# Findings of the 2021 National Maternal Mortality


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**Disclaimer**

The contents in this presentation do not necessarily reflect the views of USAID or the United States Government.


**Acknowledgement:**

Jordan's Maternal Mortality Surveillance and Response System was made possible by the generous support of the American people through the United States Agency for International Development (USAID).


Jordan's Maternal Mortality Surveillance & Response System

النظام الوطني للرصد والإستجابة لوفيات الأمهات

# Reporting Period

The **descriptive analysis** in this presentation covers the reporting period from:

**January 1st to December 31st 2021**

# Jordan's Maternal Mortality Ratio 2021

- During the reporting period, 1,871 deaths occurred among Women at reproductive Age.

- A total of **160** deaths were identified as maternal.
- A total number of **187,722** live births occurred during the same period.

- Jordan's Maternal Mortality Ratio was calculated at: **85.2 per 100,000** live births.

# Distribution of MMR and Non-COVID MMR by Year

| Year | Number of Live Births | Total Number of Deaths | Non COVID-19 Deaths | MMR | Non COVID-19 MMR |
|---|---|---|---|---|---|
| **2021** | **187,722** | **160** | **56** | **85.2** | ***29.8*** |
| 2020 | 176,557 | 68 | 53 | 38.5 | *30.0* |
| 2019 | 194,643 | 63 | 63 | 32.4 | *32.4* |
| 2018 | 207,917 | 62 | 62 | 29.8 | *29.8* |

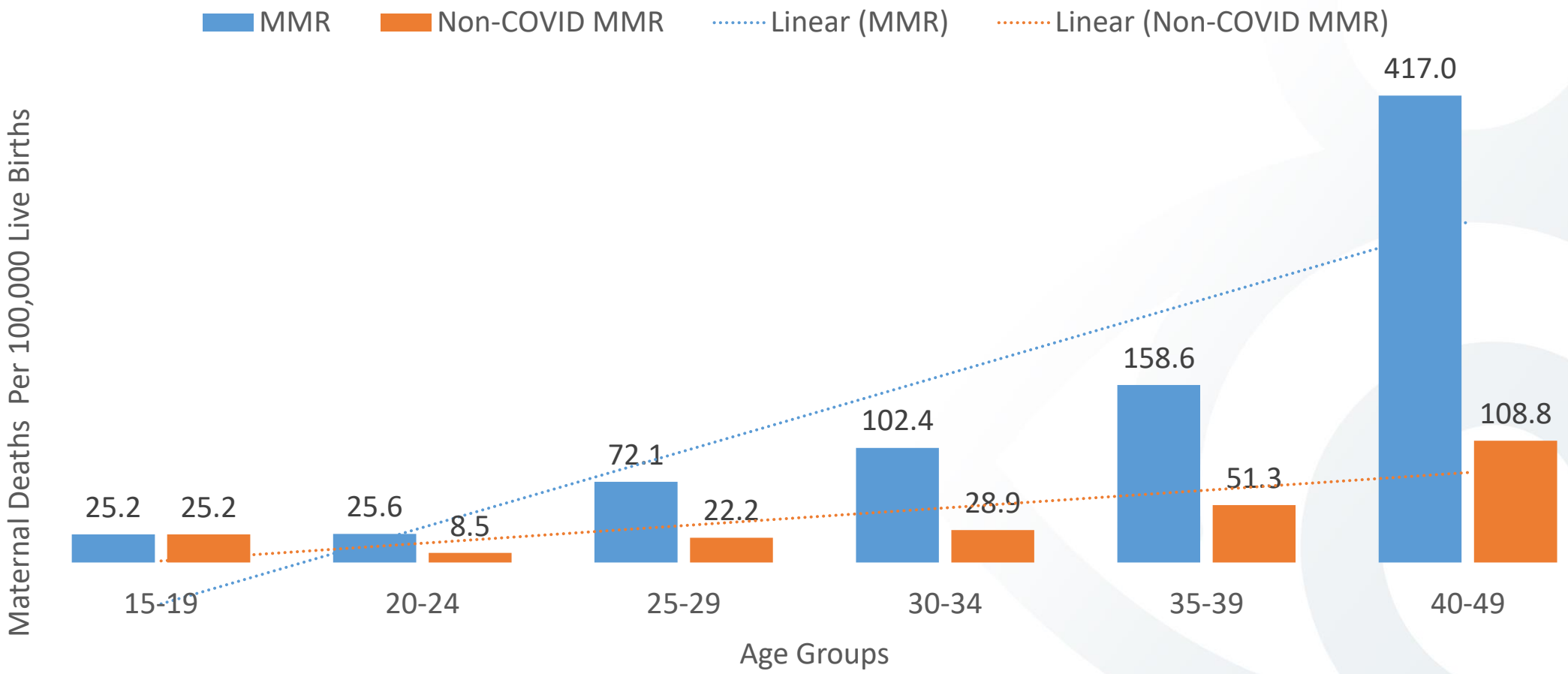
# Maternal Deaths by Demographic Characteristics

- Maternal Age Group
- Nationality
- Educational Level
- Employment Status
- Place of Residence and Place of Death

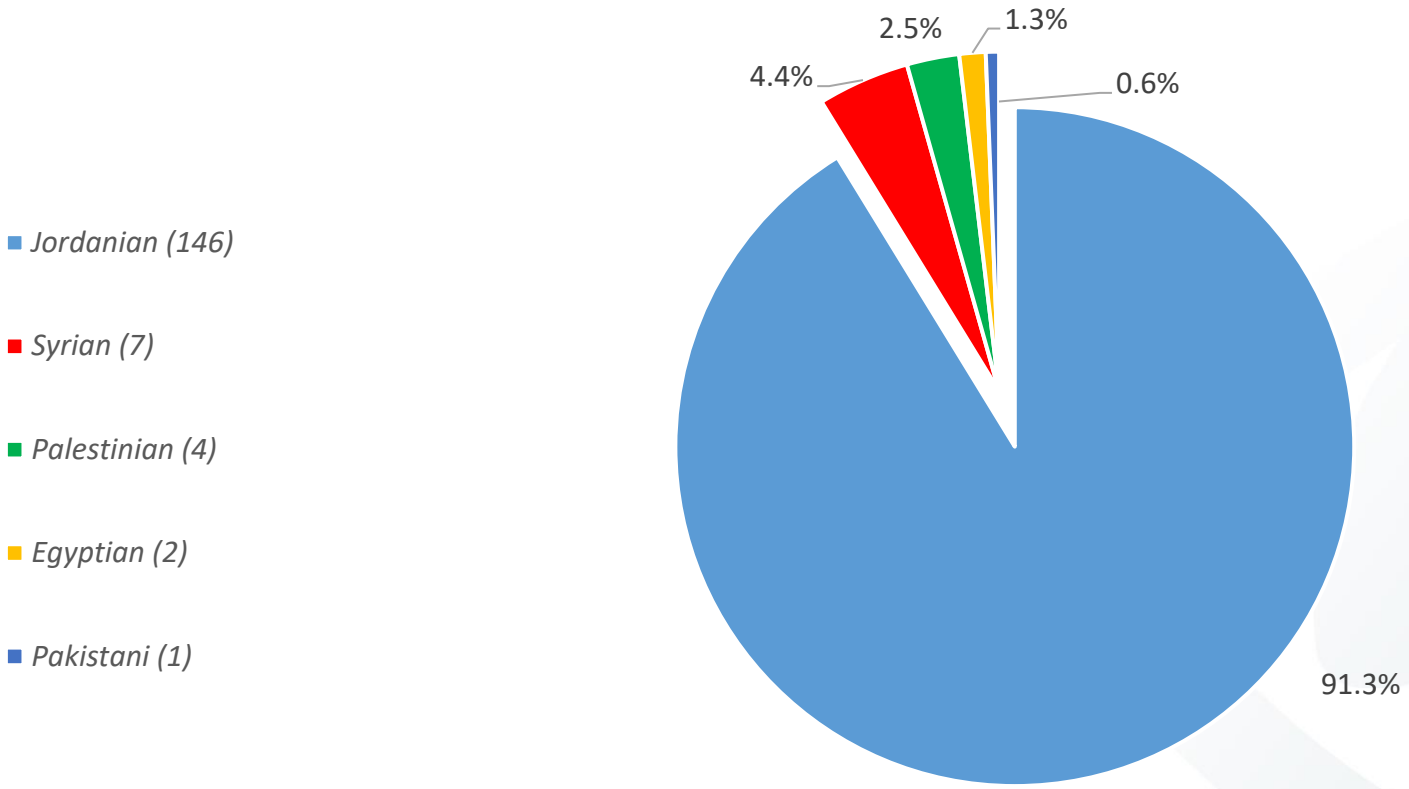
# Distribution of Maternal Deaths by Age Group

| Age Group | Number of Maternal Deaths | Percent |
|---|---|---|
| 15-19 | 2 | 1.3 |
| 20-24 | 10 | 6.3 |
| 25-29 | 41 | 25.6 |
| 30-34 | 42 | 26.3 |
| 35-39 | 40 | 25.0 |
| 40-49 | 25 | 15.6 |
| **Total** | **160** | **100** |

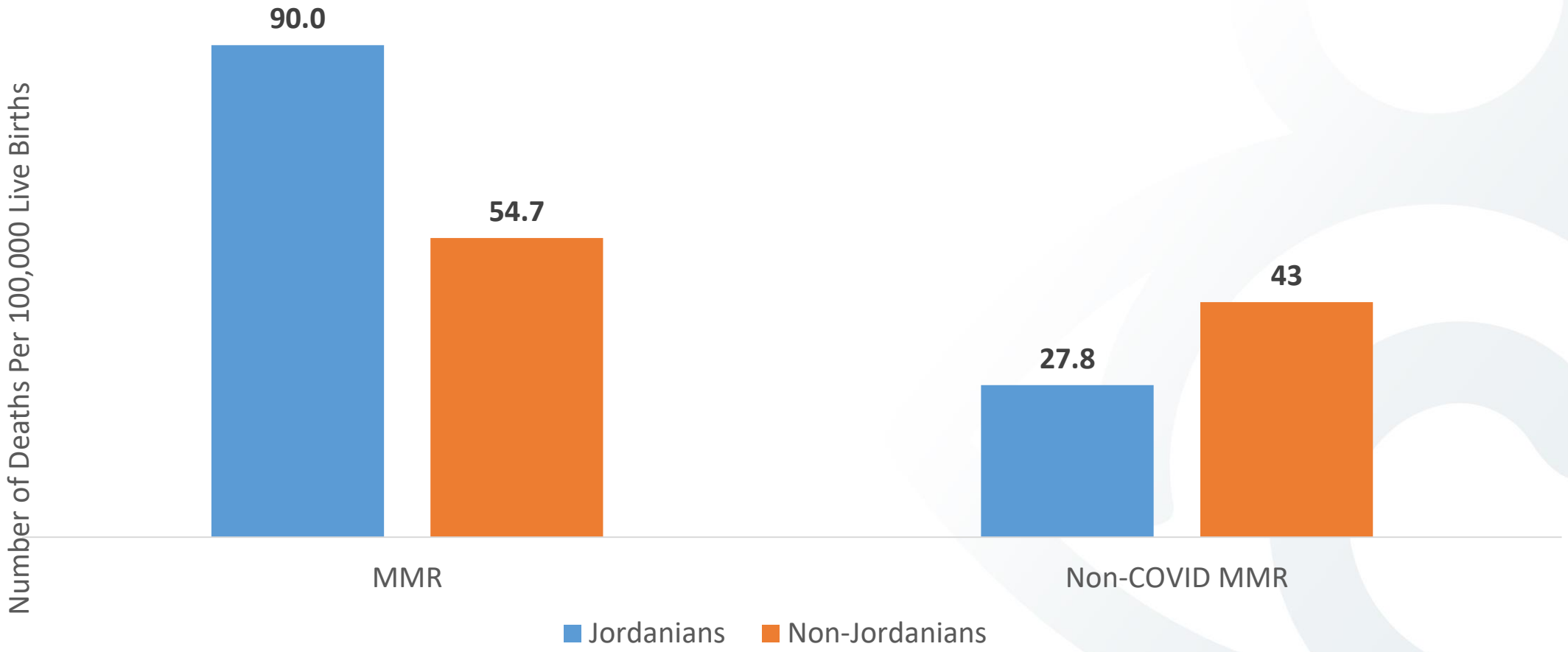
# Distribution of MMR and Non-COVID MMR by Age Group for Jordanians



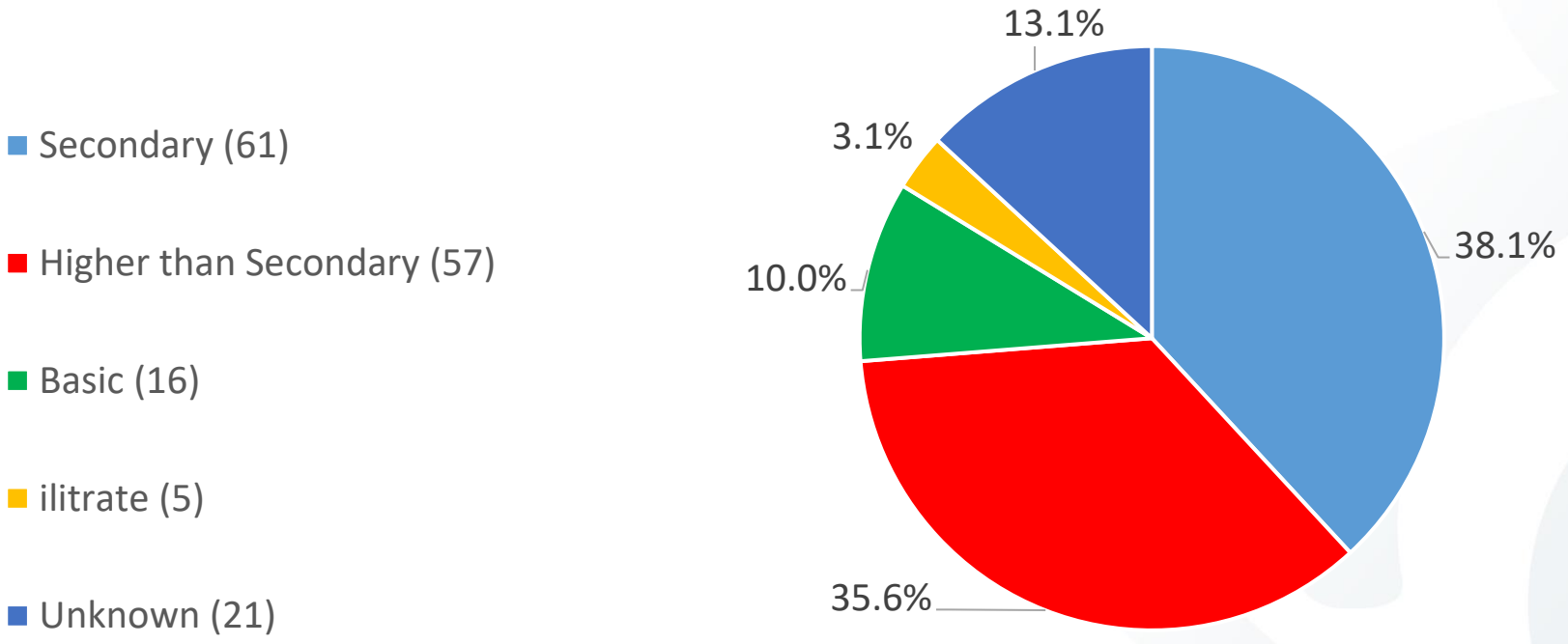
# Maternal Deaths by Nationality



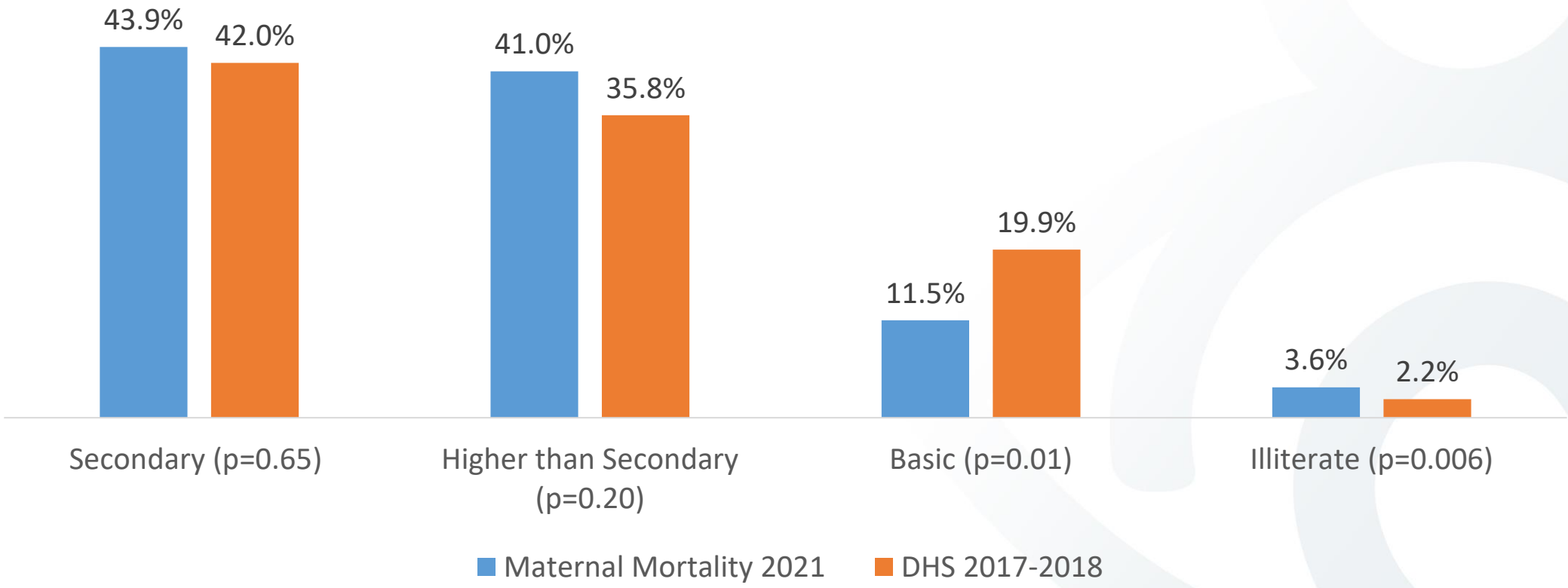
# Distribution of MMR and Non-COVID MMR by Nationality



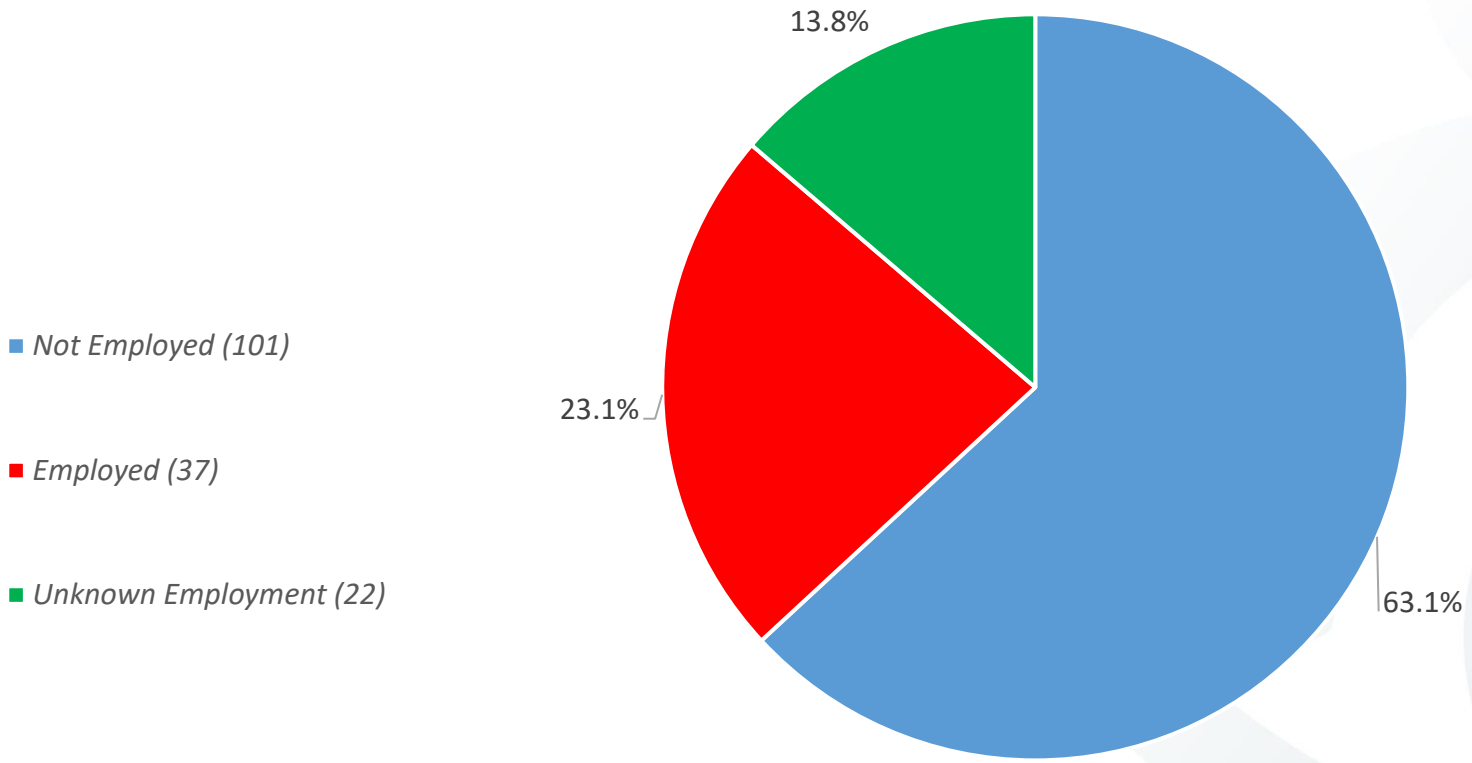
# Maternal Deaths by Educational Level



# Comparison of Educational Level with DHS Data



# Maternal Deaths by Employment Status



# Distribution of COVID-19 According to Employment

| COVID-19 Status | Employment Status (Percent) | | Total |
|---|---|---|---|
| | *Not Employed* | *Employed* | |
| *COVID Deaths* | 62 **(61.4)** | 27 **(73)** | 89 (64.5) |
| *Non-COVID Deaths* | 39 (38.6) | 10 (27) | 49 (35.5) |
| Total | 101 (100) | 37 (100) | 138 (100) |

# Maternal Deaths by Place of Death & Place of Residence

| Governorate | Place of Residence<br>Number (Percent) | Place of Death<br>Number (Percent) |
|---|---|---|
| Ajloun | 2 (1.3) | 2 (1.3) |
| Amman | 53 (33.1) | 88 (55.0) |
| Aqaba | 8 (5.0) | 7 (4.4) |
| Balqa | 11 (6.9) | 6 (3.8) |
| Irbid | 39 (24.4) | 36 (22.5) |
| Jerash | 2 (1.3) | 0 (0) |
| Karak | 3 (1.9) | 2 (1.3) |
| Maan | 2 (1.3) | 1 (0.6) |
| Madaba | 7 (4.4) | 2 (1.3) |
| Mafraq | 10 (6.3) | 5 (3.1) |
| Tafilah | 8 (5.0) | 5 (3.1) |
| Zarqa | 15 (9.4) | 6 (3.8) |
| **Total** | **160 (100.0)** | **160 (100.0)** |

# Maternal Deaths Reported in Amman According to Place of Residence

| Governorate | Place of Residence | Percent |
|---|---|---|
| Amman | 53 | 60.2 |
| Balqa | 5 | 5.7 |
| Irbid | 4 | 4.6 |
| Jarash | 1 | 1.1 |
| Karak | 1 | 1.1 |
| Maan | 1 | 1.1 |
| Madaba | 5 | 5.7 |
| Mafraq | 5 | 5.7 |
| Tafilah | 4 | 4.6 |
| Zarqa | 9 | 10.2 |
| **Total** | **88** | **100** |

## *Distribution of MMR and Non-COVID MMR by Governorate of Residence*

| Governorate | Number of Live Births | Number of Maternal Deaths | Number of Non-COVID Deaths | MMR | Non-COVID MMR |
|---|---|---|---|---|---|
| Ajloun | 5,285 | 2 | | 37.8 | |
| Amman | 78,298 | 53 | | 67.7 | |
| Aqaba | 4,462 | 8 | | 179.3 | |
| Balqa | 11,095 | 11 | | 99.1 | |
| Irbid | 34,021 | 39 | | 114.6 | |
| Jerash | 7,159 | 2 | | 27.9 | |
| Karak | 7,311 | 3 | | 41.0 | |
| Maan | 2,883 | 2 | | 69.4 | |
| Madaba | 5,192 | 7 | | 134.8 | |
| Mafraq | 11,686 | 10 | | 85.6 | |
| Tafila | 2,408 | 8 | | 332.2 | |
| Zarqa | 17,922 | 15 | | 83.7 | |
| **Total** | **187,722** | **160** | | **85.2** | |

*Figures in red are above the national value.*

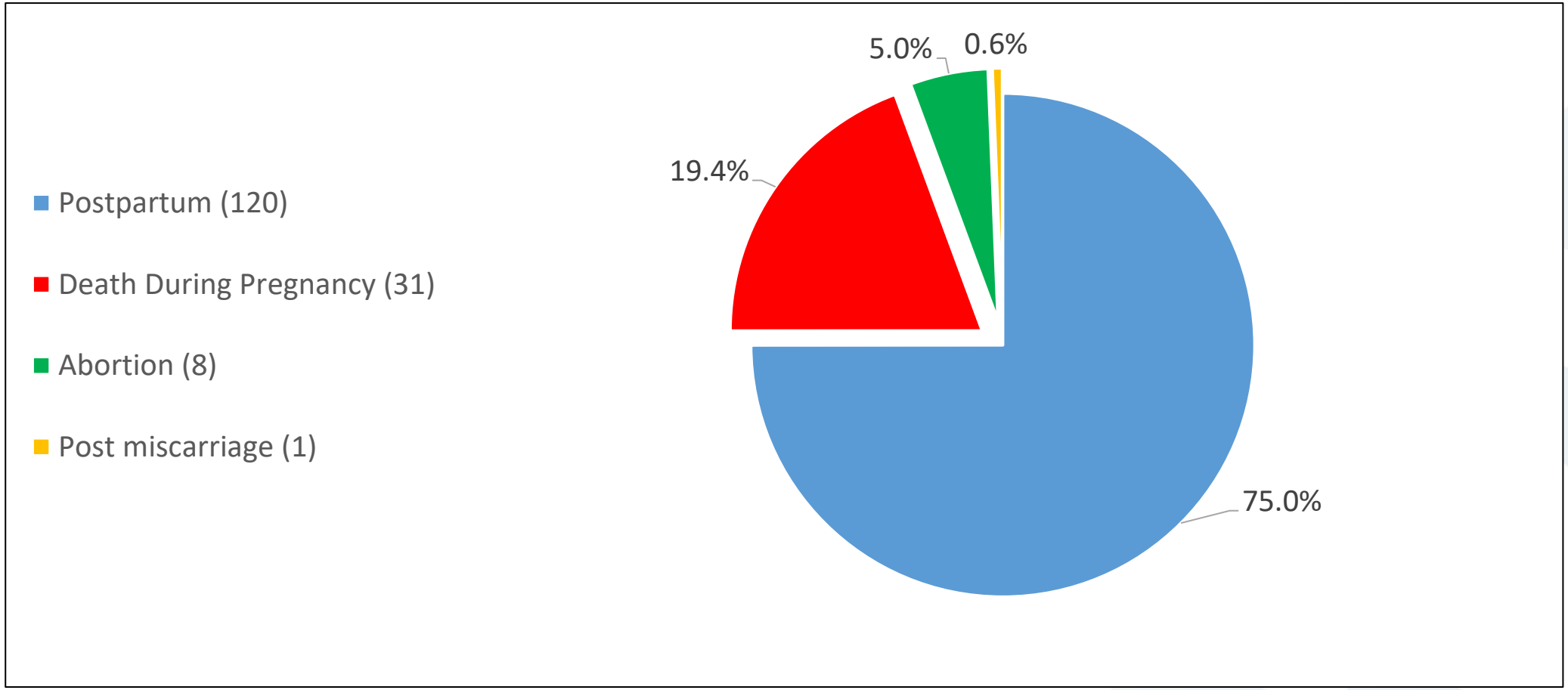
# Maternal Deaths by Clinical Characteristics

- Parity
- Timing of Death
- Antenatal Care
- Mode of Delivery
- Fetal Outcome
- Anemia Status

# Maternal Deaths by Parity

| Parity | Number of Maternal Deaths | Percent |
|---|---|---|
| Nulliparous (0 parity) | 8 | 5.0 |
| Para one | 30 | 18.8 |
| Multipara (2-4) | 82 | 51.3 |
| Grand Multipara (5-6) | 31 | 19.4 |
| Great grand multipara (≥7) | 7 | 4.4 |
| Unknown | 2 | 1.25 |
| **Total** | **160** | **100** |

# Maternal Deaths by Timing of Death



# Timing of Postpartum Maternal Deaths

| Time of Death after Delivery | COVID Deaths (Percent) | Non-COVID Deaths (Percent) | Total (Percent) |
|---|---|---|---|
| Less than 24 hours | 10 (11.5) | 17 (51.5) | 27 (22.5) |
| Between 1 to 7 days | 31 (35.6) | 5 (15.2) | 36 (30) |
| Between 8 to 42 days | 46 (52.9) | 11 (33.3) | 57 (47.5) |
| **Total** | **87 (100)** | **33 (100)** | **120 (100)** |

# Maternal Deaths by Number of Antenatal Care Visits

| Antenatal Care Visits | Number of Maternal Deaths | Percent | Percent Out of Known ANC Visits |
|---|---|---|---|
| No Antenatal Visits | 1 | 0.6 | 0.8 |
| 1-3 Visits | 21 | 13.1 | 16.4 |
| 4-7 Visits | 81 | 50.6 | 63.3 |
| ≥8 Visits | 25 | 15.6 | 19.5 |
| Unknown | 32 | 20.0 | - |
| **Total** | **160** | **100** | **100** |

# Maternal Deaths by Place of Antenatal Care

| Place of Antenatal Care Visits | Number of Maternal Deaths | Percent | Percent Out of Known ANC Visits |
|---|---|---|---|
| Private Sector | 85 | 53.1 | 63.0 |
| Public Sector | 45 | 28.1 | 33.3 |
| Mixed Public/Private | 5 | 3.1 | 3.7 |
| No ANC or Unknown | 25 | 15.6 | - |
| Total | 160 | 100 | 100 |

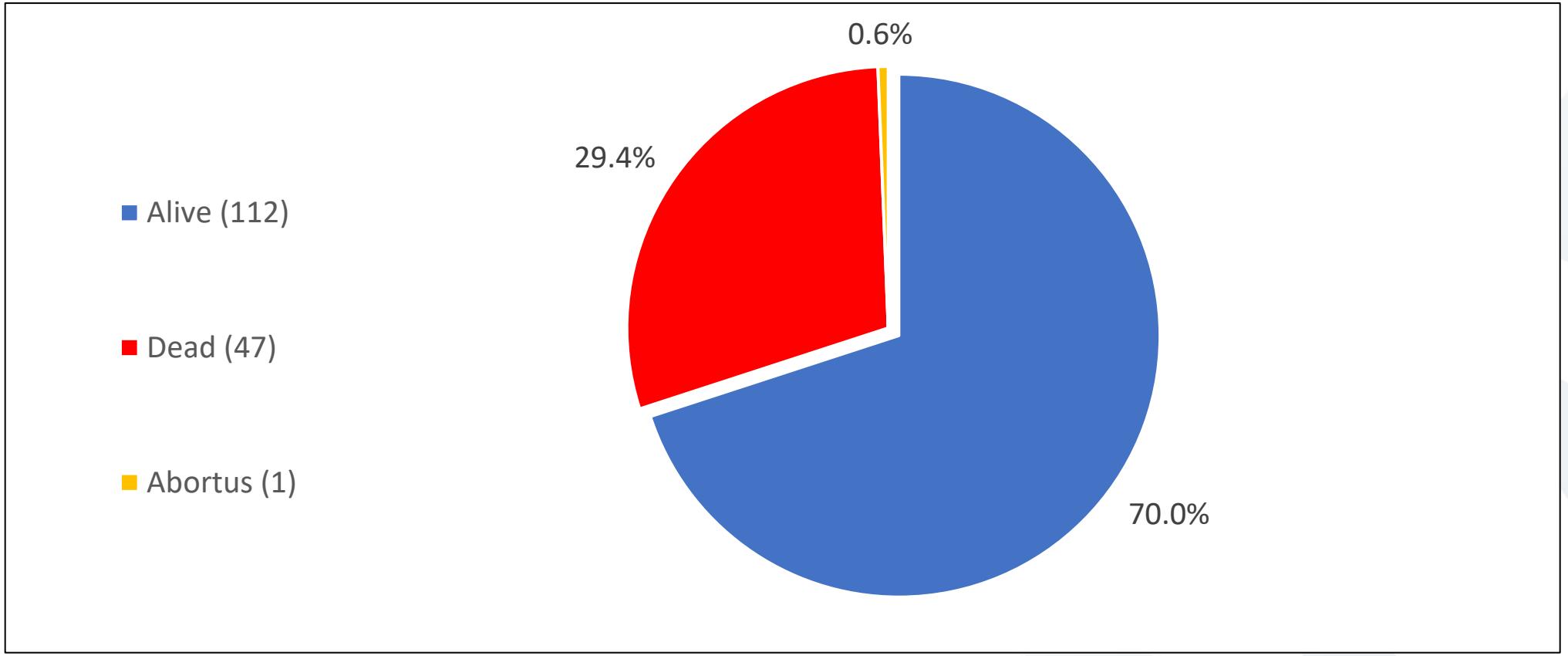
# Maternal Deaths by Provider of Antenatal Care

| Provider of Antenatal Care | Number of Maternal Deaths | Percent | Percent Out of Known ANC Visits |
|---|---|---|---|
| Doctor | 124 | 77.5 | 91.9 |
| Doctor + Midwife | 9 | 5.6 | 6.7 |
| Midwife | 2 | 1.3 | 1.5 |
| Unknown | 25 | 15.6 | - |
| **Total** | **160** | **100** | **100** |

# Maternal Deaths by Mode of Delivery

| Mode of Delivery | Number of Maternal Deaths | Percent | Percent of Deliveries |
|---|---|---|---|
| Cesarean Section | 109 | 68.1 | 84.5 |
| *Emergency Cesarean* | 93 | 58.1 | 72.1 |
| *Elective Cesarean* | 9 | 5.6 | 7.0 |
| *Postmortem Cesarean* | 7 | 4.4 | 5.4 |
| Vaginal Delivery | 19 | 11.9 | 14.7 |
| Miscarriage | 11 | 6.9 | - |
| Forceps | 1 | 0.6 | 0.8 |
| No Delivery | 20 | 12.5 | - |
| **Total** | **160** | **100** | **100** |

# Maternal Deaths by Fetal Outcome



# Maternal Deaths by Anemia Status

| Anemia Status | Number of Maternal Deaths | Percent | Percent of Known Hb Values |
|---|---|---|---|
| No-Anemia | 69 | 43.1 | 46.9 |
| Mild | 49 | 30.6 | 33.3 |
| Moderate | 28 | 17.5 | 19.0 |
| Severe | 1 | 0.6 | 0.7 |
| Arrived Dead | 13 | 8.1 | - |
| **Total** | **160** | **100** | **100** |

# Causes of Maternal Death

- Of the 160 maternal deaths, the NAG assigned the main cause of death to 158 cases.
- NAG used the International Classification of Diseases (ICD 10) in assigning type, group and underlying cause of death.
- Autopsy was performed in about 19% of all deaths and about 52% of non-COVID deaths.

# Distribution of Autopsy by COVID Cause of Death

| Autopsy Performed | COVID-19 Being Cause of Death (Percent) | | Total (Percent) |
|---|---|---|---|
| | Yes | No | |
| Yes | 1 (0.96) | 29 (51.8) | 30 (18.8) |
| No | 103 (99.04) | 27 (48.2) | 130 (81.2) |
| **Total** | **104 (100)** | **56 (100)** | **160 (100)** |

# Underlying Causes of Maternal Death

| Cause of Death | Number | Percent | Percent of Non-COVID |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# Causes of Maternal Death (Continued)

| Cause of Death | Number | Percent | Percent of Non-COVID |
|---|---|---|---|
| Antepartum Hemorrhage | 1 | 0.6 | 1.8 |
| Cardiomyopathy | 1 | 0.6 | 1.8 |
| Cerebrovascular Infarction | 1 | 0.6 | 1.8 |
| Diabetic Ketoacidosis | 1 | 0.6 | 1.8 |
| Encephalitis | 1 | 0.6 | 1.8 |
| Fatty Liver | 1 | 0.6 | 1.8 |
| Intestinal Obstruction | 1 | 0.6 | 1.8 |
| Intracerebral Hemorrhage | 1 | 0.6 | 1.8 |
| Metastatic Rectal Carcinoma | 1 | 0.6 | 1.8 |
| Myocarditis | 1 | 0.6 | 1.8 |
| Peripartum Cardiomyopathy | 1 | 0.6 | 1.8 |

# Causes of Maternal Death (Continued)

| Cause of Death | Number | Percent | Percent of Non-COVID |
|---|---|---|---|
| Raptured Aortic Aneurysm | 1 | 0.6 | 1.8 |
| Raptured Splenic Aneurysm | 1 | 0.6 | 1.8 |
| Sagittal Sinus Thrombosis | 1 | 0.6 | 1.8 |
| Subdural Hemorrhage | 1 | 0.6 | 1.8 |
| Unspecified | 2 | 1.3 | 3.6 |
| **Total** | **160** | ***100*** | **-** |
| **Total Non-COVID** | **56** | **-** | ***100*** |

# Direct Causes of Maternal Death

| Direct Cause of Death | Number | Percent | Non-COVID Percent |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| ***Subtotal*** | ***34*** | ***21.3*** | ***60.7*** |

# Indirect Causes of Maternal Death

| Indirect Causes of Death | # | % | Non-COVID % |
|---|---|---|---|
| Disease of respiratory system *(COVID and Pneumonia)* | 107 | 66.9 | 5.4 |
| Diseases of the circulatory system *(MI, cardiomyopathy, myocarditis, rupture aortic and splenic aneurysms)* | 7 | 4.4 | 12.5 |
| Diseases of the central nervous system *(cerebrovascular infarction, encephalitis and brain hemorrhage)* | 4 | 2.5 | 7.1 |
| Diseases of the digestive system *(intestinal obstruction and fatty liver)* | 2 | 1.3 | 3.6 |
| Other maternal diseases *(Septic shock)* | 2 | 1.3 | 3.6 |
| Endocrine, nutritional and metabolic diseases (*diabetic ketoacidosis*) | 1 | 0.6 | 1.8 |
| Neoplasms *(metastatic rectal carcinoma)* | 1 | 0.6 | 1.8 |
| ***Subtotal*** | **124** | **77.5** | **35.7** |
| *Unspecified* | 2 | 1.3 | 3.6 |
| **Total** | **160** | **100** | **100** |

# Avoidability of Death by All Direct and Indirect Causes

| Avoidability | Direct Cause (Percent) | Indirect Cause (Percent) | Unspecified (Percent) | Total | Percent |
|---|---|---|---|---|---|
| Yes | 27 (79.4) | 22 (17.7) | 0 (0) | 49 | 30.6 |
| No | 7 (21.6) | 102 (82.3) | 0 (0) | 109 | 68.1 |
| Unspecified | 0 (0) | 0 (0) | 2 (100) | 2 | 1.3 |
| **Total** | **34 (100)** | **124 (100)** | **2 (100)** | **160** | **100.0** |

# Maternal Deaths by Level of Delay for All Deaths

| Level of Delay | Number | Percent |
|---|---|---|
| Delay in Seeking Care: Delay I | 18 | 11.3 |
| Delay in Receiving Care: Delay III | 25 | 15.6 |
| Delay in Seeking and Receiving Care: Delays I&III | 5 | 3.1 |
| Delay in Seeking, Reaching and Receiving Care: Delays I+II | 1 | 0.6 |
| No Delay | 109 | 68.1 |
| Unspecified | 2 | 1.3 |
| **Total** | **160** | **100** |

# Maternal Deaths by Level of Delay for Non-COVID Deaths

| Level of Delay | Number | Percent |
|---|---|---|
| Delay in Seeking Care: Delay I | 7 | 12.5 |
| Delay in Receiving Care: Delay III | 23 | 41.1 |
| Delay in Seeking and Receiving Care: Delays I&III | 5 | 8.9 |
| Delay in Seeking, Reaching and Receiving Care: Delays I+II | 1 | 1.8 |
| No Delay | 18 | 32.1 |
| Unspecified | 2 | 3.6 |
| **Total** | **56** | **100** |

# Summary of Findings

- MMR of **85.2** vs non-COVID MMR or **29.8** per 100k of live births
- MMR increased with age
- MMR varied by governorate
- About **61%** of non-COVID deaths were direct
- Obstetric hemorrhage was the most common cause of direct death
- Obstetric embolism was the second common cause of direct death
- Over **79%** of direct deaths were considered preventable deaths
- About **52%** of non-COVID deaths underwent autopsy
- About **50%** of non-COVID deaths suffered from delay in receiving care
- COVID vaccination among pregnant women was too low

# Recommendations

- Almost all the proposed recommendations in 2020 maternal mortality report have never been acted upon.
- This section largely repeats the recommendation of 2020, hoping that all stakeholders will work jointly to implement the proposed responses under the MOH stewardship.

# Recommendations

- Enhance the Quality of Emergency Obstetric Care
- Strengthen Jordan’s COVID-19 Response in Obstetrics
- Supporting Vaginal Births and Reducing Unnecessary Primary CS Deliveries
- Adopting Strategies for the Quality ANC including High-Risk Pregnancy Management at primary and secondary care level
- Increase the uptake of quality family planning methods

# Thank You!

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# Age Density Function