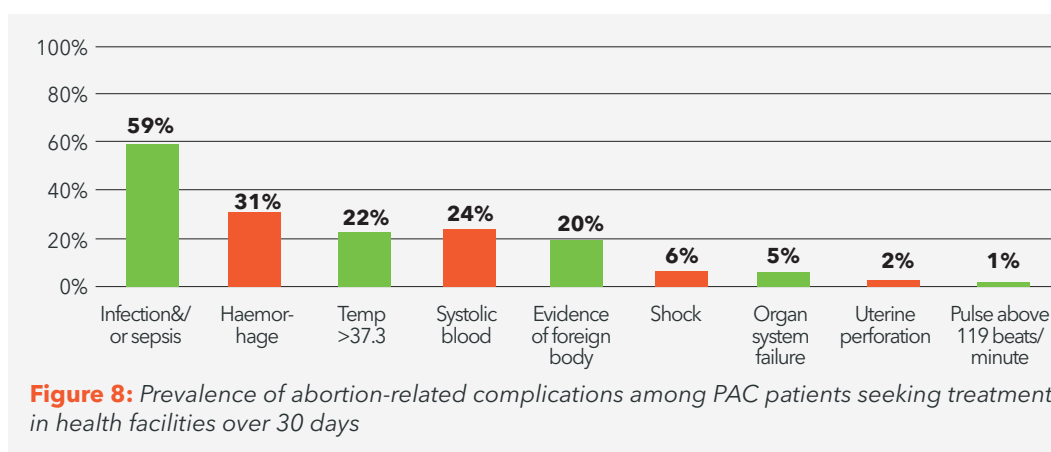# Severity of Abortion Complications

Based on the categorization of complications (see Box 1) for women who presented for PAC during the 30 days of facility observation, about 26% of women seeking PAC presented with mild complications, 25% with moderately severe, and 37% with severe complications (Figure 7). Nationally, 11% of all complications were near-miss or resulted in death.

Across the regions, North-Western (52%), North Central (43%), and South-Central (40%) regions had the highest proportions of women with severe complications. South Eastern B (17%) and South Eastern A (3%) regions had the least proportion of women with severe abortion-related complications, even though these two regions had the highest proportion of women with moderately severe complications. The regional variations in the severity of complications shown in Figure 7 could be reflective of differences in facility infrastructure, provider capacity and knowledge of clinical practice, availability of supplies and commodities.

Figure 7: *Severity of abortion complications among women treated in health facilities, Liberia, 2021*
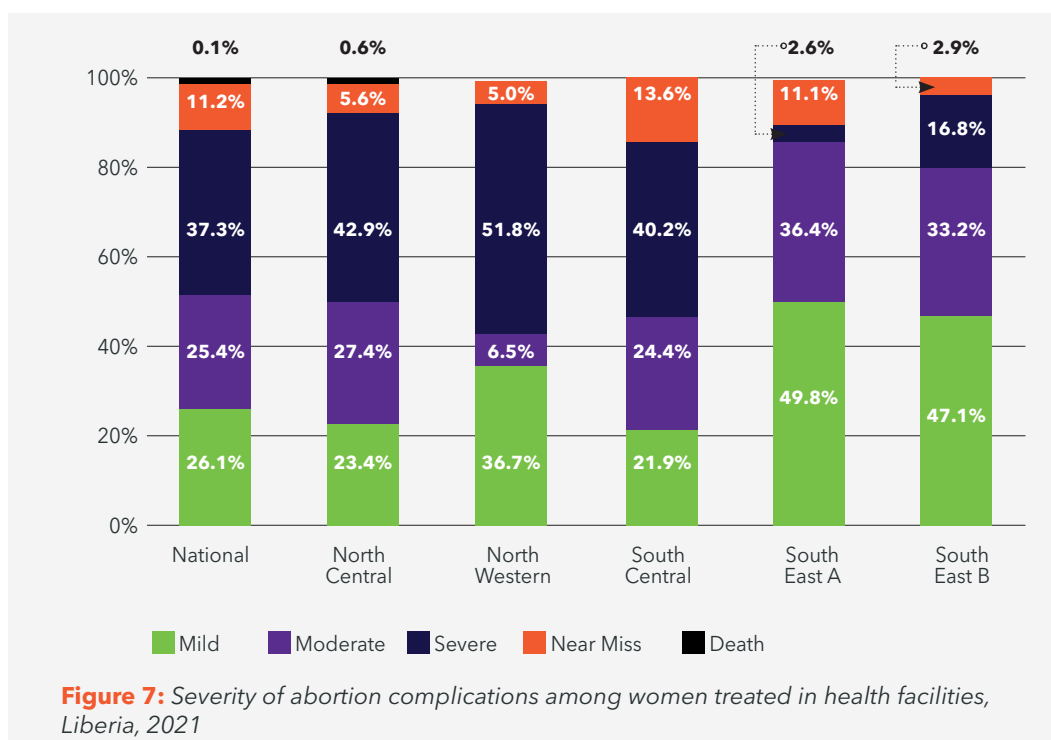
Abortion-Related Complications

Figure 8 shows the distribution of specific abortion-related complications by women presenting for PAC services. More than half of women were diagnosed with both clinical signs of infections and sepsis (59%), about one-third had hemorrhage (31%) and slightly over a fifth of the women had a systolic blood pressure less than 91 mmHg (24%), and temperatures higher than 37.3°C (22%). There was one death during the 30-day study observation period.

Figure 8: *Prevalence of abortion-related complications among PAC patients seeking treatment in health facilities over 30 days*

Discussion

The AICM approach suggests that approximately 38,779 abortion occurred in Liberia in 2021, corresponding to a national abortion rate of 30.7 per 1,000 WRA. The estimated abortion rate is largely comparable to existing abortion rate estimates (22). For instance, 2017 modeling from the Guttmacher Institute found that the abortion rate in western Africa was 31 per 1,000 WRA between 2010-2014 (23). Studies in neighboring countries have estimated the induced abortion incidence rate to be 25 per 1,000 in Burkina Faso (24), 33 per 1,000 in Nigeria (25), 44 per 1,000 in Ghana (26), and 16 per 1000 in Senegal (27). It is however valuable to highlight that these previous studies were conducted close to a decade ago.

There are significant variations in the abortion rate across regions in Liberia, with North Central having the lowest abortion rates (6.6/1,000) and South-Central having the highest (49.7/1,000). The South-Central region also reported a high unintended pregnancy rate (99.8/1,000). The high abortion rates and unintended pregnancy rates in the South-Central region may indicate that women and girls have high unmet need for family planning. For instance, in 2020, one-third of married women had an unmet need for family planning, 21% for spacing and 13% for limiting number of children, and this gap increases among adolescents and young people (7). Further, the two (2) regions (North-Western and South-Central) with the highest unintended pregnancy rates also had the highest abortion incidence rates. This reinforces the argument that legal restrictions do not necessarily reduce the occurrence of abortion, but rather drive women toward unsafe abortion methods likely to result in complications and death (22). Interventions to increase family planning, reduce unmet need, and to increase use of safe abortion methods (e.g. using manual vacuum aspiration [MVA], misoprostol, or combipack) are effective approaches to reduce abortion-related morbidity and mortality (28).

Data from the HFS indicates that the vast majority of women who seek PAC services do so in public (67%) and primary-level health facilities (74%) compared to health centers and hospitals. Yet, despite these public and primary-level facilities being the dominant access points to women seeking PAC services in Liberia, they are most often the least equipped with trained staff, essential equipment, commodities, and supplies for PAC, thus impeding access to quality and comprehensive abortion-related services (29).

Study findings show that women seeking abortion-related care in Liberian health facilities were socially and demographically diverse. This study shows that almost half of the patients seeking post-abortion care presented with either severe (37%) or near-miss (11%) complications and with wide regional variations. The PAC cases with this level of severity were higher than those documented in some studies, like Zimbabwe and Uganda (19-20%) (30,31) but comparable to the level 37% found in Kenya and Sierra Leone (18). Safe abortion, i.e., procedure for terminating an unintended pregnancy carried out by providers with the necessary knowledge, skills, and qualifications in an environment that conforms to minimal medical standards (e.g. following WHO guidelines) and with appropriate commodities, equipment and supplies, typically result in extremely low rates of complications. Unsafe abortion however, results in severe complications, some of which are life-threatening. Women with severe complications often require admission into intensive and high dependency care units, long admission periods, and treatment by highly skilled health providers, such as gynecologists who are often scarce in low-income countries, especially at lower facility levels (31). Due to the associated morbidity and mortality, the burden of unsafe abortion on the health system are enormous (32).

While there are ongoing legislative processes in Liberia to reform the existing laws around abortion and enhance access to safe abortion care and reduce unsafe abortion and improve maternal health in general, there remains a need to implement and routinely monitor the use of existing clinical guidance for delivering PAC and addressing abortion-related complications in Liberia.

Recommendations

01 Accelerate the legal and policy reforms that address the causes of unsafe abortion and unintended pregnancies and eliminate barriers to access of sexual and reproductive health services for all women and girls. Liberia has already committed to domesticating the Maputo Protocol, that creates a framework for addressing sexual and gender-based violence (SGBV), facilitating a return to school criteria for pregnant and parenting adolescents, safe abortion care and the age of consent for sex and marriage, among others.

02 Access to quality family planning services and effective modern methods for all women and men.

03 Expanding access to quality post-abortion care, including post-abortion contraception counseling and method provision at all health system levels. This also includes strengthening the capacity of lower-level health facilities and mid-level providers to utilize appropriate uterine evacuation technologies, including MVA, misoprostol, and mifepristone/misoprostol combipack, availing essential equipment and supplies, and ensuring pre-service and in-service training of providers on PAC. The 2019 National CAC Guidelines should be disseminated and used to support training and mentoring of all providers on high-quality PAC.

04 Ensure full dissemination and implementation of the revised Public Health Law once passed to all communities, health facilities, and policymakers.

05 Community education and awareness on the burdens and dangers of unsafe abortion, current legal provisions on abortion and current access points (e.g. hospitals), stigma reduction, and awareness on a wide range of family planning methods available in Liberia.

06 Strengthen the health system and health facilities to ensure that they have the necessary equipment and supplies, including medication and contraception, to provide quality sexual and reproductive health services, including abortion and post-abortion care.

07 Collaborate with local and international organizations, including NGOs, to support and implement programs that promote access to comprehensive sexual and reproductive health services, including family planning, abortion care, and post-abortion care.
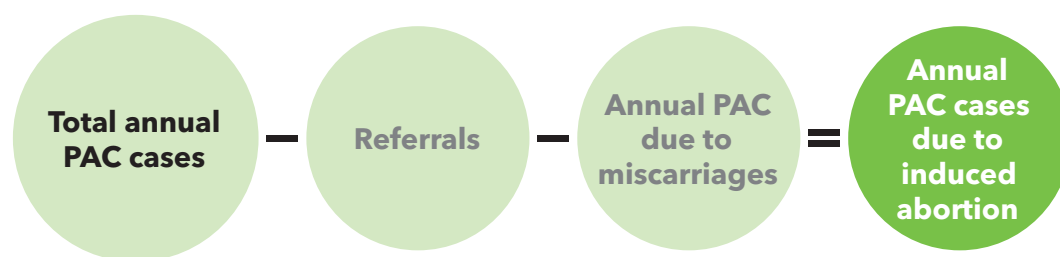
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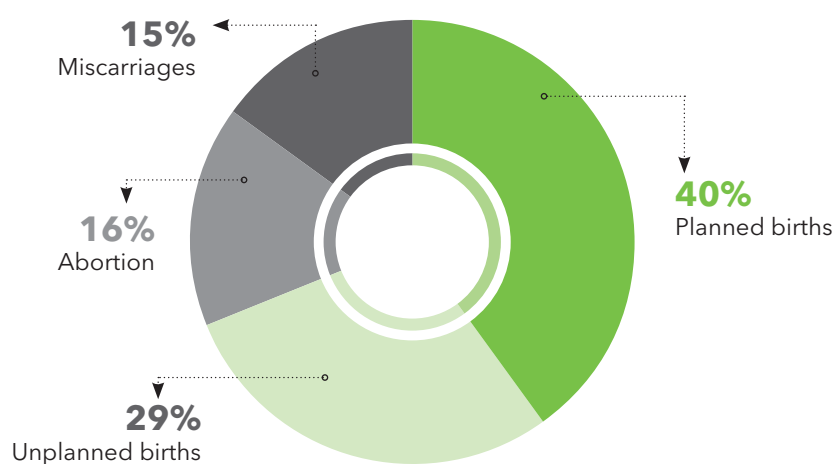
Appendices

Appendix 1: Steps for calculating the induced abortion

| Total annual PAC cases | − | Referrals | − | Annual PAC due to miscarriages | = | Annual PAC cases due to induced abortion |

$$12 * \left(\frac{\text{typical mo} + \text{last mo}}{2} \right)$$

- *PAC cases often undercounted in facility ledgers*
- *Therefore estimated by asking providers to recall PAC cases seen in a typical month and in the last month*

- *Remove cases that were initially treated at a facility but then referred to a higher level facility for more care*

- *Remove late miscarriages (13-24 weeks) which account for 3.41% of live births in reach region*

Appendix 2: All pregnancy outcomes in Liberia, 2021

15% Miscarriages

16% Abortion

29% Unplanned births

40% Planned births

Notes

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Health Research Center