COVID-19 in India: Potential Impact of the Lockdown and Other Longer-Term Policies

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Disclaimers

- These are non-peer-reviewed results of the analysis of a fast-moving epidemic with many uncertain parameters. Researchers worldwide are producing this type of rapid results in the form of similar unpublished studies and reports. Our findings may change in the future as new insights on the SARS-CoV-2 virus and COVID-19 emerge.
- This research was produced by a team of researchers at CDDEP, John Hopkins University, and Princeton University. As is the standard research practice, this work does not represent the views of these institutions.
- For comments and clarifications, please email Emily Schueller (schueller@cddep.org).

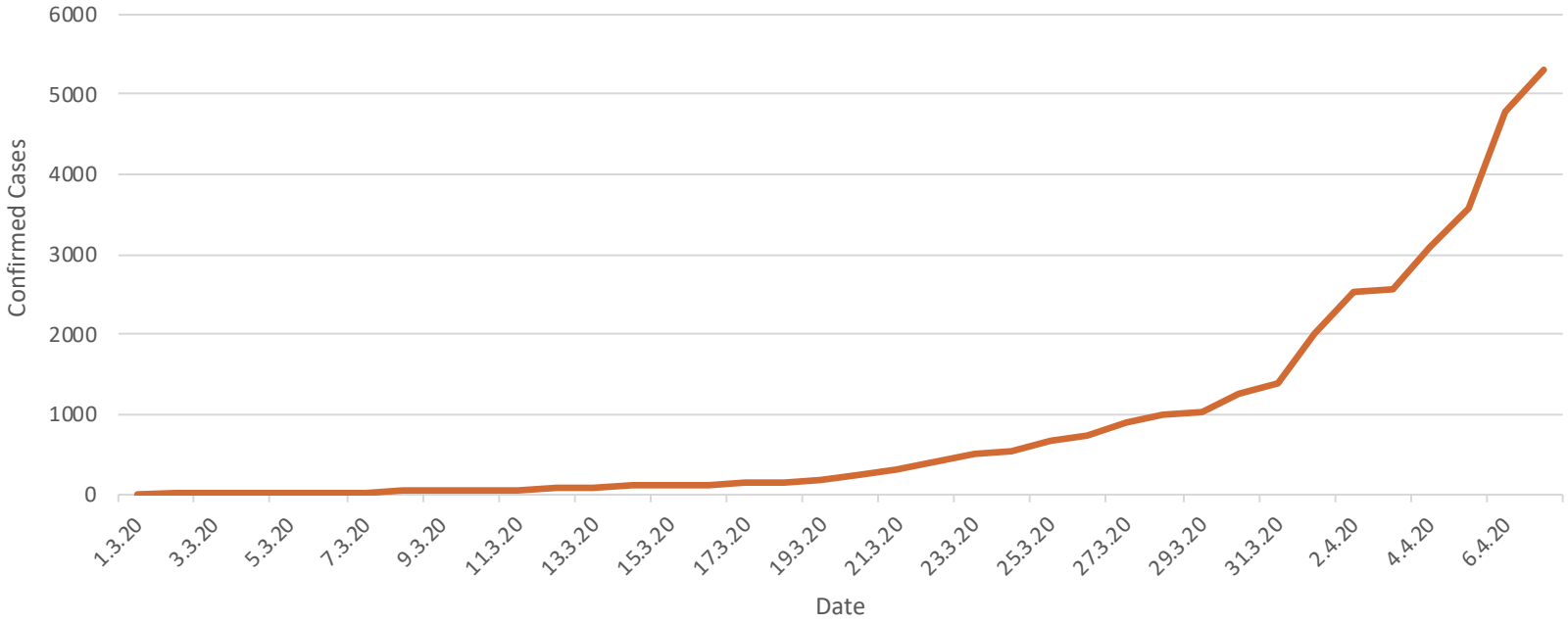
Summary

- COVID-19 is spreading at a rapid pace worldwide.
- Most individuals with COVID-19 show no or mild symptoms.
- To contain COVID-19's spread and keep infections at a manageable level, many countries have instituted lockdowns and social distancing.
- In India, a nation-wide 21-day lockdown was announced with effect from 25 March 2020. This lockdown is expected to avert a sudden and large increase in the number of infections in the short term.
- Additionally, interventions such as social distancing and isolation of infected individuals over several months could reduce peak infections.
- Interventions such as frequent handwashing, reduced mass gatherings, contact tracing, and quarantines could slow transmission and reduce overall infections.

COVID-19: What is known?

- Confirmed cases have spread worldwide, with 1,428,428 cases in 121 countries on 7 April.
- Emerging evidence suggests a that asymptomatic or mild infections may account for a significant proportion infected population.
- Many countries such as China, Italy, the United States, the United Kingdom, Spain, and others show sudden explosion in cases after a long period of few cases, indicating the possibility of many undetected cases.

Confirmed COVID-19 Cases in India since 1 March, 2020



Source: Johns Hopkins Coronavirus Resource Center COVID-19 Map. https://coronavirus.jhu.edu/map.html

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COVID-19 Cases in India

- COVID-19 cases began in late January with 3 confirmed cases but accelerated to 28 confirmed cases on 4 March 2020.
- On 28 March 2020, near the beginning of the lockdown, there were 909 confirmed cases in India with 85% of these hospitalized.
- As of 9 April 2020, COVID-19 cases have been identified in 31 Indian states and union territories.
- Testing continues to be rapidly expanded – expect to see additional cases in near future due to increased testing of the population.

COVID-19 India: Cases, hospitalizations and deaths (over a one-week period during lockdown from 28 March-3 April 2020)

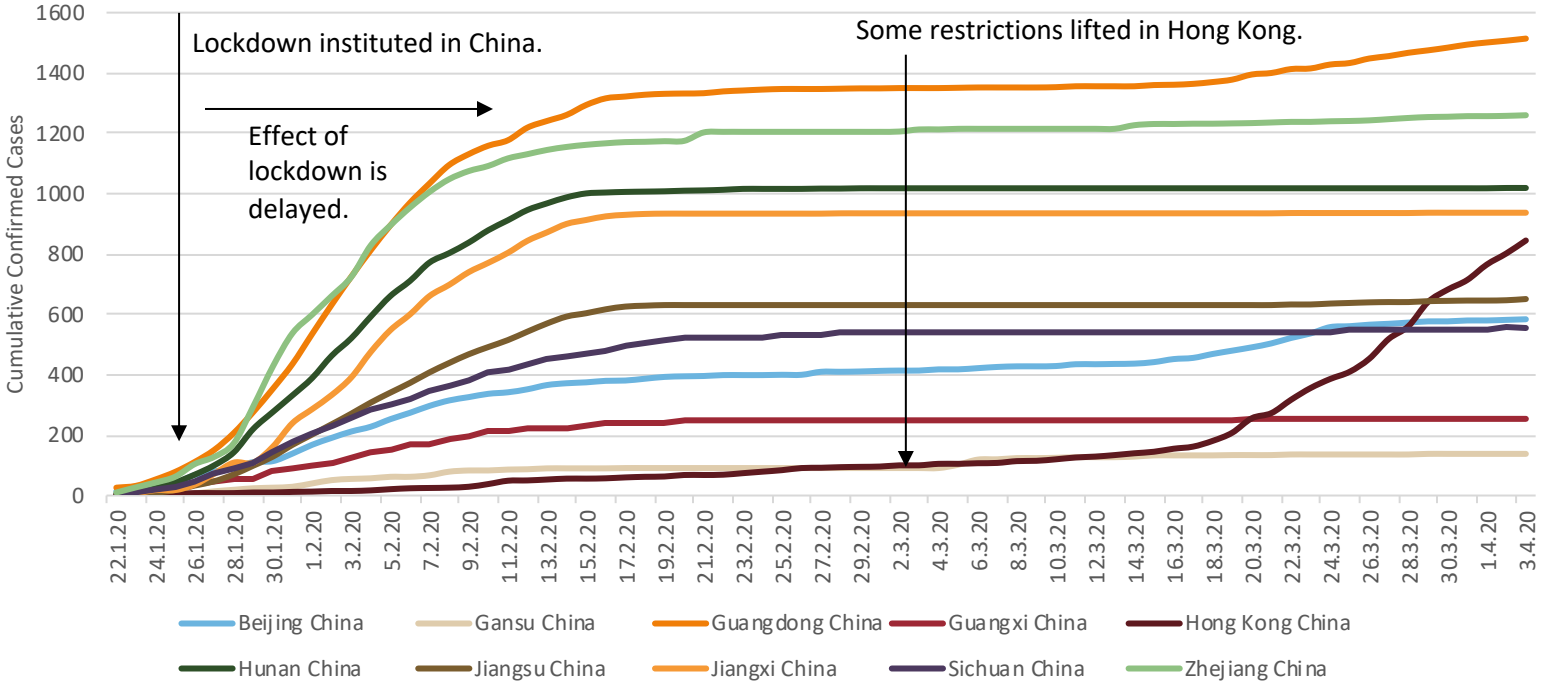
Date	Samples tested*	COVID+ cases	COVID+ cases hospitalized	COVID+ cases recovered/ cured/ migrated	COVID + deaths
28 March 2020	NA	909	776	80	19
30 March 2020	NA	1251	942	102	32
1 April 2020	NA	1637	1467	133	38
3 April 2020	NA	2301	1764	157	56

*This information was not available at national level and was also not available for some States

Rationale for Lockdown and/or Quarantine

- Rapid spread of the disease has resulted in large numbers of infections worldwide, with many patients in critical care units.
- Severe cases require ventilators – given the high transmission rate and likelihood of many severe cases, unmet need could be high.
- To reduce the number of severe infections at one time, governments around the world have instituted quarantine or isolation measures. This allows for time to build health care capacity.
- It also helps develop triage protocols to focus on severe cases, reduce mortality, and prevent hospitals from becoming foci of further COVID spread.

Effect of Lockdown in China



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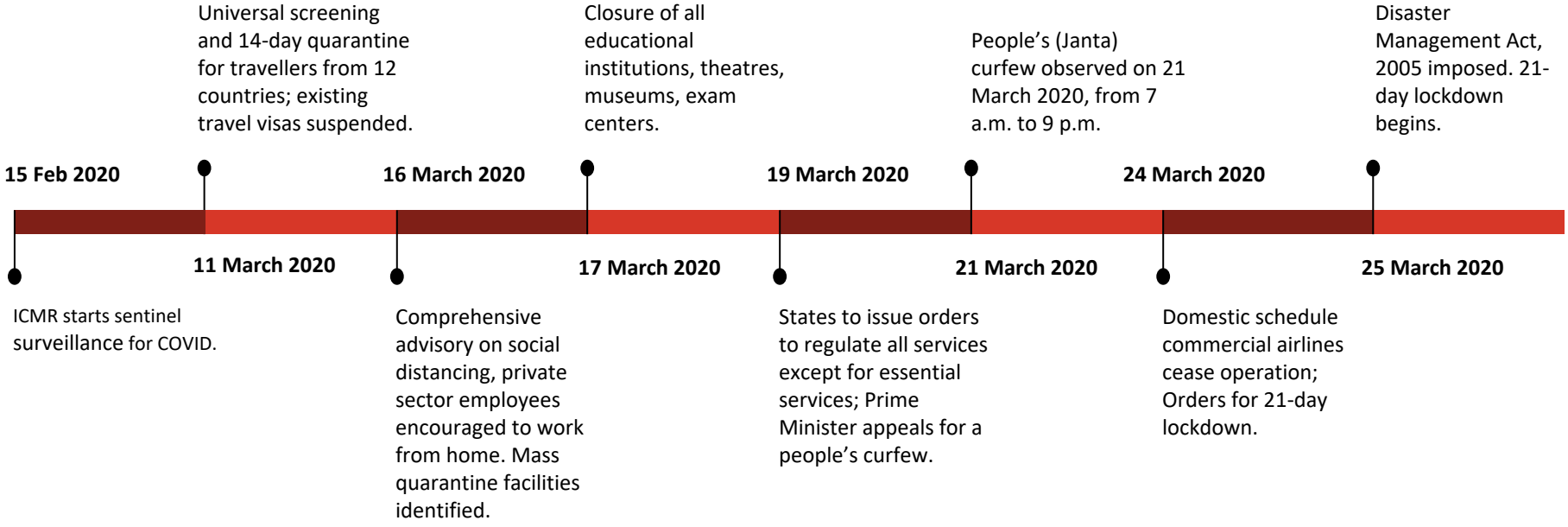
COVID-19 India: Timeline of Government actions before lockdown



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Modeling the 21-Day Indian Lockdown

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Methods

- Parameterization
  - Incubation period of 3 days[1]
  - 85 percent of infected population have no/mild symptoms[2]
  - Hospitalization rate of 6 percent, in line with age distribution of India's population[3]
  - Asymptomatic clearance period of 3 days[1]
  - Symptomatic clearance period of 5 days[4]
  - R0 (Basic reproductive number) of baseline scenario is approximately 2.66, in line with estimates from other country contexts[5]
- Parameters are evolving based on fit with different countries' known data.
  - Transmission rate is likely very different between asymptomatic and symptomatic individuals.

References:

1 Explaining the Bomb-Like Dynamics of COVID-19 with Modeling and the Implications for Policy. Gary Lin, Alexandra T Strauss, Maxwell Pinz, Diego A Martinez, Katie K Tseng, Emily Schueller, Oliver Gatalo, Yupeng Yang, Simon A Levin, Eili Y Klein, For the CDC MInD-Healthcare Program. medRxiv 2020.04.05.20054338; doi: https://doi.org/10.1101/2020.04.05.20054338

2 Liu S, Luo H, Wang Y, Wang D, Ju S, Yang Y. Characteristics and Associations with Severity in COVID-19 Patients: A Multicentre Cohort Study from Jiangsu Province, China. SSRN **2020**; Available at: https://papers.ssrn.com/abstract=3548753.

3 International Institute for Population Sciences, ICF. National Family Health Survey (NFHS-4) 2015-2016: India. Mumbai: IIPS, 2017.

4 Bi Q, Wu Y, Mei S, et al. Epidemiology and Transmission of COVID-19 in Shenzhen China: Analysis of 391 cases and 1,286 of their close contacts. Infectious Diseases (except HIV/AIDS), 2020. Available at: http://medrxiv.org/lookup/doi/10.1101/2020.03.03.20028423.

5 Wu JT, Leung K, Leung GM. Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: a modelling study. The Lancet **2020**; 395:689–697.

Model Assumptions

- Assume that the 21-day lockdown reduces disease transmission by 25 percent in moderate lockdown or 44 percent in hard lockdown.
- Given the high number of hospitalized cases in India, we assume that confirmed cases represent symptomatic cases in our model.
- Confirmed cases may increase faster than predicted in the near future as testing capacity is increased and contact tracing is continued.
- The model does not yet include seasonal effects or mutations in the virus. These factors may reduce transmission without any human involvement.

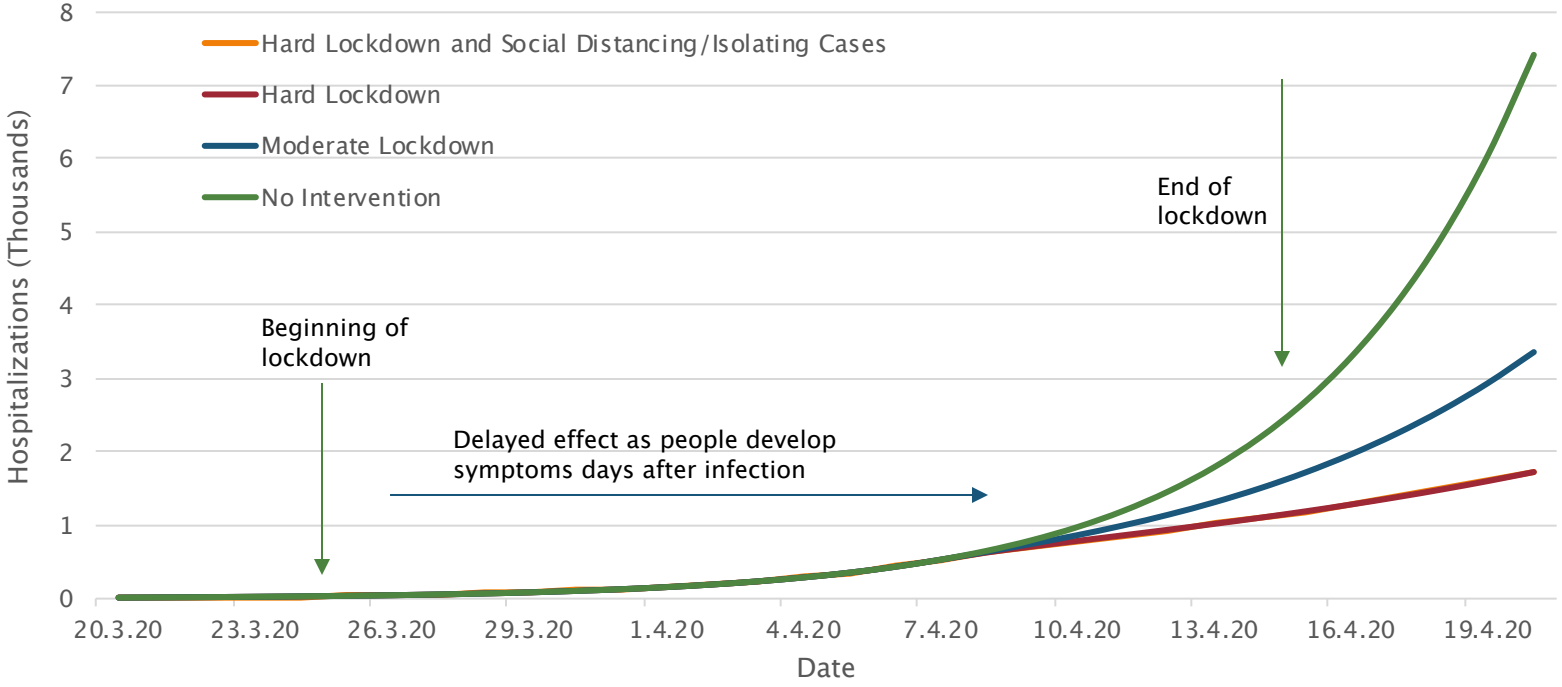
Definitions

- **Isolation** – Individuals who are COVID-19 positive or who demonstrate symptoms similar to those of COVID-19 stay at home and have no contact with other people for at least 2 weeks.
- **Asymptomatic** – Individuals who have COVID-19 but display no or mild symptoms.
- **Symptomatic** – Individuals who have COVID-19 and display moderate or severe symptoms.

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected COVID-19 Hospitalizations Under 21-Day Lockdown



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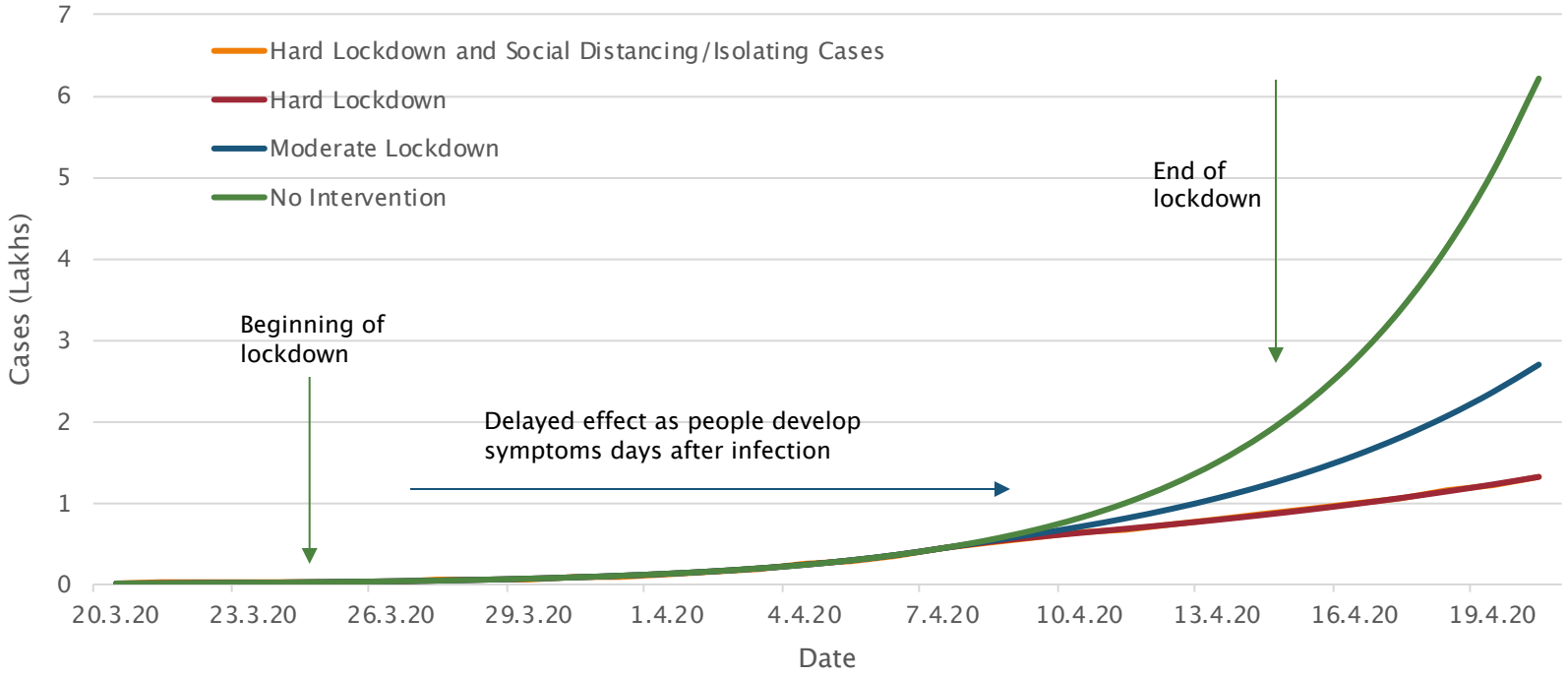
Projected Total Infections (Asymptomatic, Symptomatic, and Hospitalized) Under 21-Day Lockdown



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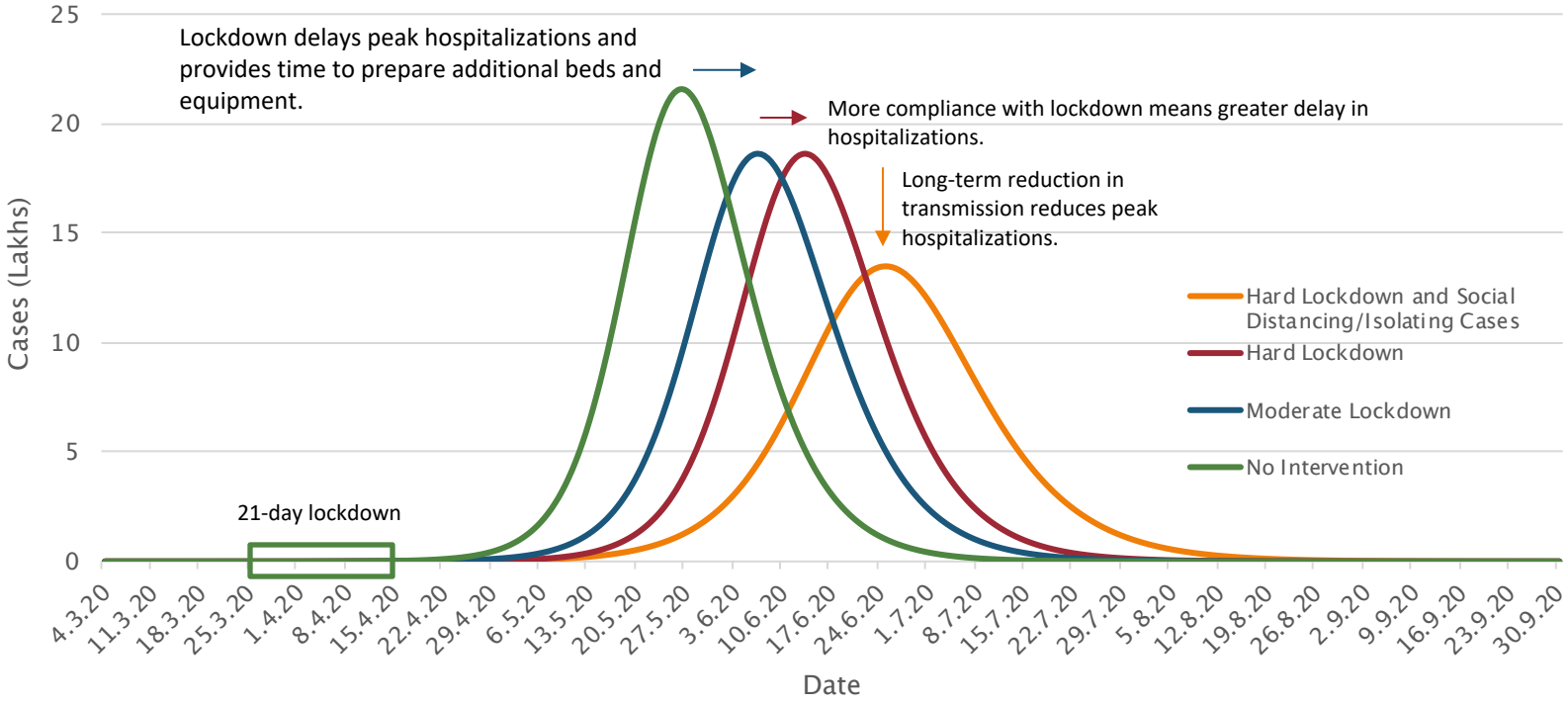
Short-Term Effect of the Current Lockdown

- The national 21-day lockdown in India should be effective in:
  - Buying time to prepare hospitals for surge cases.
  - Reducing new cases in following weeks if social distancing is strictly enforced and good contact tracing continues during the course of the lockdown.
- What will happen when the lockdown is lifted?
- Different options:
  - Can maintain some general social distance practices among the general population to reduce overall transmission in the longer term.
  - Can have multiple lockdowns with breaks between to control the number of infections and hospitalizations at one time.
  - Can mandatorily isolate individuals with symptoms of respiratory illness until they recover so they do not transmit the virus.
  - Here we model a general reduction in social distancing and isolation of symptomatic individuals.

Projected COVID-19 Hospitalized Cases in India



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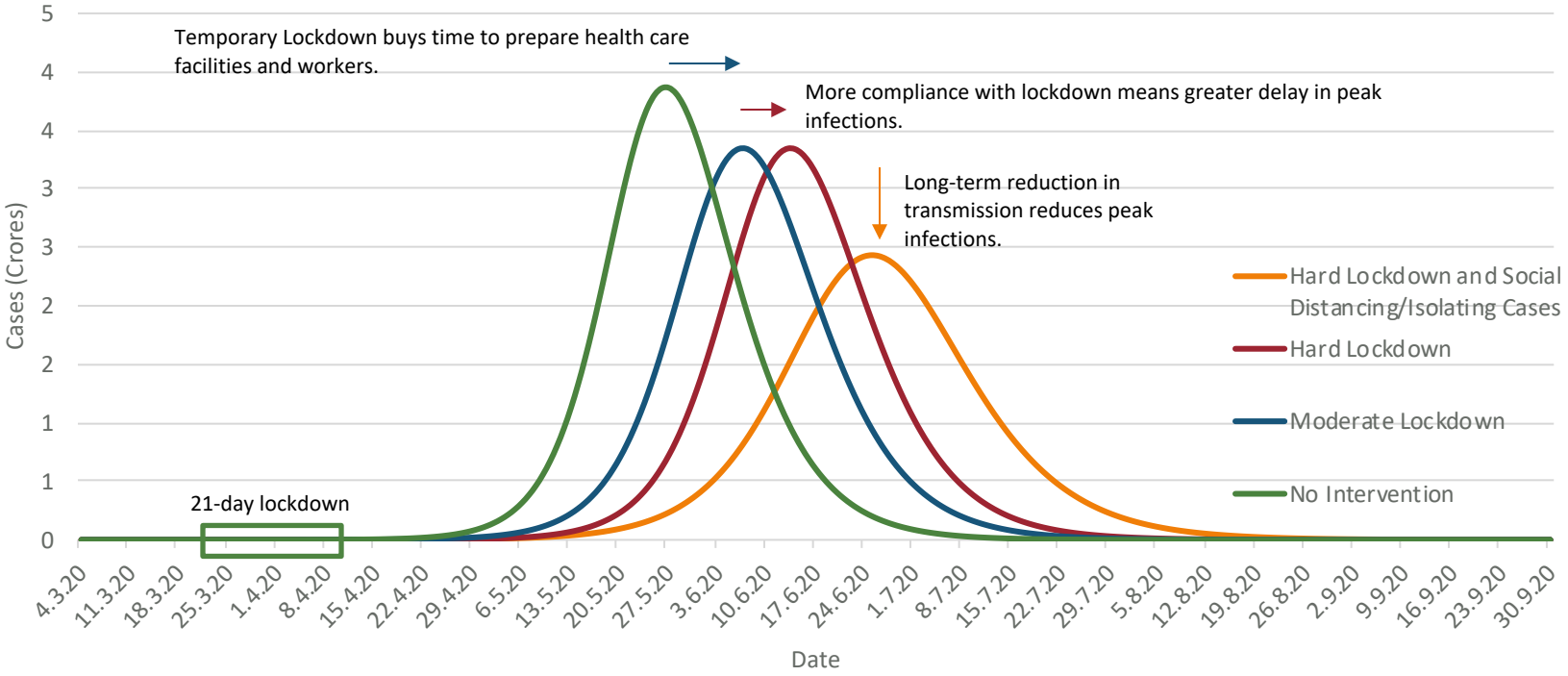
Projected COVID-19 Symptomatic and Hospitalized Cases in India



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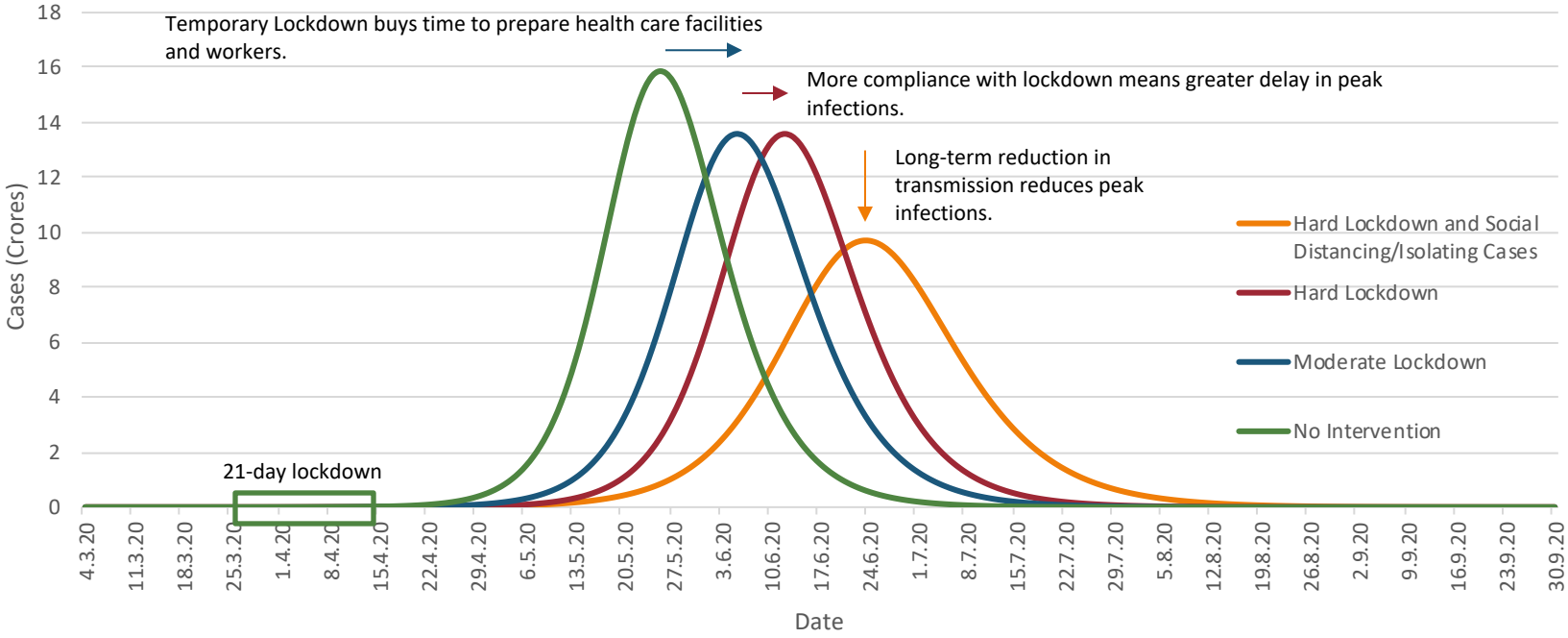
Projected Total COVID-19 Infections (Asymptomatic, Symptomatic, Hospitalized) in India



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Projected Peak Values for Scenarios

	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	21,56,071 (10,83,536-32,34,106)	3,64,83,591 (1,82,41,796-5,47,25,387)	15,86,33,510 (7,93,16,755-23,79,50,265)
Moderate Lockdown	18,61,395 (9,30,698-27,92,093)	3,15,84,239 (1,57,92,120-4,73,76,359)	13,58,43,308 (6,79,21,654-20,37,64,962)
Hard Lockdown	18,61,957 (9,30,979-27,92,936)	3,15,87,631 (1,57,93,816-4,73,81,447)	13,58,52,818 (6,79,26,409-20,37,79,227)
Hard Lockdown and Continued Social Distancing/Isolating Cases	13,47,643 (673,822-20,21,465)	2,29,83,993 (1,14,91,997-3,44,75,990)	9,69,97,240 (4,84,98,620-14,54,95,860)

Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but, given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Projected Total Values for Scenarios through September 2020

	Total Hospitalizations	Total Symptomatic Non-Hospitalized Infections	Total Infections
Baseline	1,14,11,840 (57,05,919–1,71,17,759)	19,01,97,331 (9,50,98,665–2,85,295,996)	1,26,79,82,208 (63,39,91,104–1,38,00,04,385)
Moderate Lockdown	1,10,19,226 (55,09,613–1,65,28,839)	18,36,53,775 (9,18,26,887–27,54,80,662)	1,22,43,58,499 (61,21,79,249–1,38,00,04,385)
Hard Lockdown	1,10,19,192 (55,09,596–1,65,28,788)	18,36,53,200 (9,18,26,600–27,54,79,800)	1,22,43,54,668 (61,21,77,334–1,38,00,04,385)
Hard Lockdown and Continued Social Distancing/Isolating Cases	1,00,53,568 (50,26,783–1,50,80,351)	16,75,59,460 (8,37,79,729–25,13,39,189)	1,11,70,63,067 (55,85,31,533–1,38,00,04,385)

Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but, given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Main Takeaways

- The primary effect of an extensive, temporary lockdown is to provide time to the health system by delaying peak infections until adequate health care infrastructure, personnel and equipment can be obtained.
- Triage protocols for the care of COVID-19 patients should also be developed quickly before infections increase.
- **It is vital to build up health care infrastructure quickly to prepare for an increase in hospitalized cases. In addition for providing shelter and care for the sick, such investment may provide a livelihood for workers and reduce the negative impacts of restrictions.**
- A greater reduction in the transmission rate over the long term would have an even larger effect in reducing peak infections and hospitalizations. Here, we modeled only reduction of contacts in the symptomatic population, but reduction of contacts in the general population can reduce the peak further. **While we do not know how much effect an individual policy might have, it is clear a longer-term policy of reducing social contacts can have an effect.**
- Multiple periods of tightening and loosening restrictions may have a similar effect, but restrictions would need to be tightened often to avoid a high peak of infections and hospitalizations. It is also important to note that fragmented frequent changes in lockdown policy or fragmented policies (states vs states and state vs centre) can result in policy confusion and community fatigue for enforcement.

Factors that May Potentially Reduce Transmission

Environmental or Disease Factors	Behavioural or Policy Factors
Seasonal changes in temperature or humidity	Behaviour change in social norms leading to reduction in contacts through social distancing
Mutations in the virus	Handwashing and good sanitation and hygiene
Different strains of the virus	Isolation of known cases for 2-3 weeks
Vaccine or treatment becoming available – although clinical trials will take time	Investment in WASH infrastructure in healthcare facilities and community facilities

Policy Implications: Short-Term

1. Immediate social distancing will reduce the burden on the healthcare system as well as reduce risk of mortality for people who have elevated risk.
2. Temporary lockdown allows time to build capacity of hospitals and health care workers.
3. Need additional beds and ventilators to meet demand.
4. Rapid deployment of additional health care workers needed to do efficient testing (identify) and contact tracing (isolate cases) in both urban and rural areas.
5. Model is sensitive to hospital outbreaks of COVID-19 induced by admission of infected patients into hospitals. Need for large, temporary hospitals to handle this load over the next three-month period. Secondary, hospital-based transmission fuels the epidemic.
6. Testing, particularly of those coming in with respiratory symptoms is essential to separate those in hospitals. **Need two-stage, preemptive testing in symptomatic elderly immediately to reduce deaths.**
7. A major question is the proportion of the population infected. Immediate and continuing serological surveys are needed to monitor this question which can inform the government and policy-makers regarding removing quarantines.
8. Mortality in healthcare workers could further increase deaths in the general population. Health care workers need personal protective equipment (i.e., masks and gowns) to protect themselves. Such equipment should be obtained in advance of greatest need.

Policy Implications: Long-Term

1. Risk of resurgence when short-term measures such as lockdown or stay-at-home orders are lifted.
2. Seasonality may reduce transmissibility of the virus, based on the behavior of other coronaviruses. However, the effect of seasonality on SARS-CoV-2 has yet to be determined.
3. A long-term (several months) reduction in contact rate can reduce the number of peak infections and peak hospitalizations.
4. While other factors related to climate or the virus itself may achieve this reduction in the transmission rate, the impact of these factors is currently unknown.
5. Therefore, the introduction of measures that promote social distancing over a period of several months may reduce the burden of COVID-19 on the Indian population and health care system.

Policy Suggestions for the General Population

1. The model demonstrates that a reduction in the transmission rate may have a substantial impact on the spread of COVID-19.
2. Such a reduction can be achieved through a combination of policies, including:
    a) Immediate isolation of all individuals demonstrating symptoms of dry cough, fever, respiratory distress or pneumonia.
    b) Promotion of social distancing (such as reducing exposure to large crowds and foregoing some non-essential social events) by social media campaigns featuring respected public figures.
    c) Restrictions on large gatherings, especially those which encourage substantial travel outside and within regions of India.
    d) Improved sanitation and hygiene in health care facilities and the community.
    e) Encourage people to get tested without any social stigma.
    f) Provision of free/subsidized treatment for those affected by COVID to encourage people to test and identify themselves.
    g) Alternate periods of tighter and looser restrictions to reduce the number of infections at a given time.
    h) Make testing widely available and encouraged. Individuals who test positive for COVID-19 should be isolated and cared for with as little social contact as possible for at least two weeks.
    i) Balance need for social distancing with reduction of stigma against health workers and those who are sick. Ensure the public is not discouraged from seeking testing or treatment.

Policy Suggestions Regarding Businesses and Health Care Workers

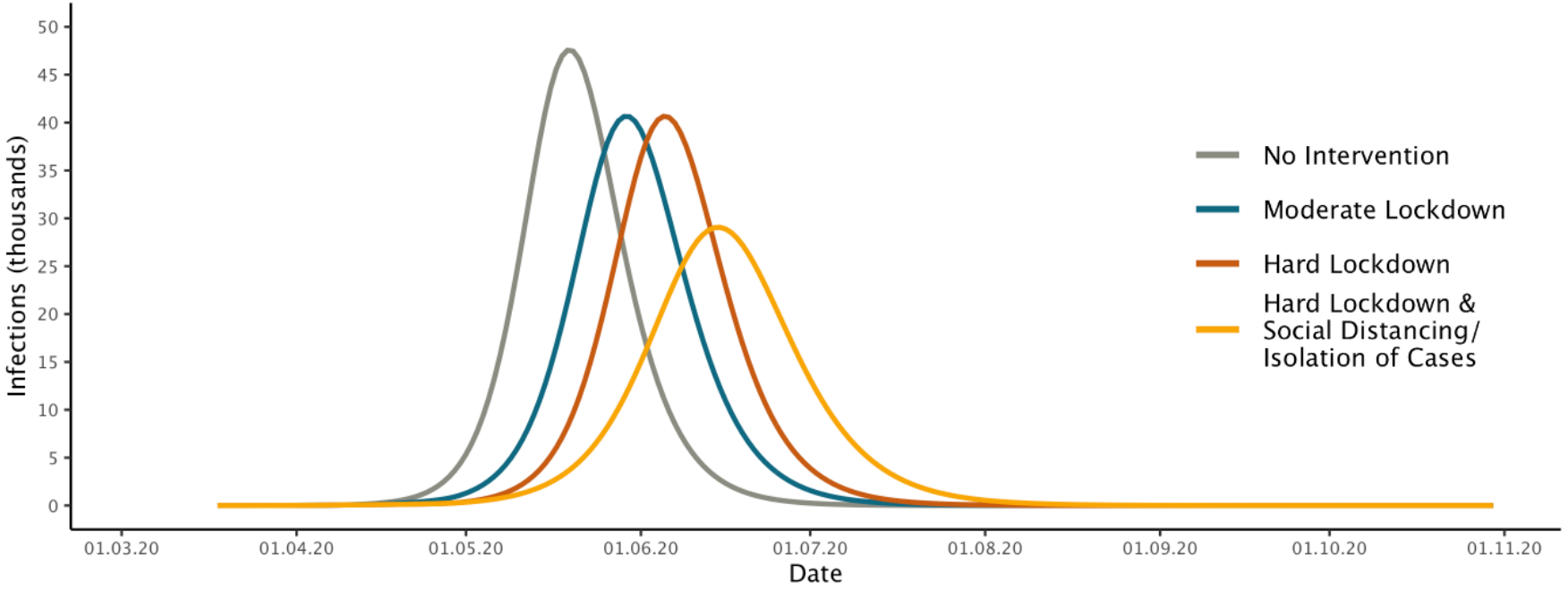
1. The model demonstrates that a reduction in the transmission rate may have a substantial impact on the spread of COVID-19.
2. Such a reduction can be achieved through a combination of policies, including:
    a) Ensure adequate supply of personal protective equipment to protect health care workers from the disease.
    b) Improved sanitation and hygiene in healthcare facilities.
    c) Create employment guarantee to expand available health care workforce and offset unemployment caused by reduced economic activity.
    d) Encourage large local events and businesses, such as exhibitions, markets, etc. to implement restrictions on crowding, such as reducing the number of attendees at a given time.
    e) Balance need for social distancing with reduction of stigma against health workers and those who are sick. Ensure the public is not discouraged from seeking testing or treatment.
    f) Limit number of employees working on one day by staggering shifts throughout the week.

Andaman and Nicobar Islands

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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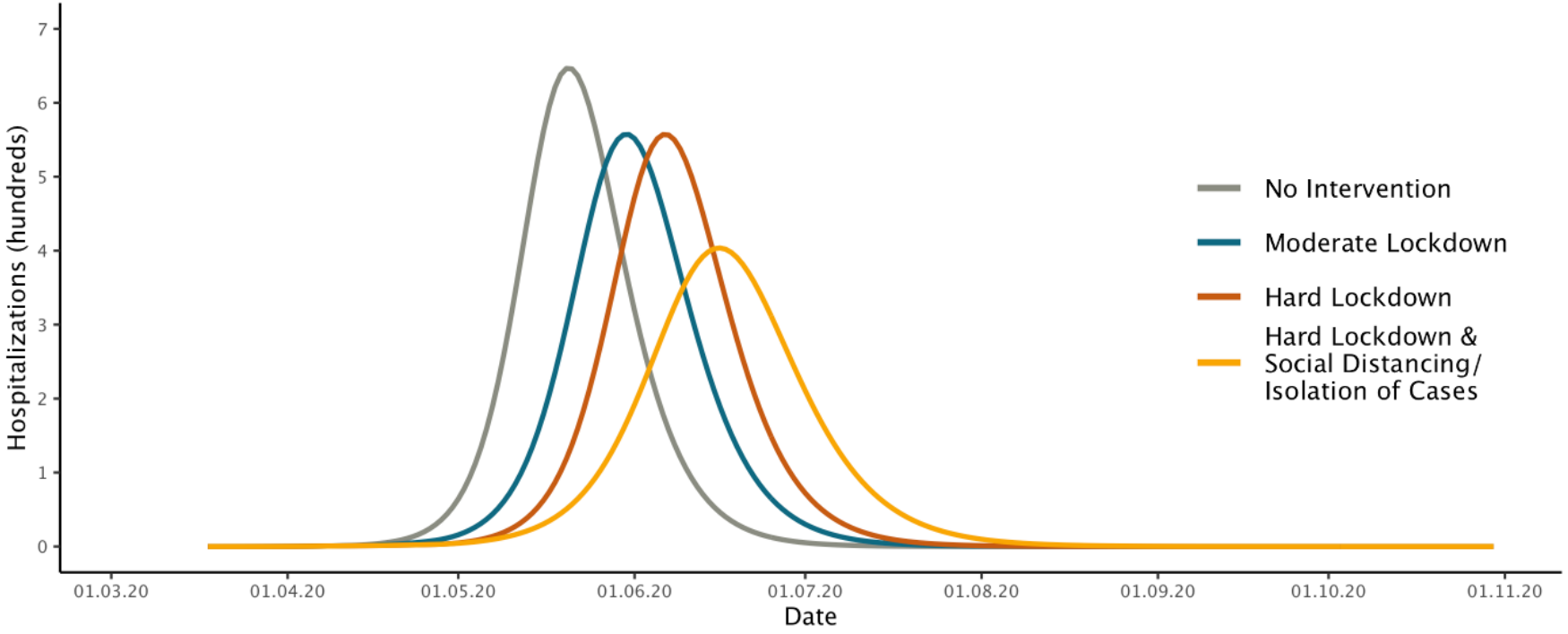
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Andaman & Nicobar Islands

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	646 (323-970)	10,953 (5,477-16,430)	47,560 (23,780-71,340)
Moderate Lockdown	557 (279-836)	9,466 (4,733-14,199)	40,632 (20,316-60,948)
Hard Lockdown	557 (279-836)	9,460 (4,730-14,190)	40,652 (20,326-60,978)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	404 (202-605)	6,882 (3,441-10,324)	29,059 (14,530-43,589)

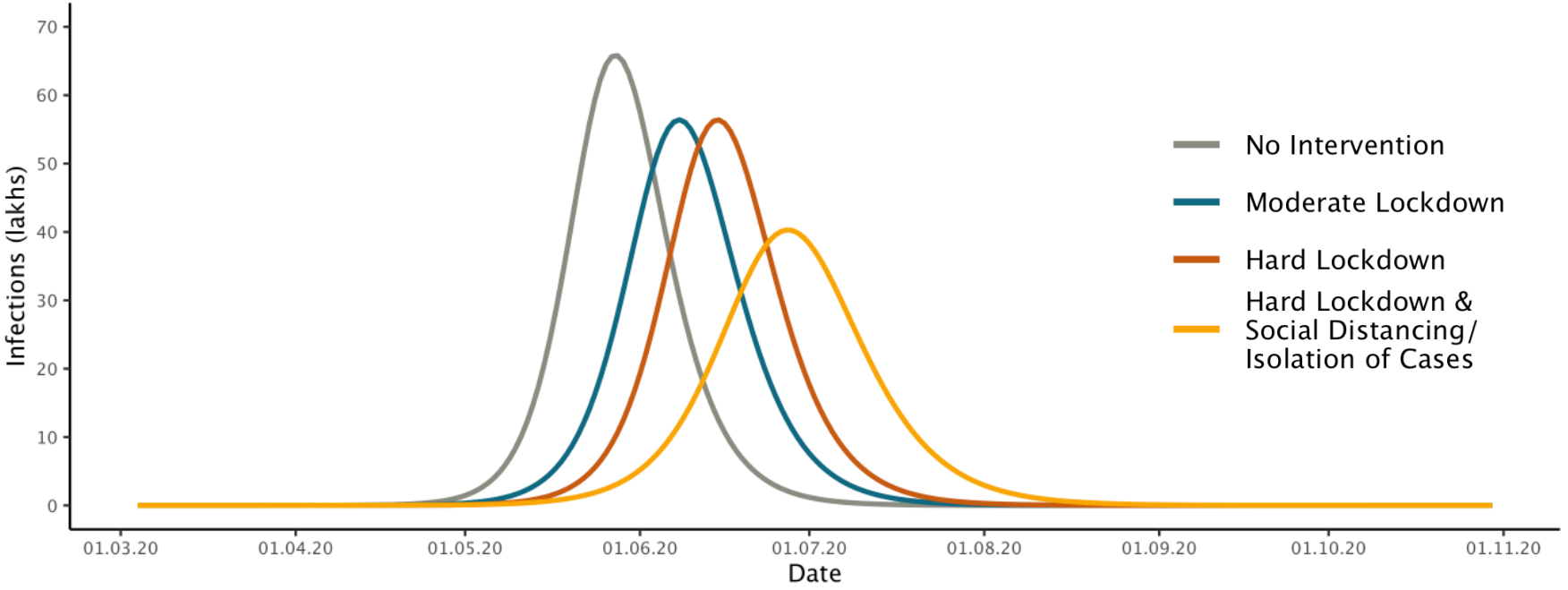
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Andhra Pradesh

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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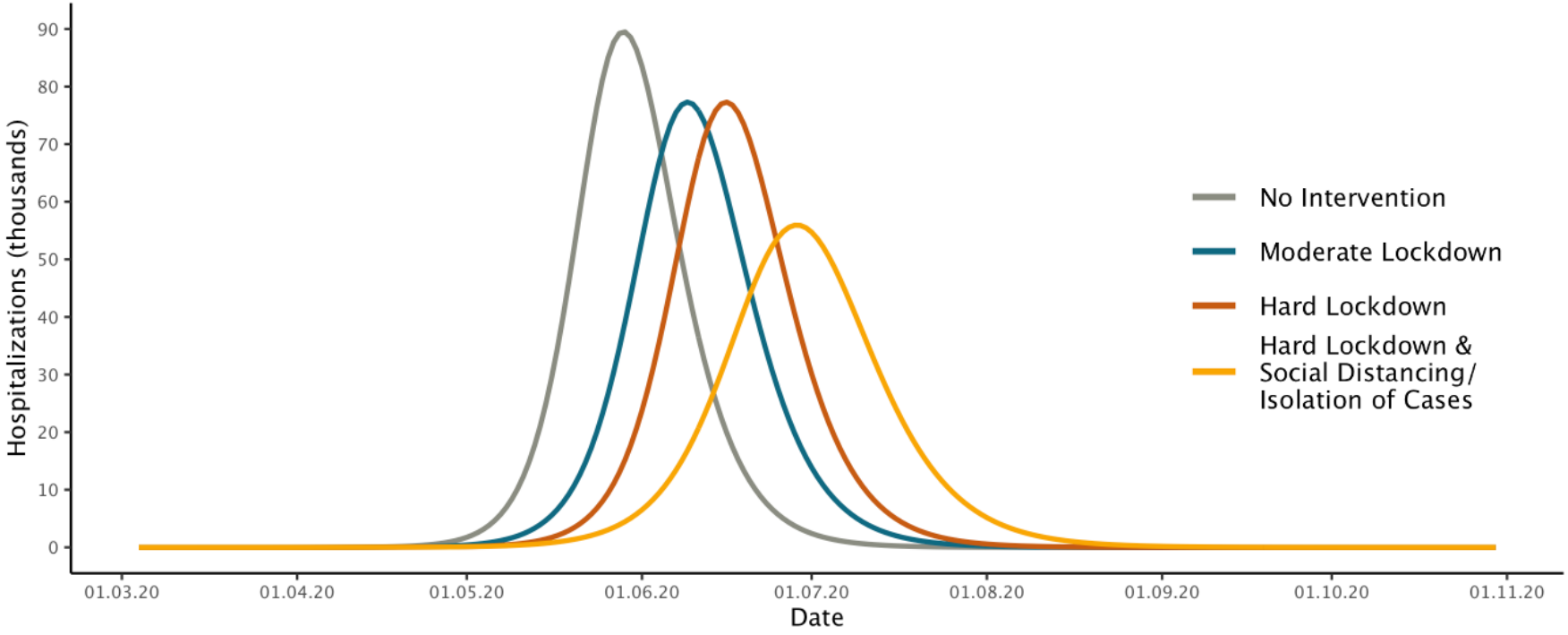
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Andhra Pradesh

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	89,473 (44,737–1,34,210)	15,16,029 (7,58,014–22,74,044)	65,78,864 (32,89,432–98,68,295)
Moderate Lockdown	77,304 (38,652–1,15,956)	13,11,534 (6,55,767–19,67,301)	56,40,142 (28,20,071–84,60,213)
Hard Lockdown	77,295 (38,648–1,15,943)	13,12,169 (6,56,084–19,68,254)	56,37,959 (28,18,980–84,56,938)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	55,923 (27,962–83,885)	9,53,928 (4,76,964–14,30,892)	40,29,028 (20,14,514–60,43,543)

Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Arunachal Pradesh

Scenarios

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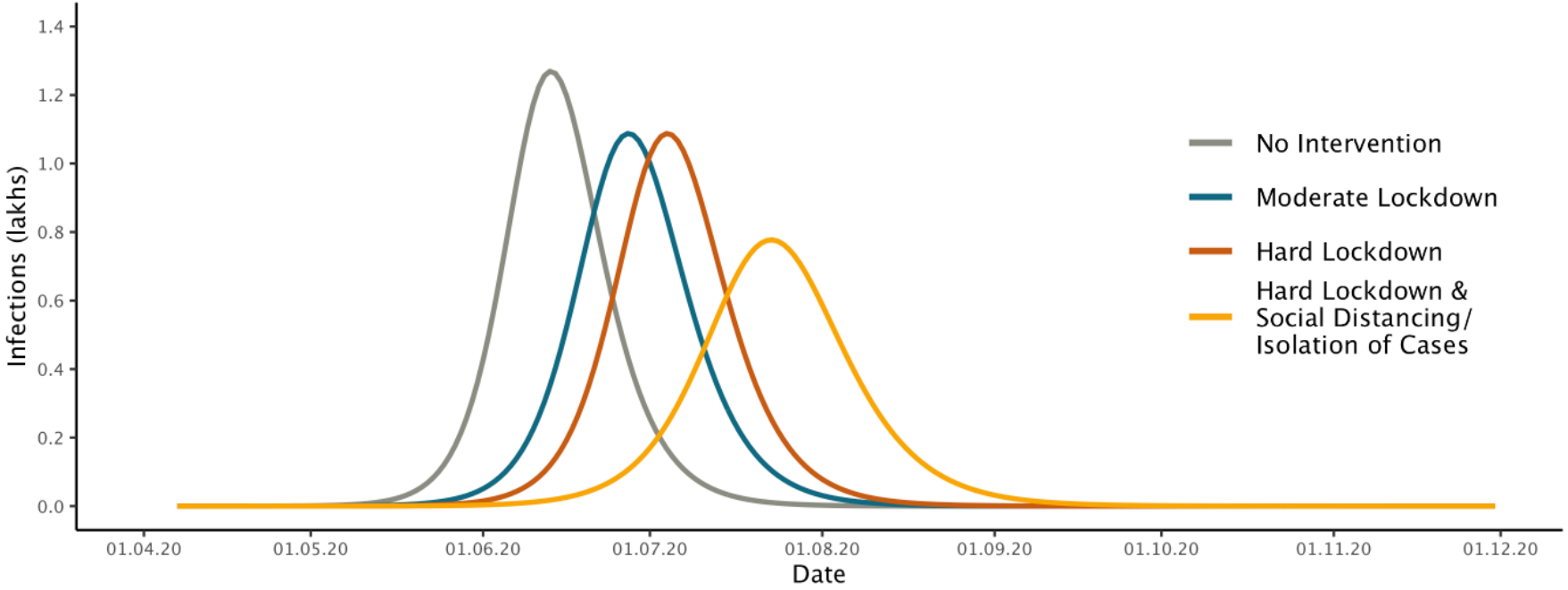
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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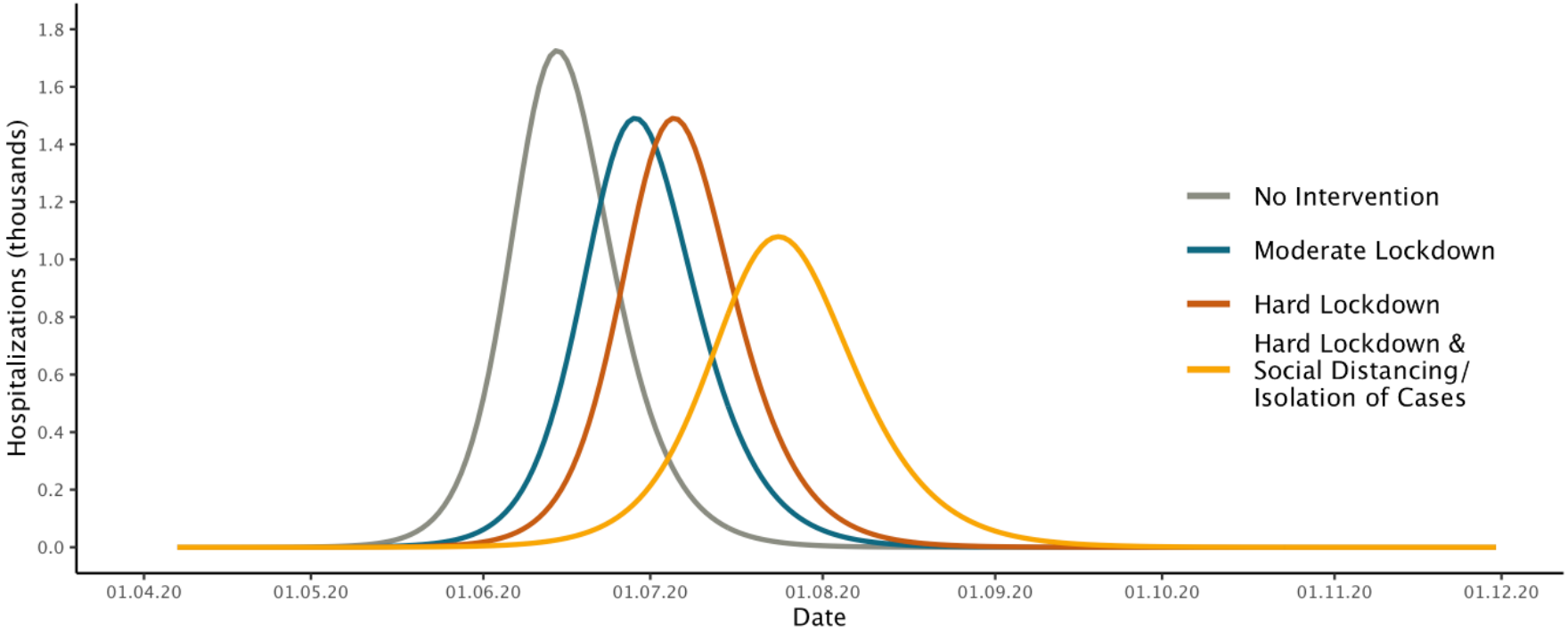
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Arunachal Pradesh

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,725 (863–2,588)	29,183 (14,592–43,775)	1,26,916 (63,458–1,90,374)
Moderate Lockdown	1,490 (745–2,235)	25,289 (12,644–37,933)	1,08,762 (54,381–1,63,144)
Hard Lockdown	1,490 (745–2,236)	25,286 (12,643–37,929)	1,08,768 (54,384–1,63,152)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,079 (540–1,619)	18,393 (9,197–27,590)	77,711 (38,855–1,16,566)

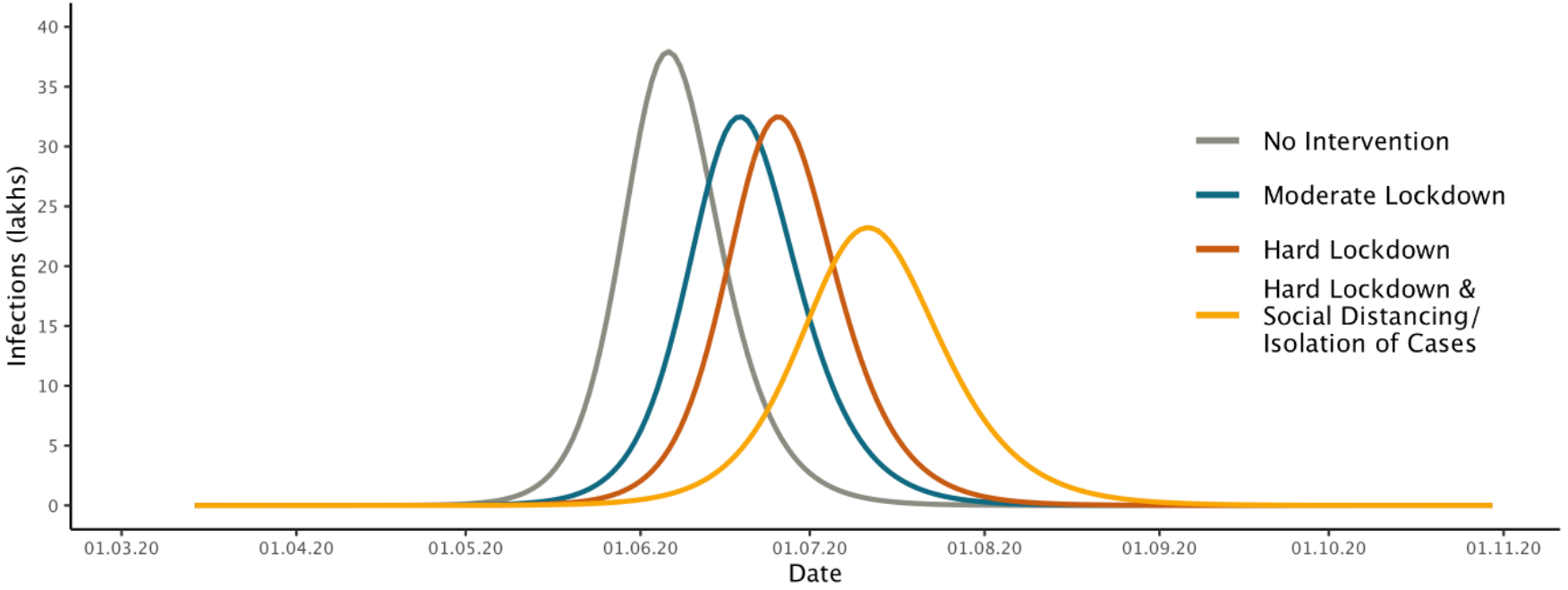
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Assam

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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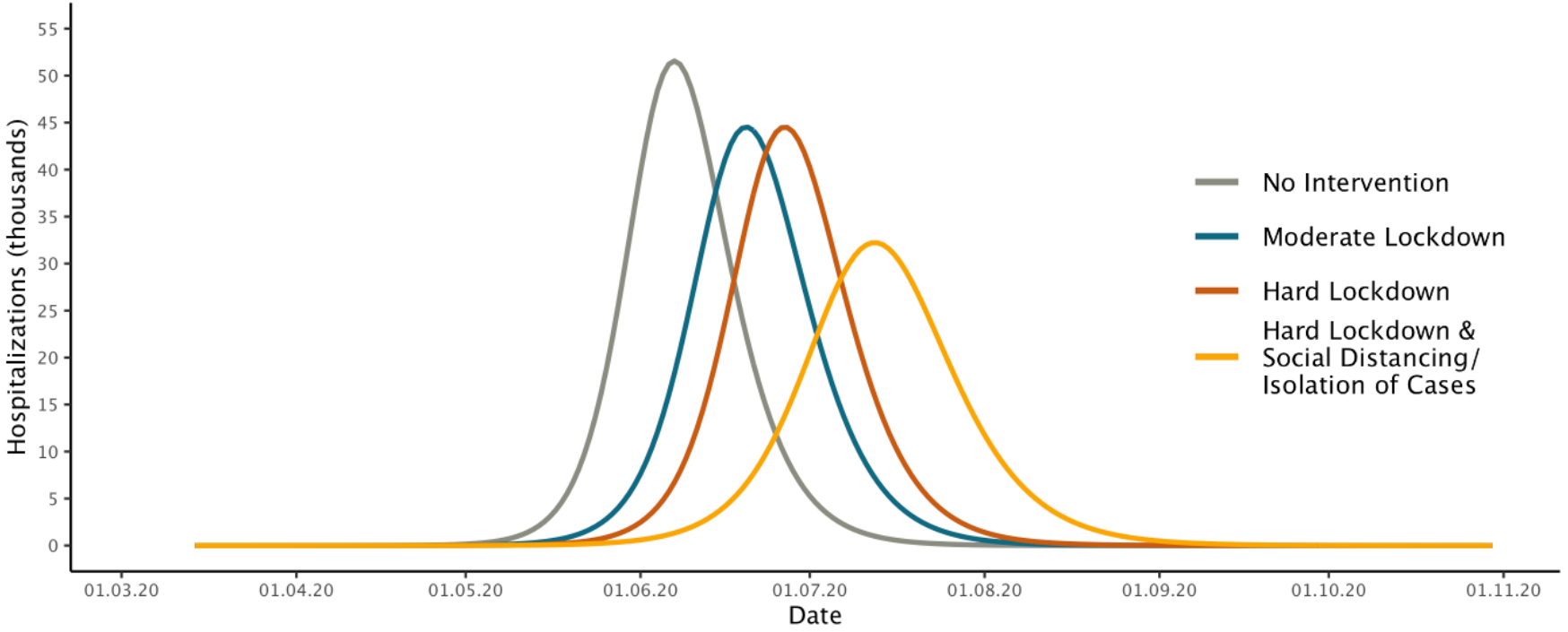
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Assam

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	51,558 (25,779–77,337)	8,72,684 (4,36,342–13,09,026)	37,92,428 (18,96,214–56,88,642)
Moderate Lockdown	44,524 (22,262–66,785)	7,56,143 (3,78,072–11,34,215)	32,46,954 (16,23,477–48,70,432)
Hard Lockdown	44,490 (22,245–66,735)	7,56,044 (3,78,022–11,34,066)	32,45,962 (16,22,981–48,68,944)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	32,214 (16,107–48,320)	5,49,666 (2,74,833–8,24,499)	23,20,798 (11,60,399–34,81,197)

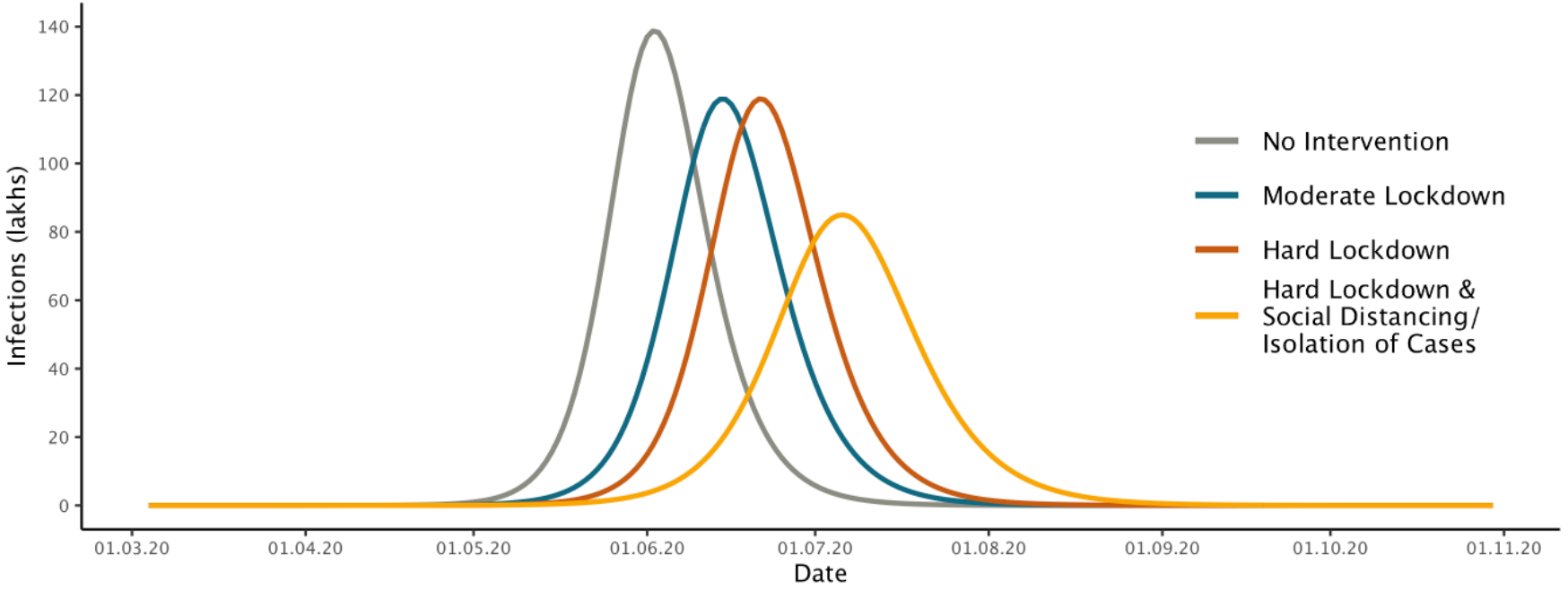
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Bihar

Scenarios

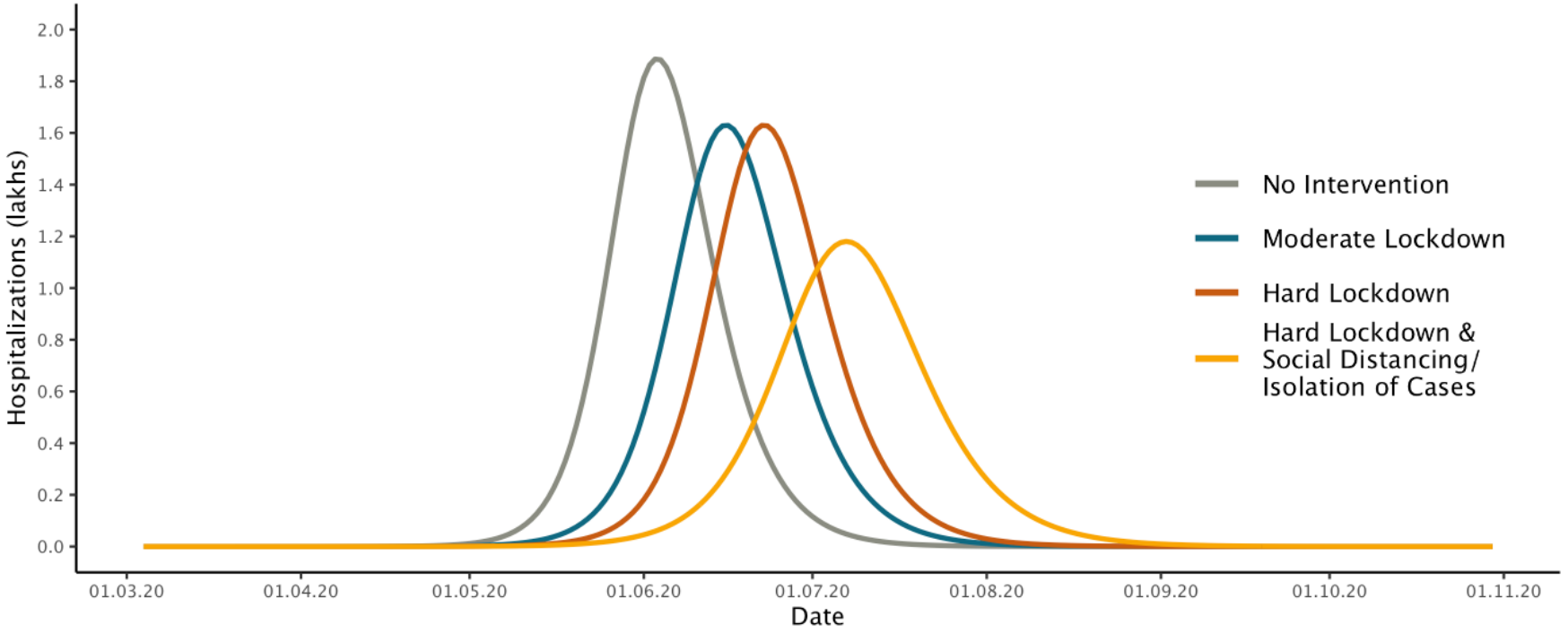
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Bihar

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,88,569 (94,285-2,82,854)	31,93,978 (15,96,989-47,90,968)	1,38,74,836 (69,37,418-2,08,12,254)
Moderate Lockdown	1,62,902 (81,451-2,44,353)	27,67,905 (13,83,952-41,51,857)	1,18,80,111 (59,40,056-1,78,20,166)
Hard Lockdown	1,62,905 (81,452-2,44,357)	27,66,665 (13,83,332-41,49,998)	1,18,90,392 (59,45,196-1,78,35,588)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,18,019 (59,010-1,77,029)	20,11,463 (10,05,732-30,17,195)	84,98,443 (42,49,222-1,27,47,664)

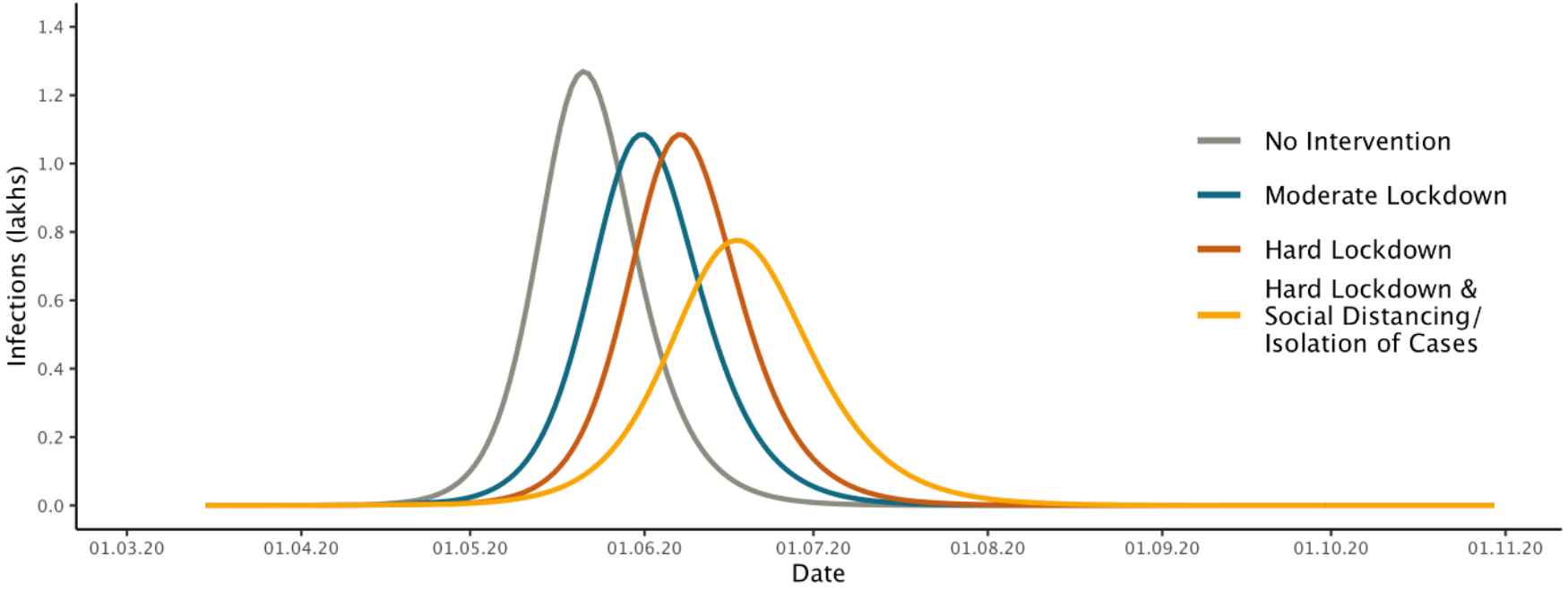
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Chandigarh

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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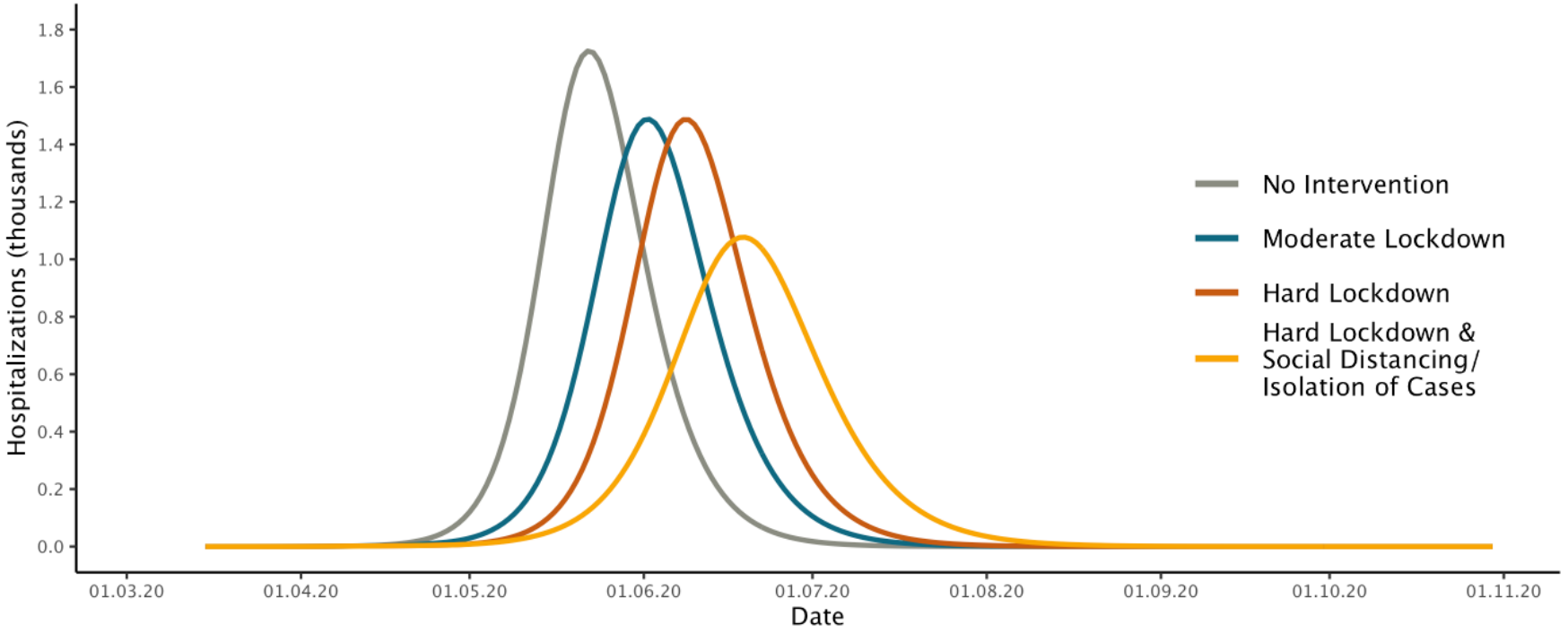
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Chandigarh

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,725 (863–2,588)	29,183 (14,592–43,775)	1,26,916 (63,458–1,90,374)
Moderate Lockdown	1,487 (744–2,231)	25,266 (12,633–37,899)	1,08,446 (54,223–1,62,669)
Hard Lockdown	1,486 (743–2,229)	25,255 (12,627–37,882)	1,08,469 (54,234–1,62,703)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,077 (538–1,615)	18,370 (9,185–27,555)	77,524 (38,762–1,16,286)

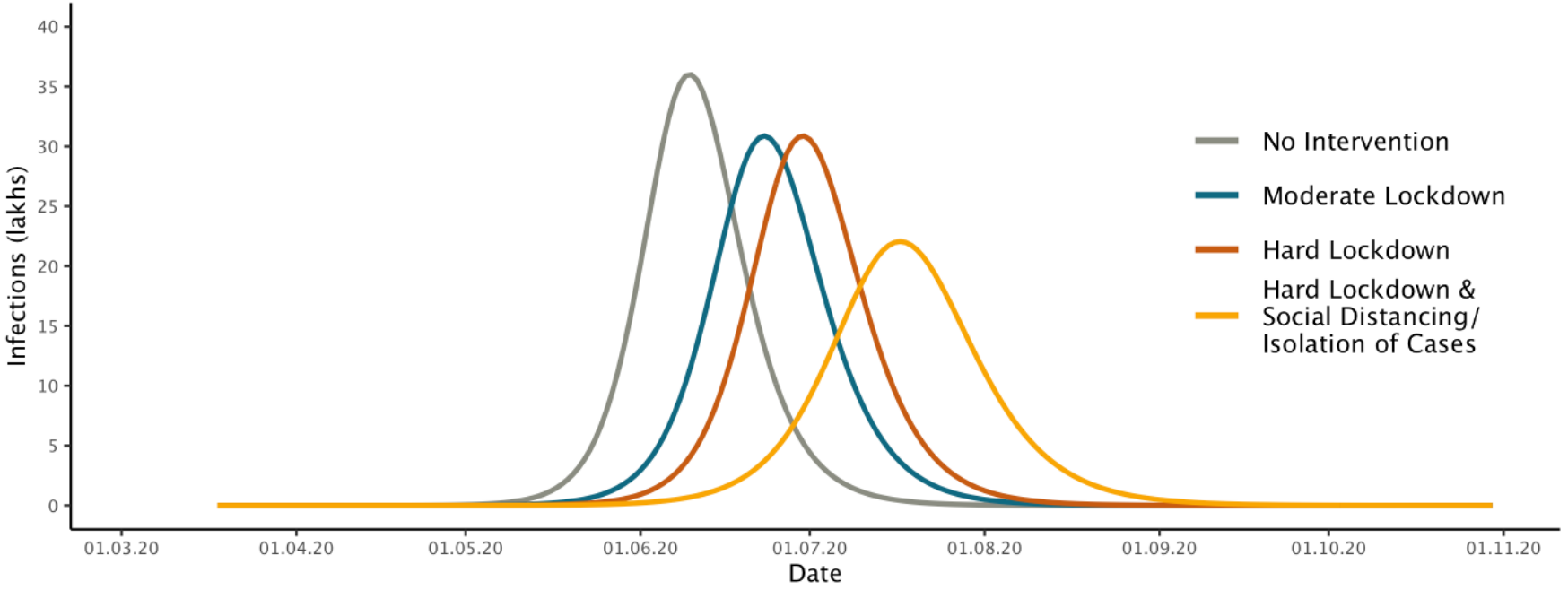
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Chhattisgarh

Scenarios

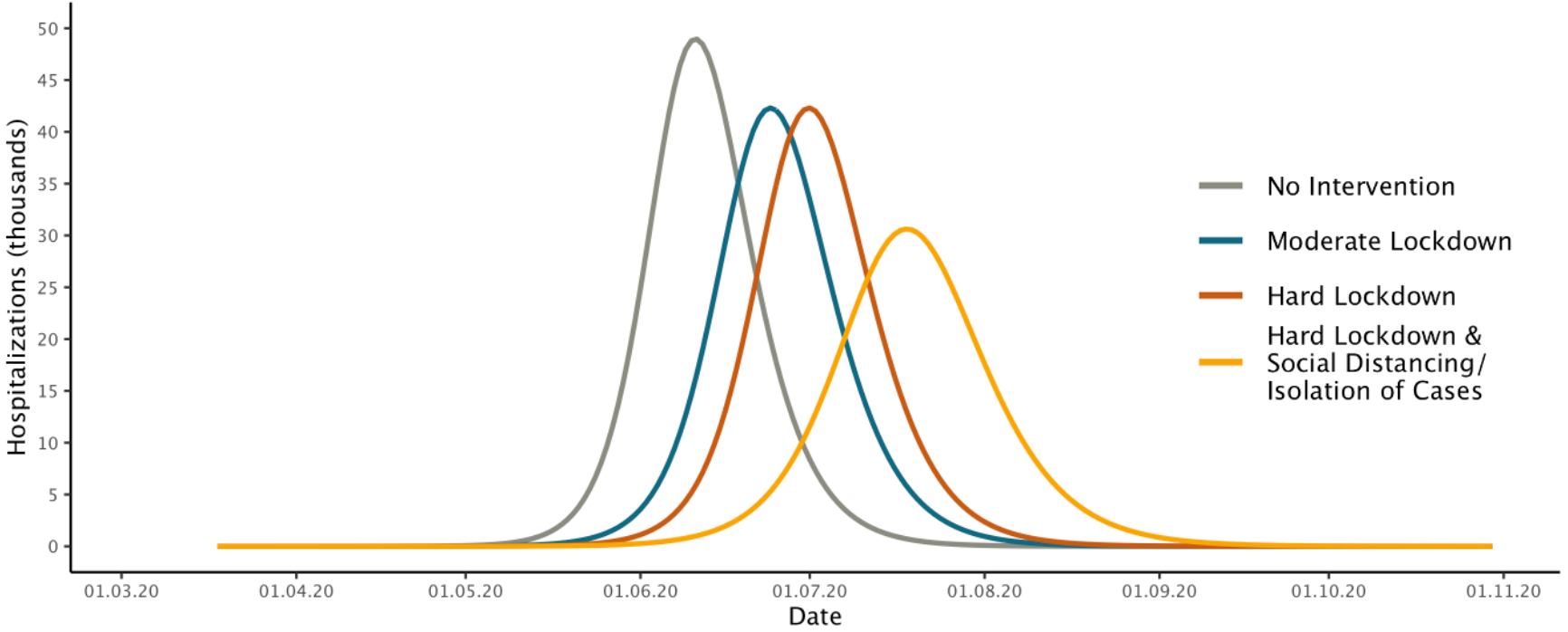
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Chhattisgarh

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	48,946 (24,473-73,420)	8,29,251 (4,14,626-12,43,877)	35,99,142 (17,99,571-53,98,713)
Moderate Lockdown	42,304 (21,152-63,456)	7,17,749 (3,58,875-10,76,624)	30,86,548 (15,43,274-46,29,822)
Hard Lockdown	42,300 (21,150-63,450)	7,18,119 (3,59,060-10,77,179)	30,85,403 (15,42,701-46,28,104)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	30,616 (15,308-45,924)	5,21,765 (2,60,883-7,82,648)	22,05,204 (11,02,602-33,07,806)

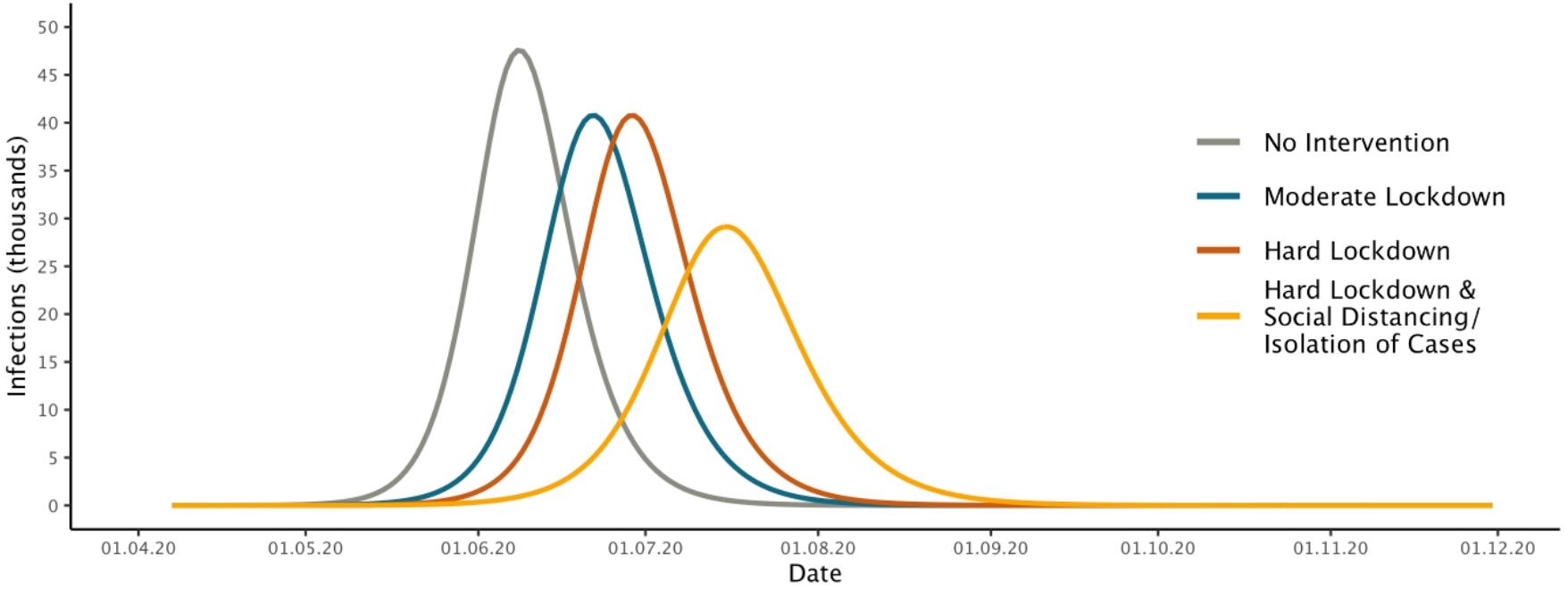
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Dadra and Nagar Haveli

Scenarios

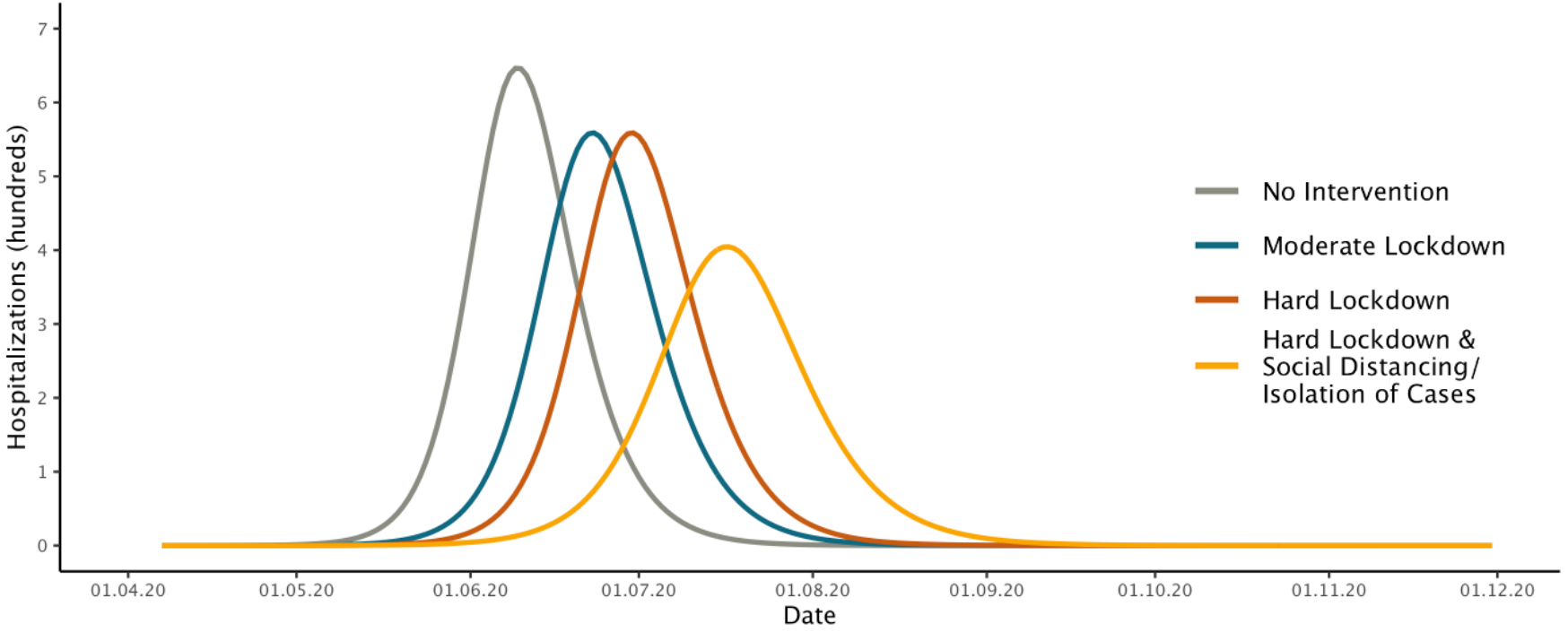
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Dadra and Nagar Haveli

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	646 (323–970)	10,953 (5,477–16,430)	47,560 (23,780–71,340)
Moderate Lockdown	559 (279–838)	9,492 (4,746–14,238)	40,756 (20,378–61,134)
Hard Lockdown	559 (279–838)	9,492 (4,746–14,238)	40,751 (20,376–61,127)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	405 (202–607)	6,900 (3,450–10,351)	29,118 (14,559–43,677)

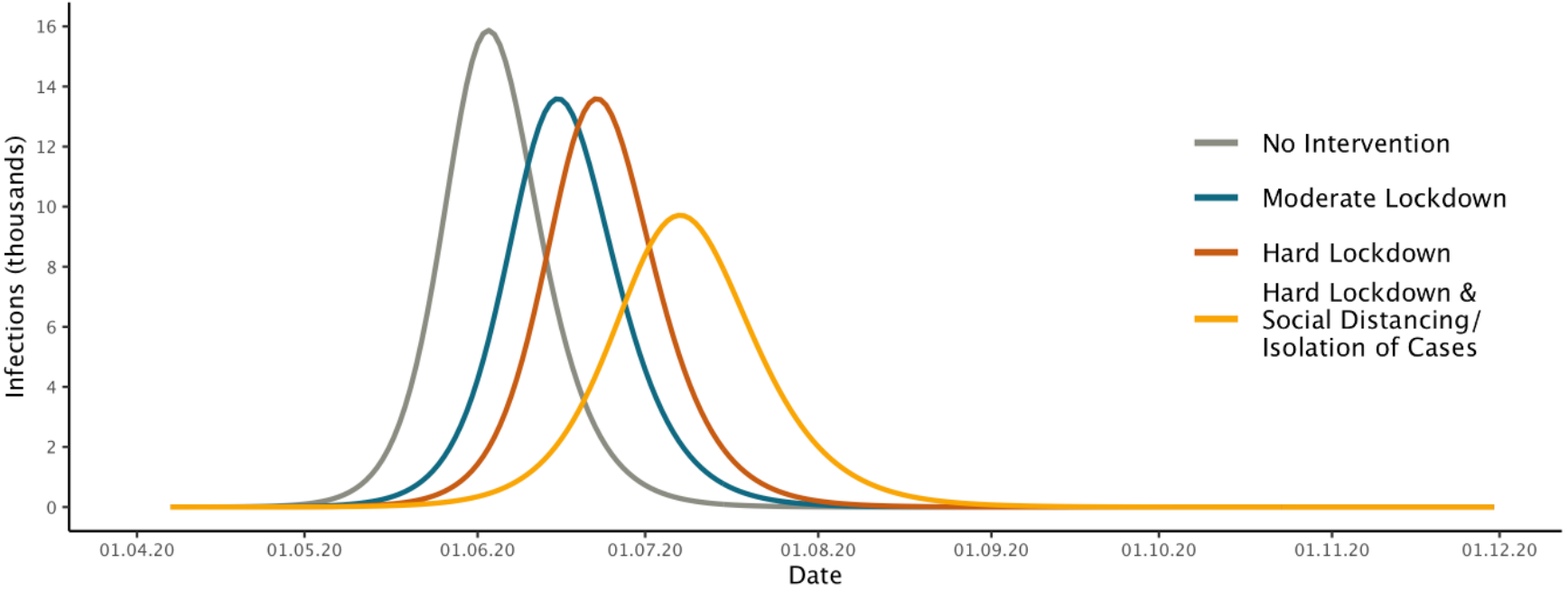
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Daman and Diu

Scenarios

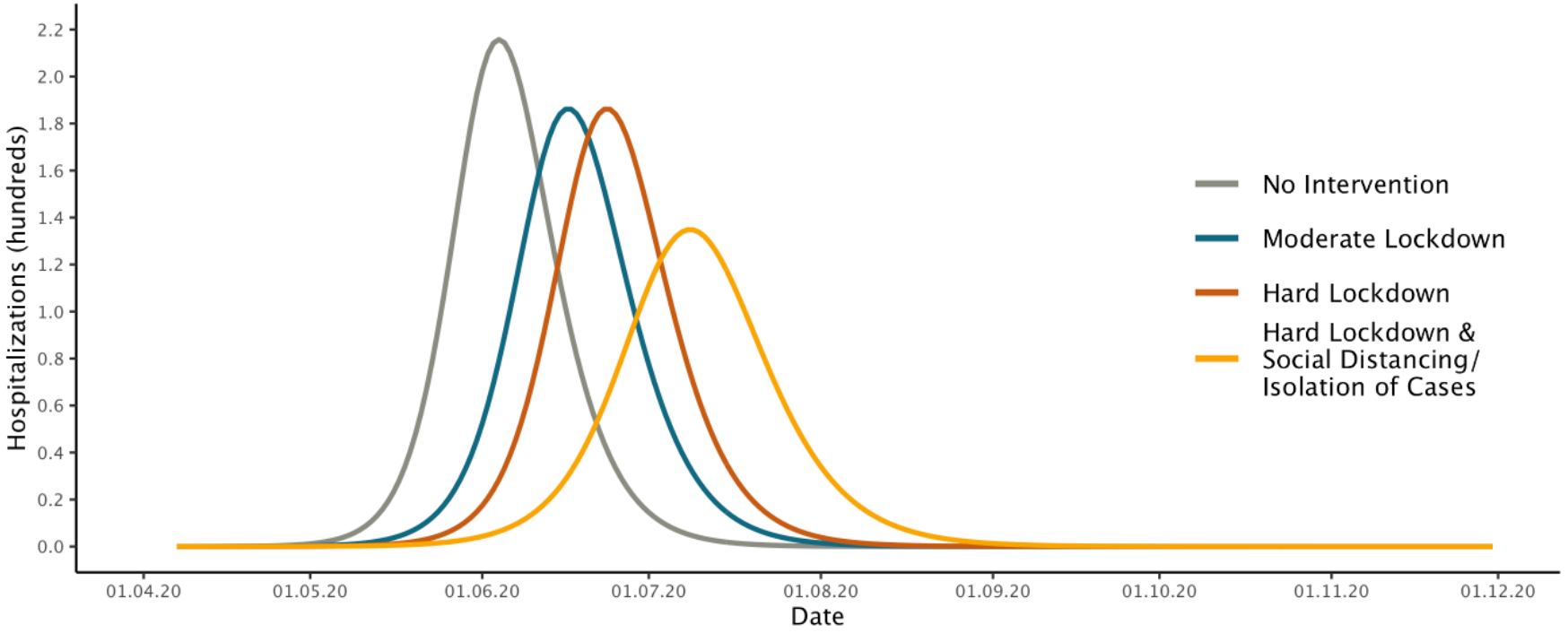
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Daman and Diu

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	216 (108–324)	3,651 (1,826–5,477)	15,869 (7,935–23,804)
Moderate Lockdown	186 (93–279)	3,163 (1,582–4,745)	13,585 (6,792–20,377)
Hard Lockdown	186 (93–279)	3,163 (1,581–4,744)	13,586 (6,793–20,379)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	135 (67–202)	2,300 (1,150–3,450)	9,712 (4,856–14,568)

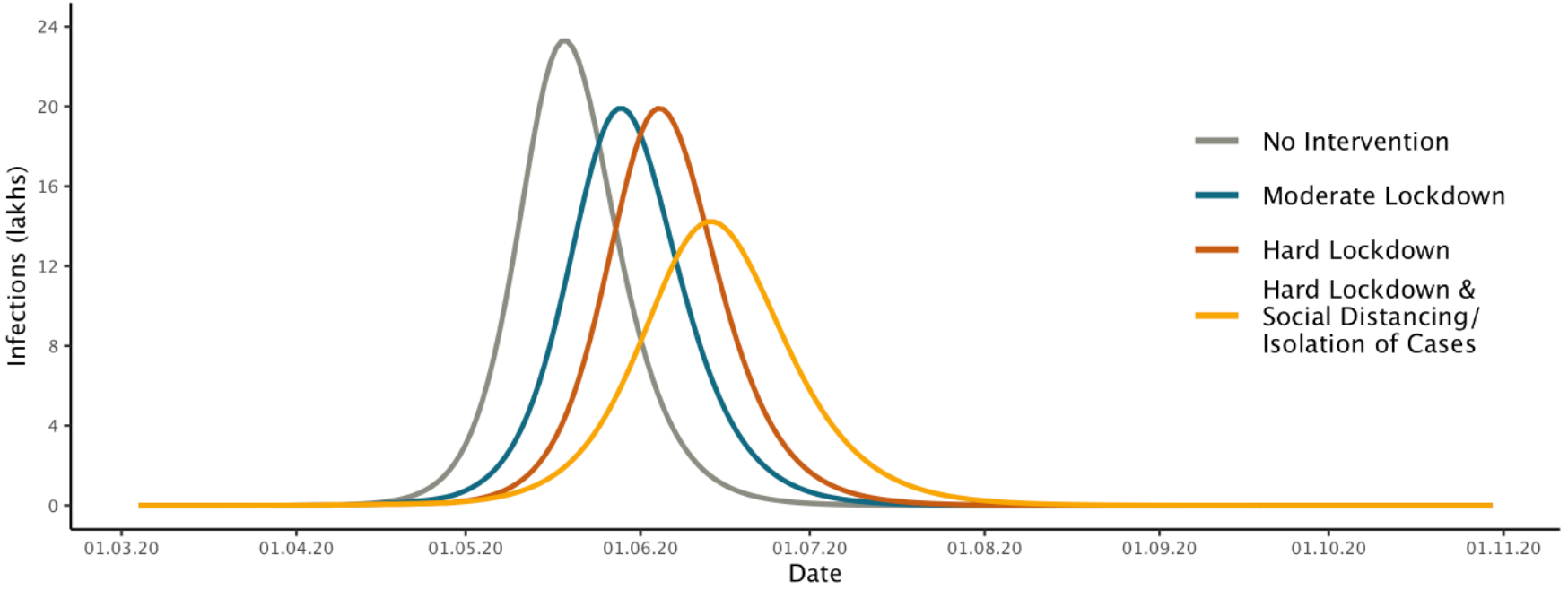
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Delhi

Scenarios

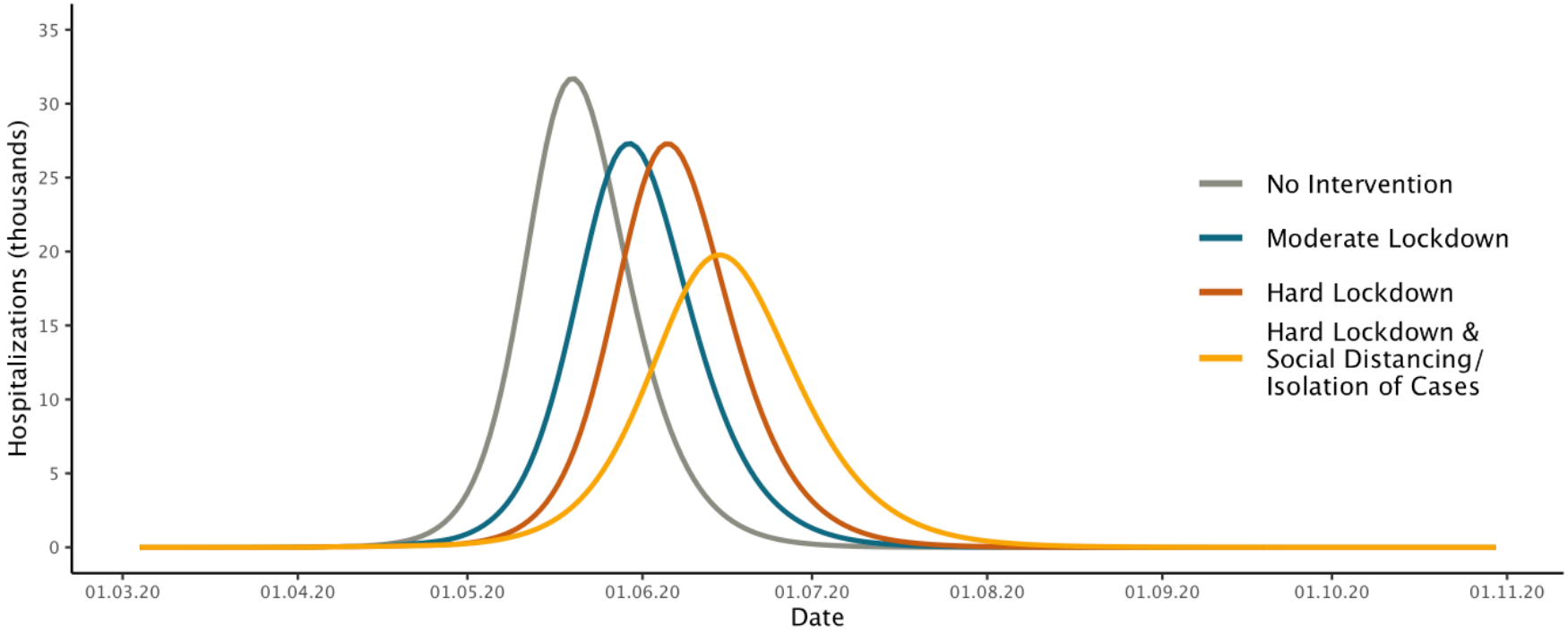
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Delhi

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	31,677 (15,839–47,516)	5,36,949 (2,68,475–8,05,424)	23,28,800 (11,64,400–34,93,200)
Moderate Lockdown	27,289 (13,645–40,934)	4,63,643 (2,31,822–6,95,465)	19,89,537 (9,94,768–29,84,305)
Hard Lockdown	27,271 (13,635–40,906)	4,63,352 (2,31,676–6,95,027)	19,90,403 (9,95,201–29,85,604)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	19,762 (9,881–29,643)	3,37,125 (1,68,562–5,05,687)	14,22,759 (7,11,379–21,34,138)

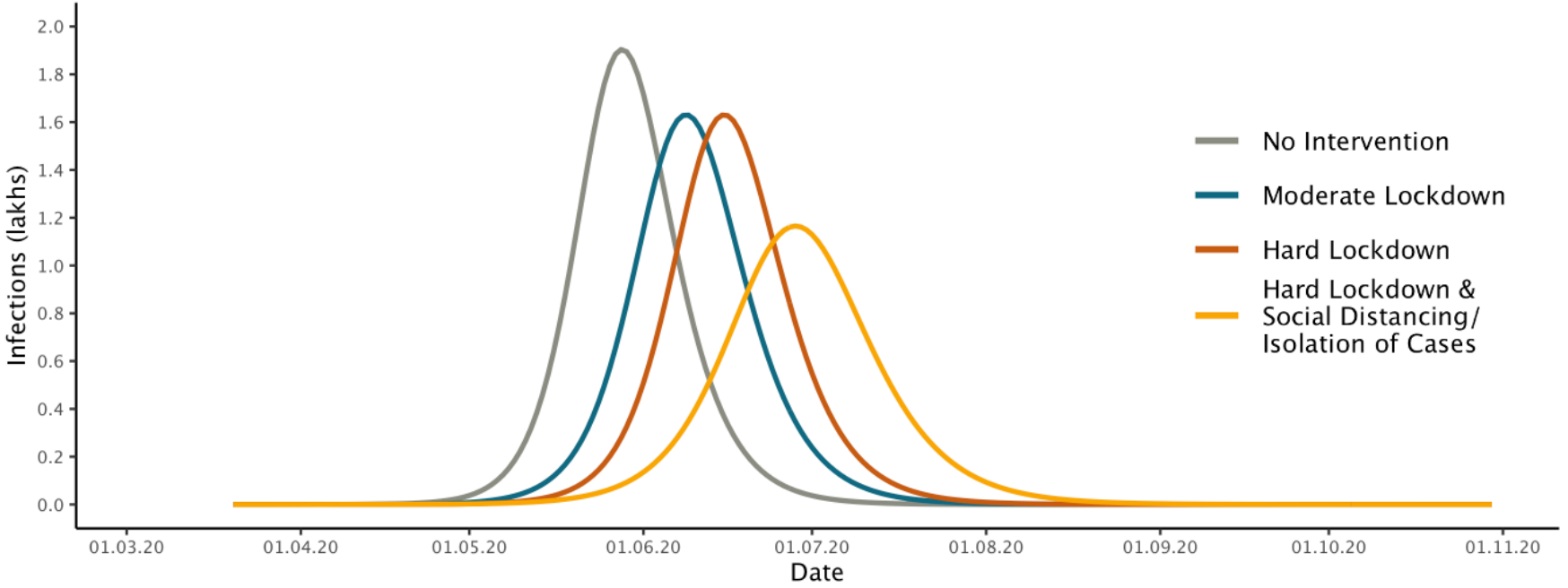
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Goa

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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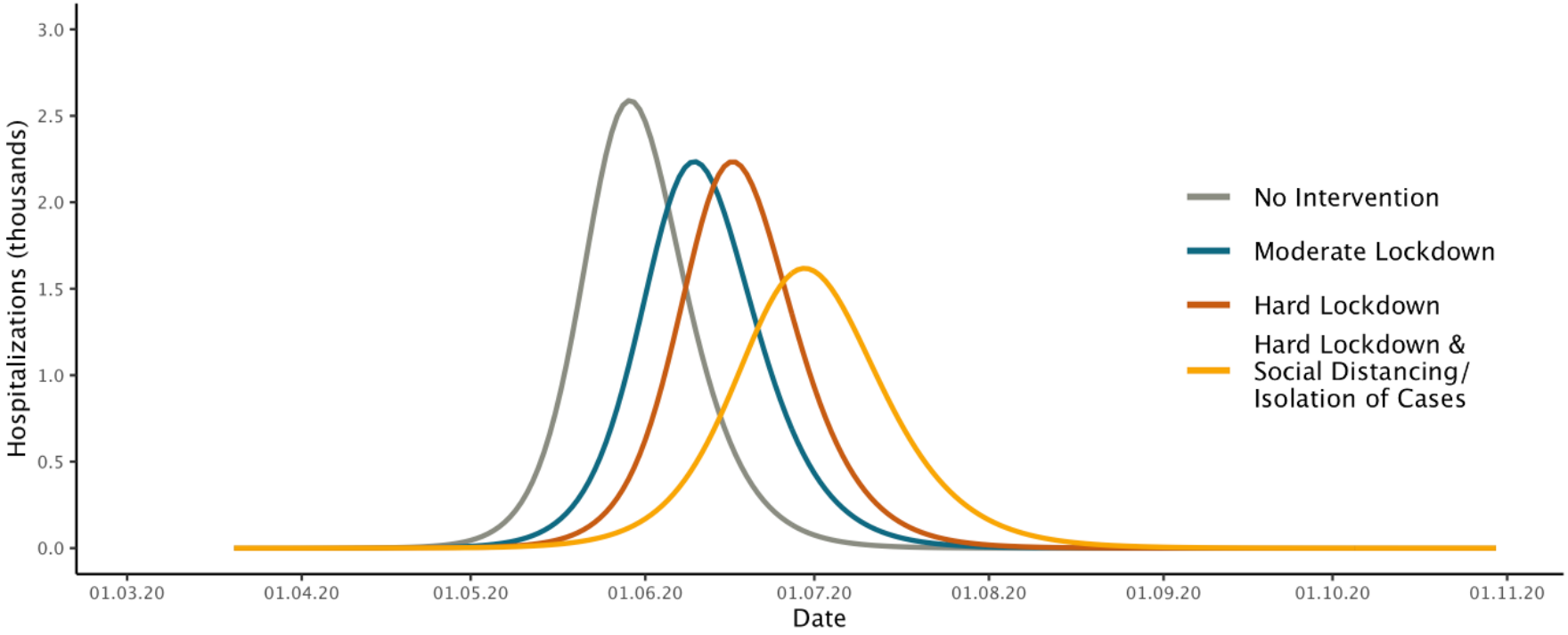
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Goa

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	2,588 (12,94-3,881)	43,774 (21,887-65,661)	1,90,375 (95,187-2,85,562)
Moderate Lockdown	2,234 (1,117-3,352)	37,952 (18,976-56,928)	1,62,930 (81,465-2,44,394)
Hard Lockdown	2,232 (1,116-3,349)	37,942 (18,971-56,913)	1,62,945 (81,472-2,44,417)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,618 (809-2,427)	27,575 (13,787-41,362)	1,16,528 (58,264-1,74,792)

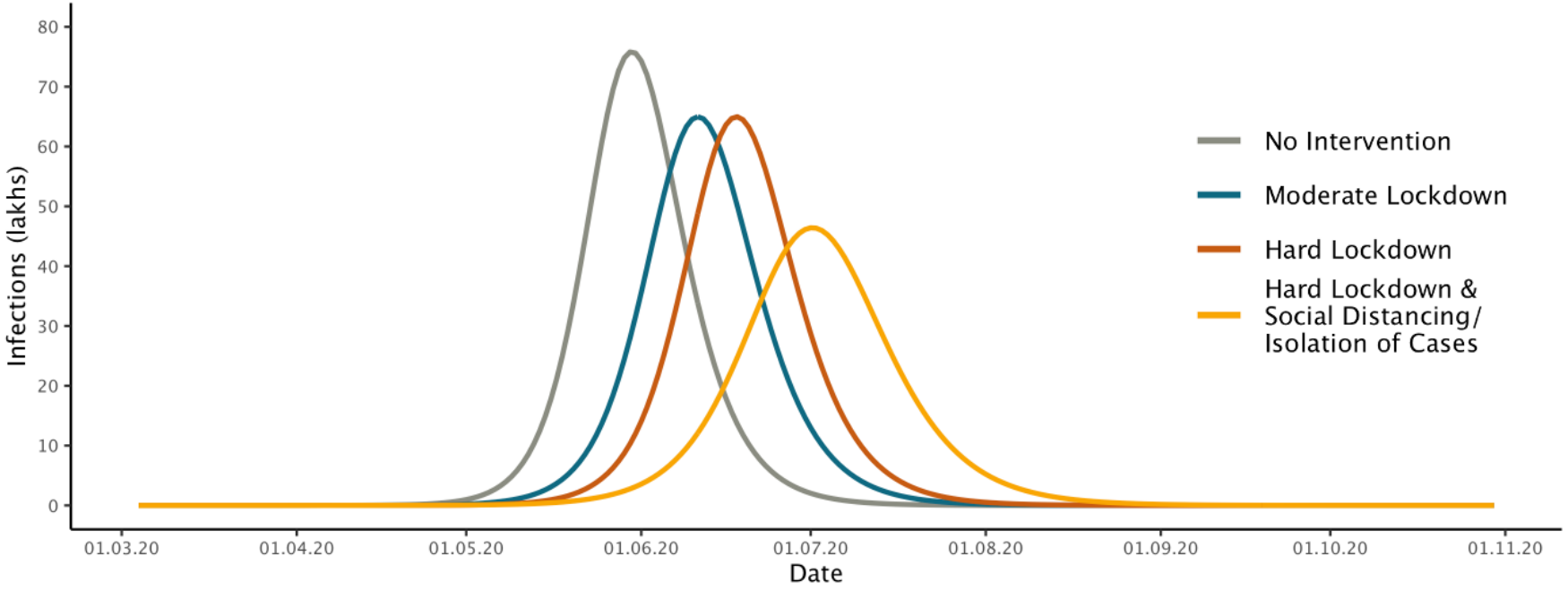
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Gujarat

Scenarios

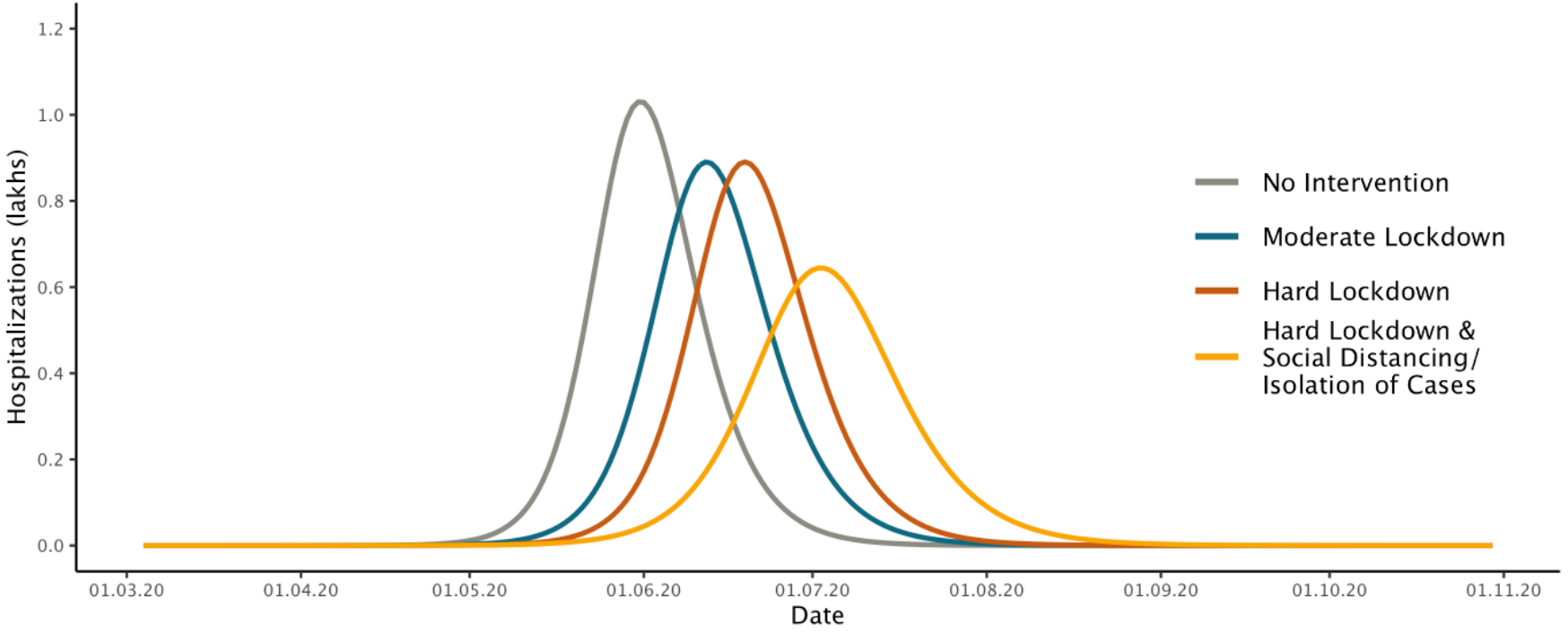
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Gujarat

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,03,000 (51,500-1,54,500)	17,44,993 (8,72,497-26,17490)	75,78,796 (37,89,398-1,13,68,193)
Moderate Lockdown	89,046 (44,523-1,33,569)	15,10,280 (7,55,140-22,65,420)	64,97,776 (32,48,888-97,46,664)
Hard Lockdown	89,057 (44,528-1,33,585)	15,11,363 (7,55,682-22,67,044)	64,96,894 (32,48,447-97,45,341)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	64,413 (32,206-96,619)	10,99,104 (5,49,552-16,48,656)	46,40,724 (23,20,362-69,61,086)

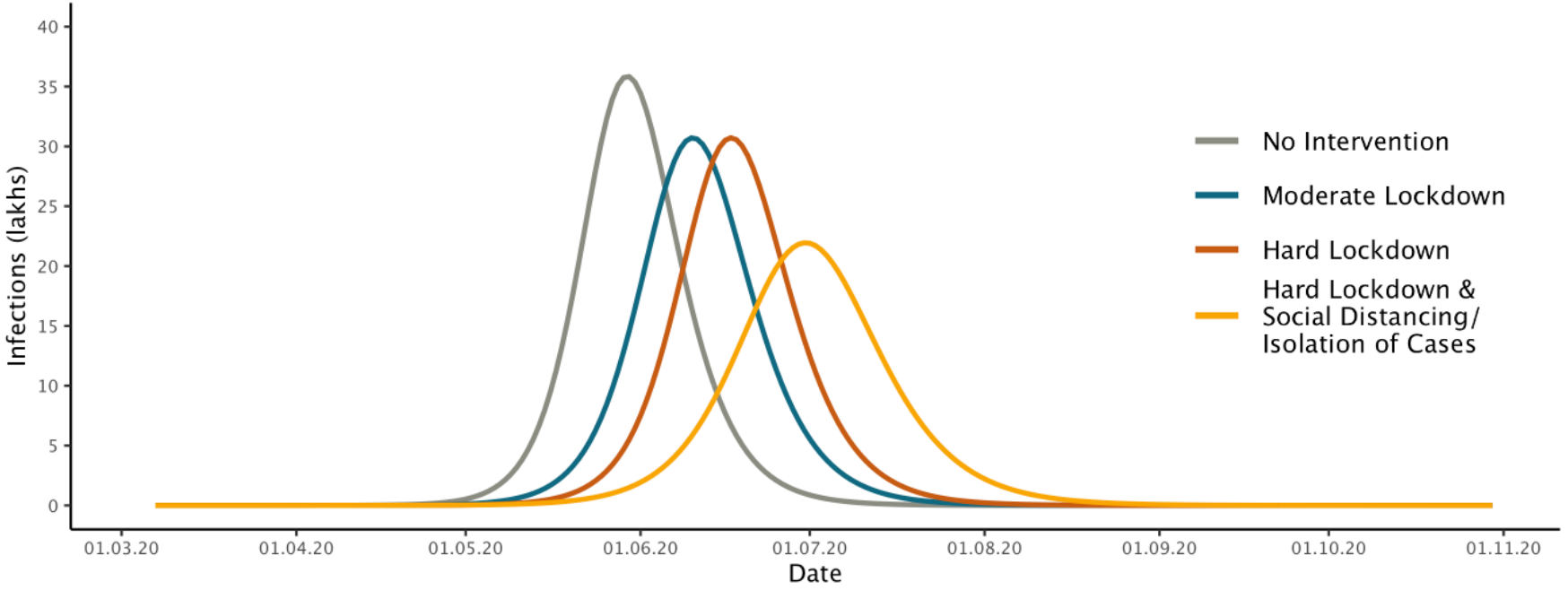
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Haryana

Scenarios

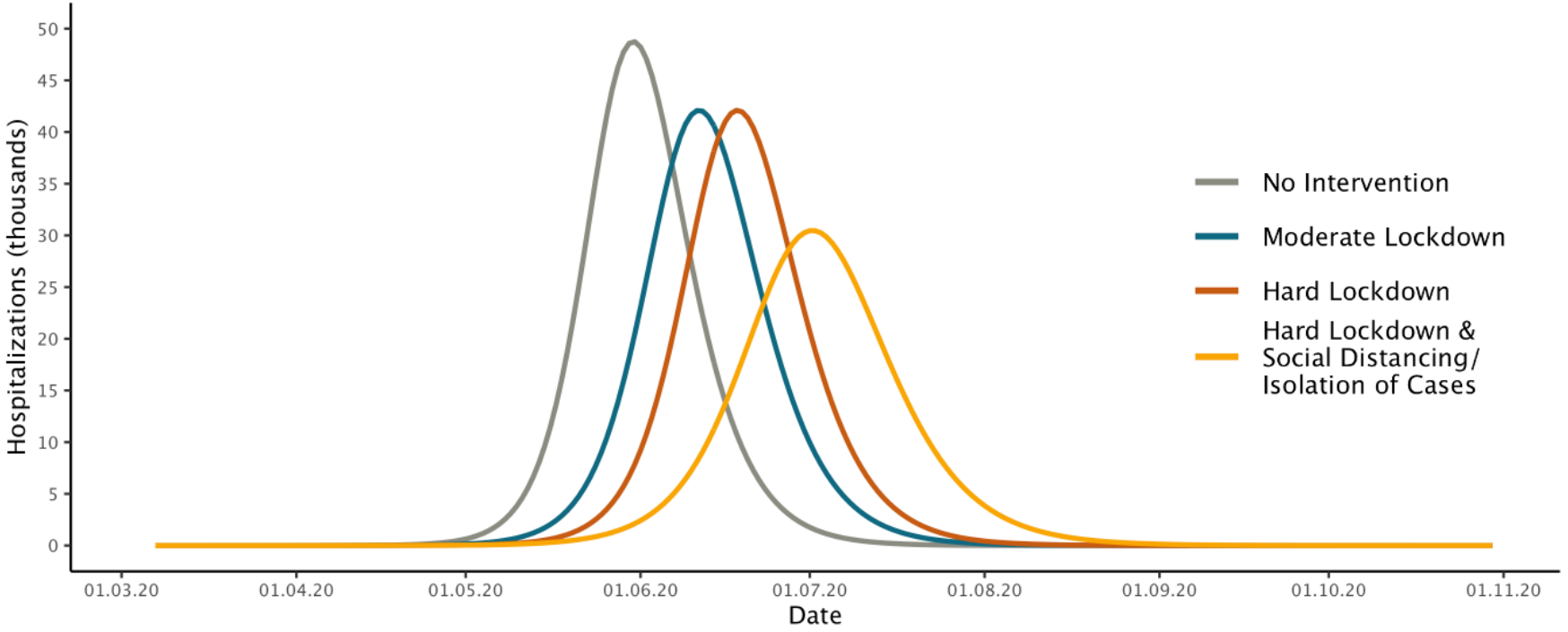
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Haryana

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	48,727 (24,363–73,090)	8,25,598 (4,12,799–12,38,397)	35,82,880 (17,91,440–53,74,320)
Moderate Lockdown	42,074 (21,037–63,110)	7,14,419 (3,57,209–10,71,628)	30,70,858 (15,35,429–46,06,288)
Hard Lockdown	42,097 (21,048–63,145)	7,13,957 (3,56,979–10,70,936)	30,71,897 (15,35,949–46,07,846)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	30,455 (15,227–45,682)	5,19,610 (2,59,805–7,79,414)	21,94,280 (10,97,140–32,91,419)

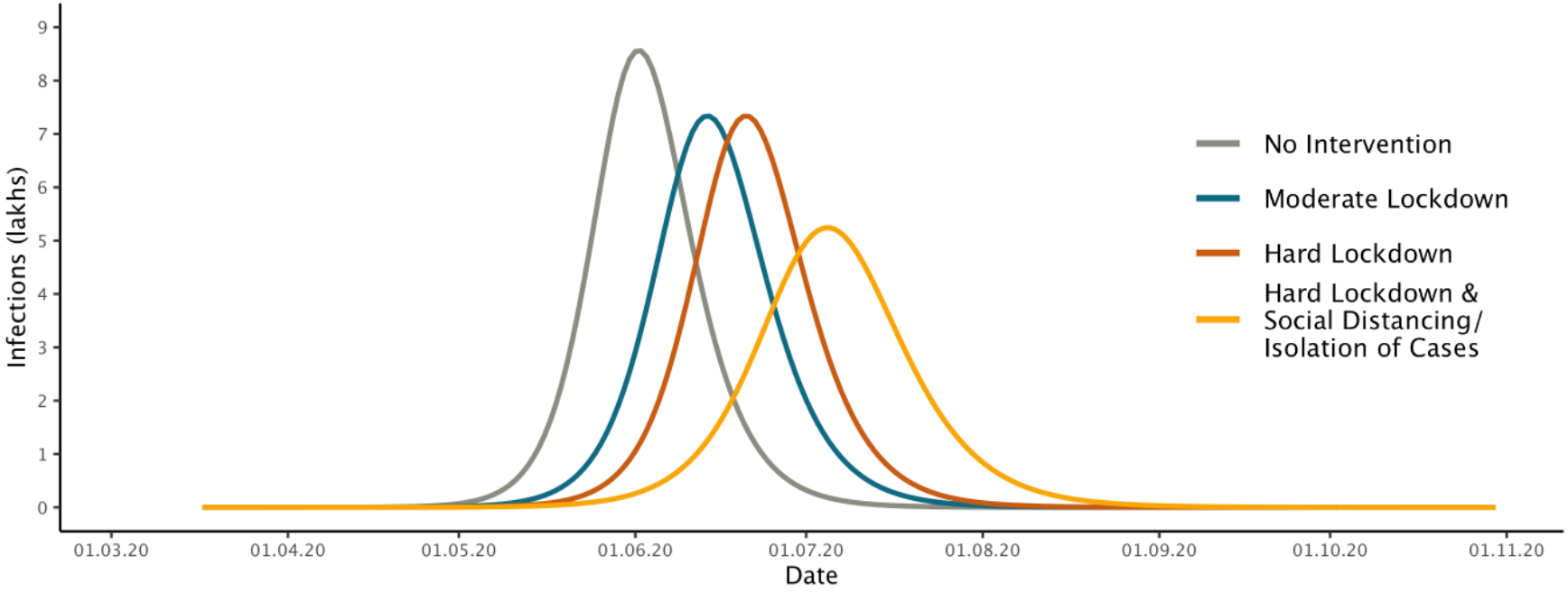
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Himachal Pradesh

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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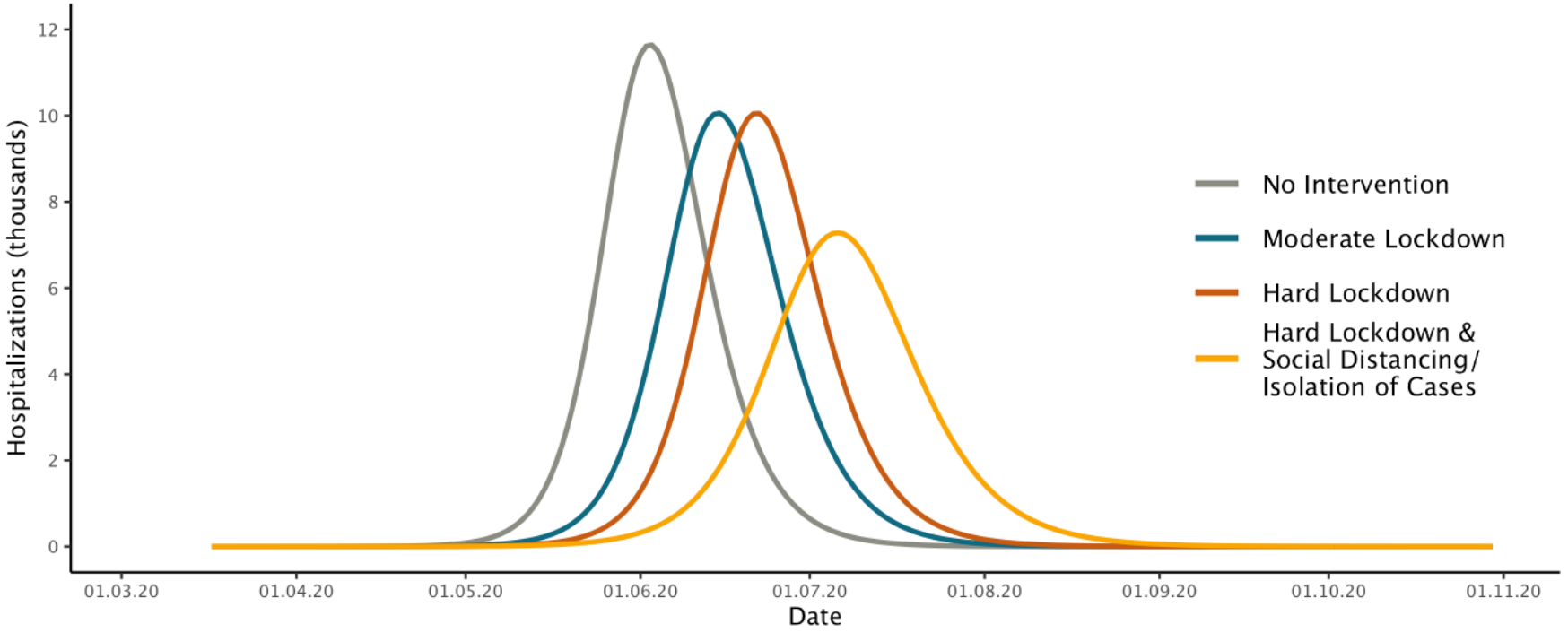
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Himachal Pradesh

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	11,640 (5,820–17,460)	1,97,262 (98,631–2,95,893)	8,55,837 (4,27,919–12,83,756)
Moderate Lockdown	10,059 (5,030–15,089)	1,70,824 (85,412–2,56,236)	7,33,612 (3,66,806–11,00,418)
Hard Lockdown	10,052 (5,026–15,078)	1,70,808 (85,404–2,56,212)	7,33,218 (3,66,609–10,99,828)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	7,283 (3,642–10,925)	1,24,158 (62,079–1,86,236)	5,24,392 (2,62,196–7,86,588)

Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

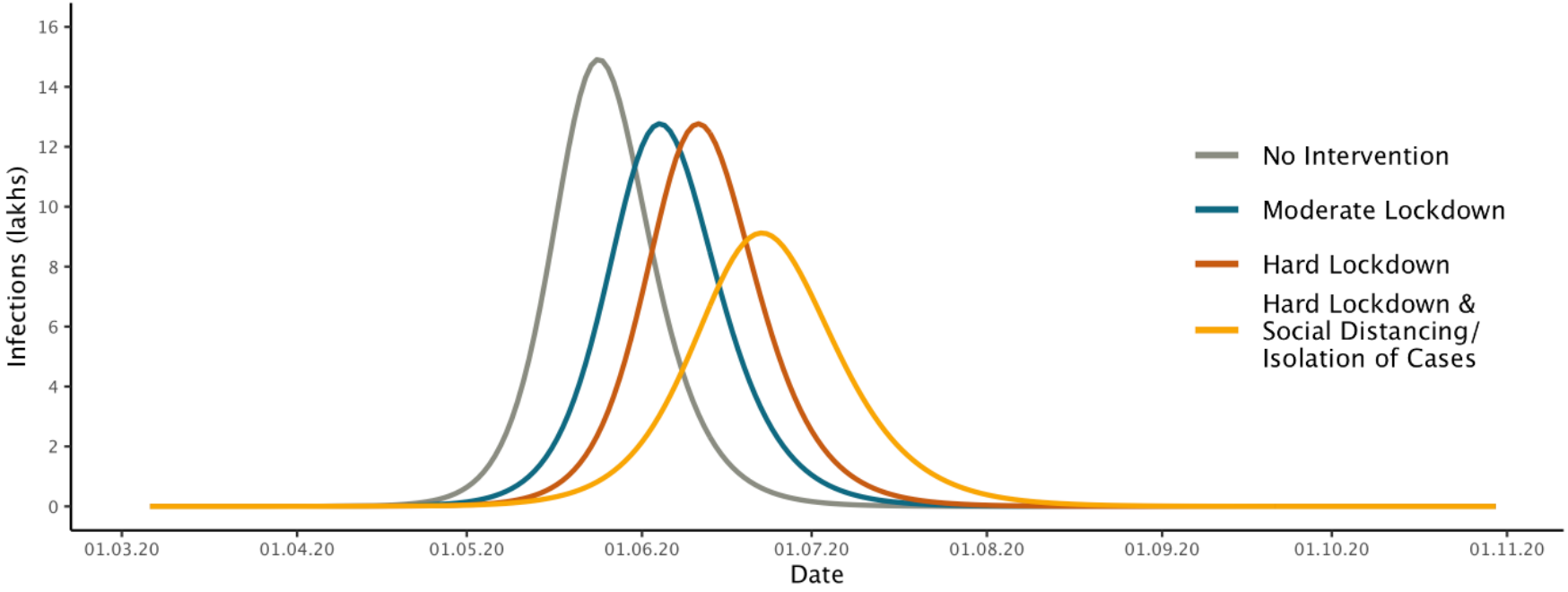
Jammu and Kashmir

*Data on Ladakh were not separately available in the NFHS-4 survey (2015-16) which provides some of our model parameters. Estimates for Jammu and Kashmir here include those for Ladakh.

Scenarios

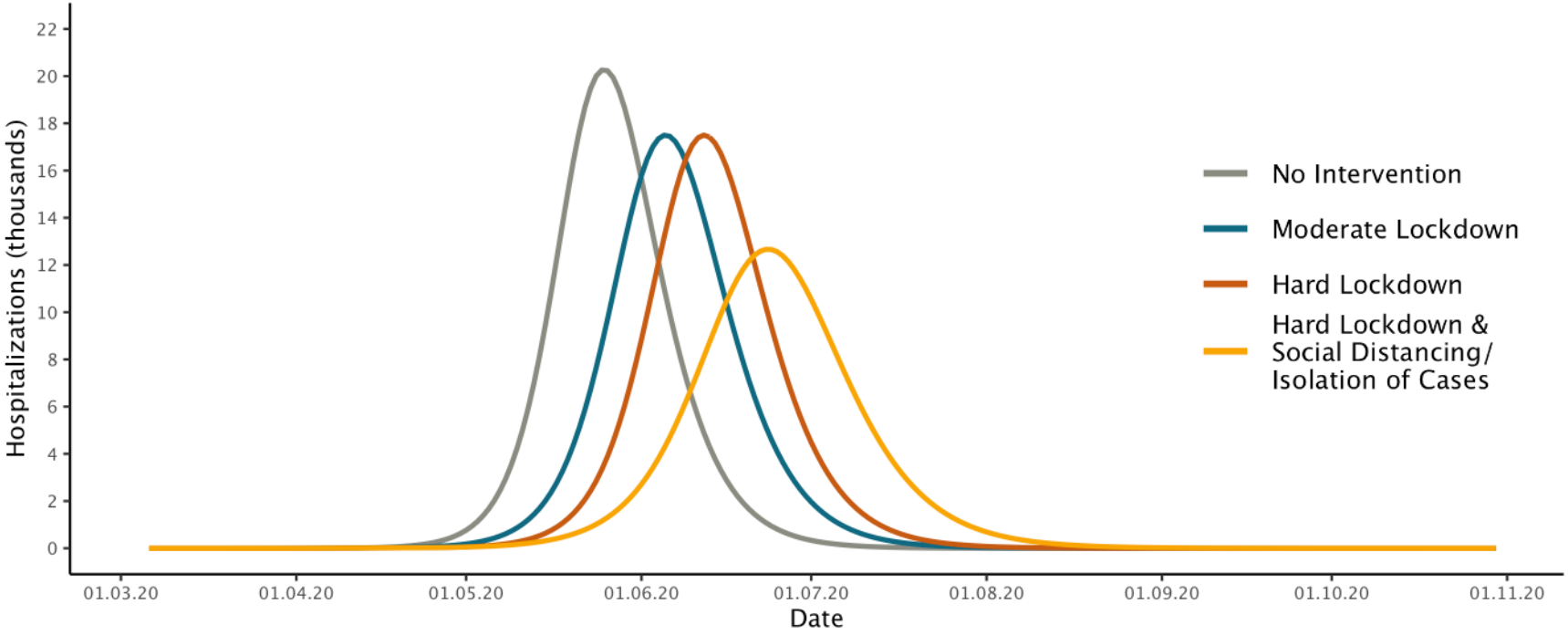
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Jammu and Kashmir (Includes estimates for Ladakh)

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	20,256 (10,128-30,385)	3,43,143 (1,71,572-5,14,715)	14,90,465 (7,45,232-22,35,698)
Moderate Lockdown	17,495 (8,748-26,243)	2,96,821 (1,48,410-4,45,231)	12,76,757 (6,38,379-19,15,136)
Hard Lockdown	17,500 (8,750-26,249)	2,96,891 (1,48,446-4,45,337)	12,76,775 (6,38,388-19,15,163)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	12,662 (6,331-18,993)	2,15,965 (1,07,982-3,23,947)	9,12,211 (4,56,105-13,68,316)

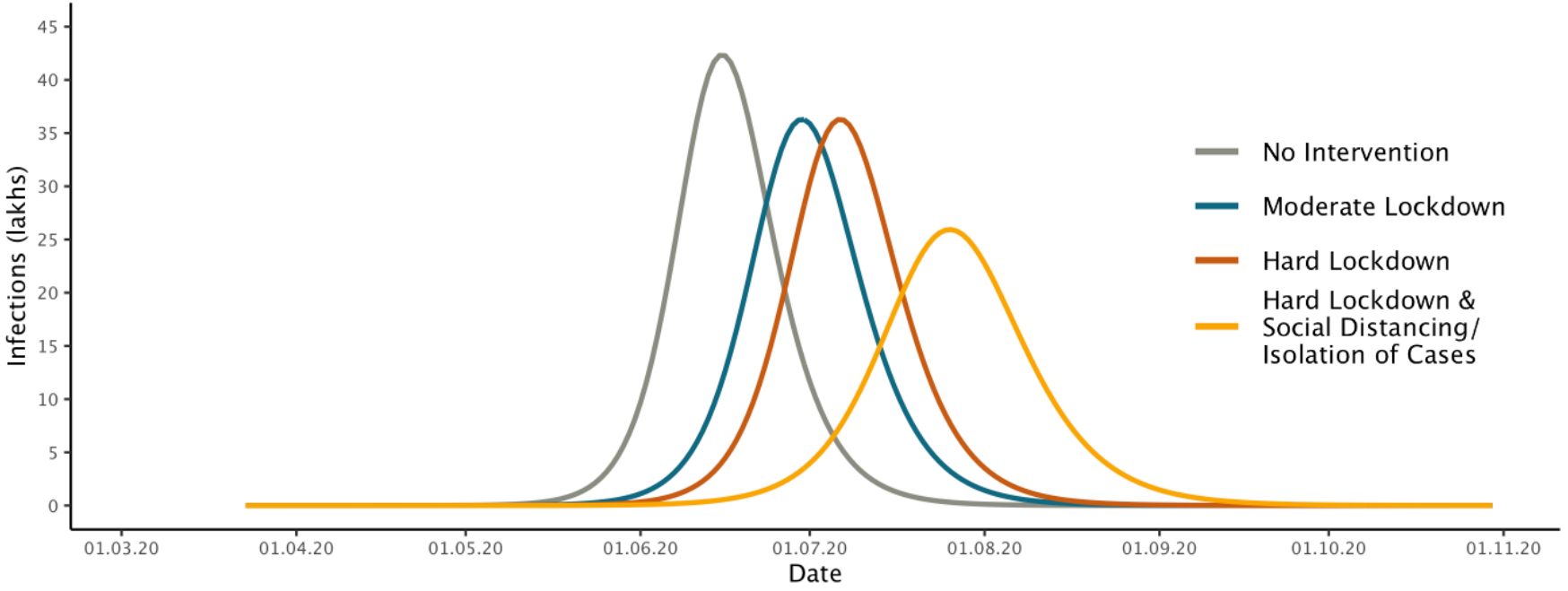
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Jharkhand

Scenarios

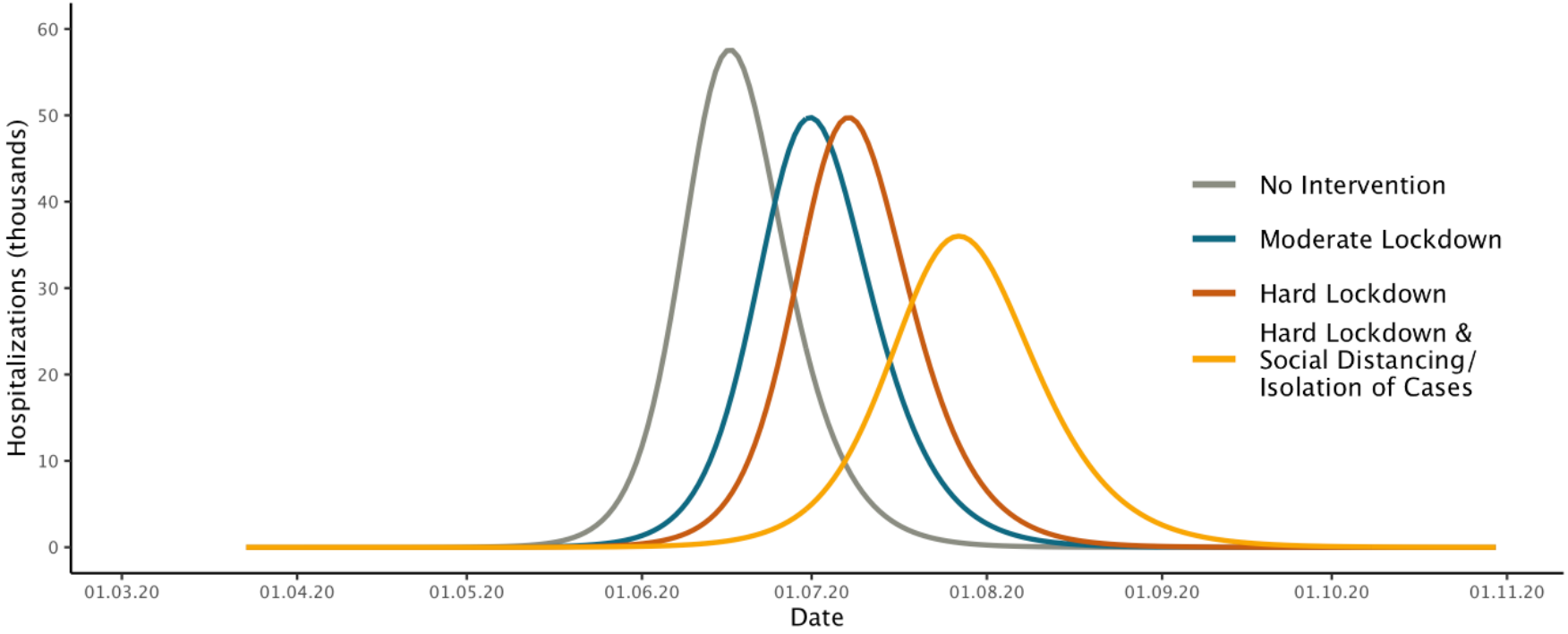
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Jharkhand

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	57,515 (28,757–86,272)	9,75,144 (4,87,572–14,62,716)	42,29,931 (21,14,966–63,44,896)
Moderate Lockdown	49,741 (24,871–74,612)	8,44,787 (4,22,393–12,67,180)	36,27,382 (18,13,691–54,41,074)
Hard Lockdown	49,703 (24,851–74,554)	8,44,658 (4,22,329–12,66,987)	36,26,760 (18,13,380–54,40,140)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	36,018 (18,009–54,027)	6,13,876 (3,06,938–9,20,814)	25,93,592 (12,96,796–38,90,387)

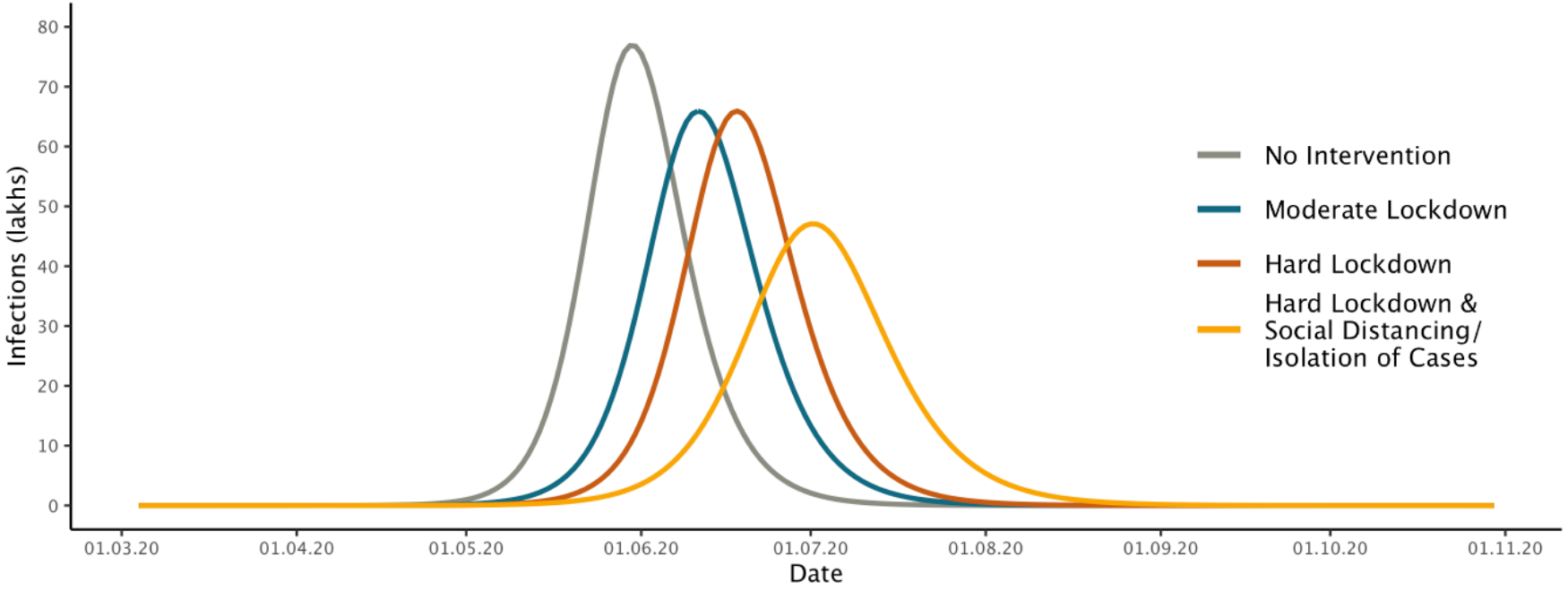
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Karnataka

Scenarios

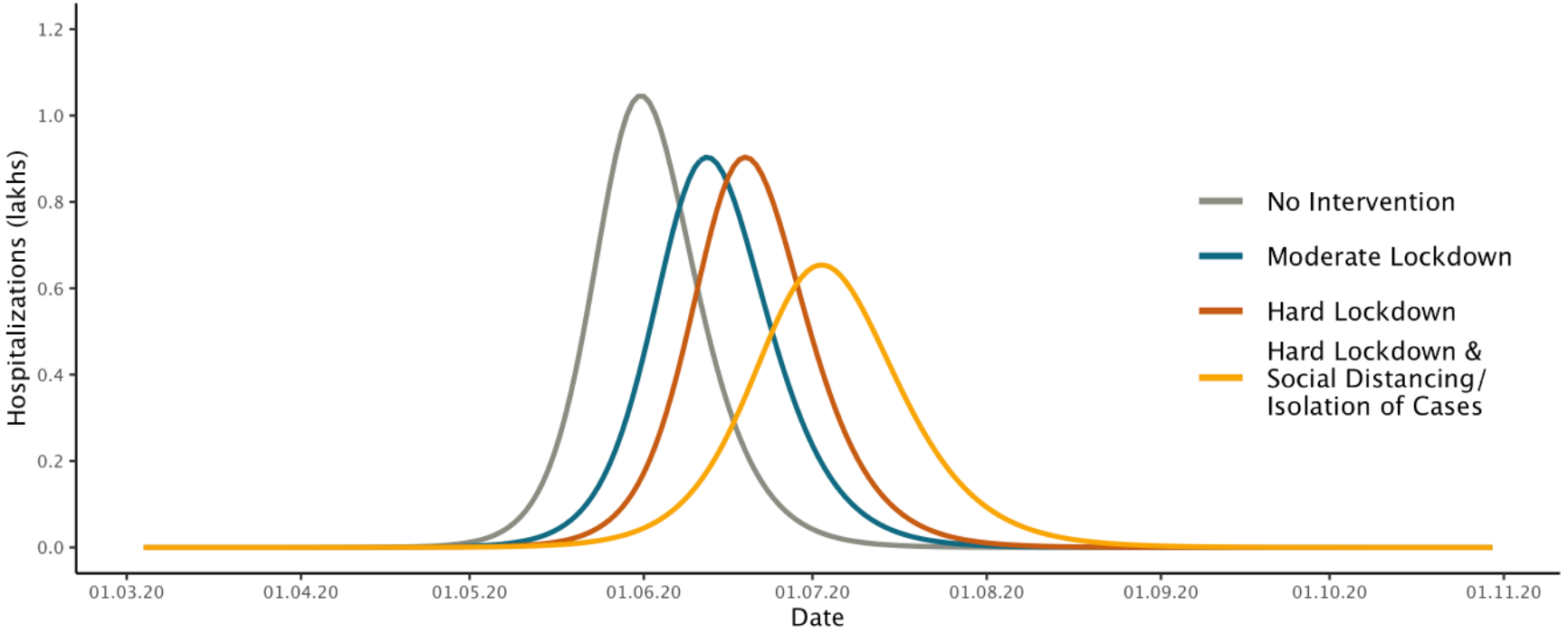
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Karnataka

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,04,463 (52,232–1,56,695)	17,71,022 (8,85,511–26,56,533)	76,86,668 (38,43,334–1,15,30,002)
Moderate Lockdown	90,334 (45,167–1,35,500)	15,32,430 (7,66,215–22,98,645)	65,92,367 (32,96,184–98,88,550)
Hard Lockdown	90,360 (45,180–1,35,540)	15,33,089 (7,66,544–22,99,634)	65,92,726 (32,96,363–98,89,088)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	65,377 (32,689–98,066)	11,15,288 (5,57,644–16,72,932)	47,07,308 (23,53,654–70,60,962)

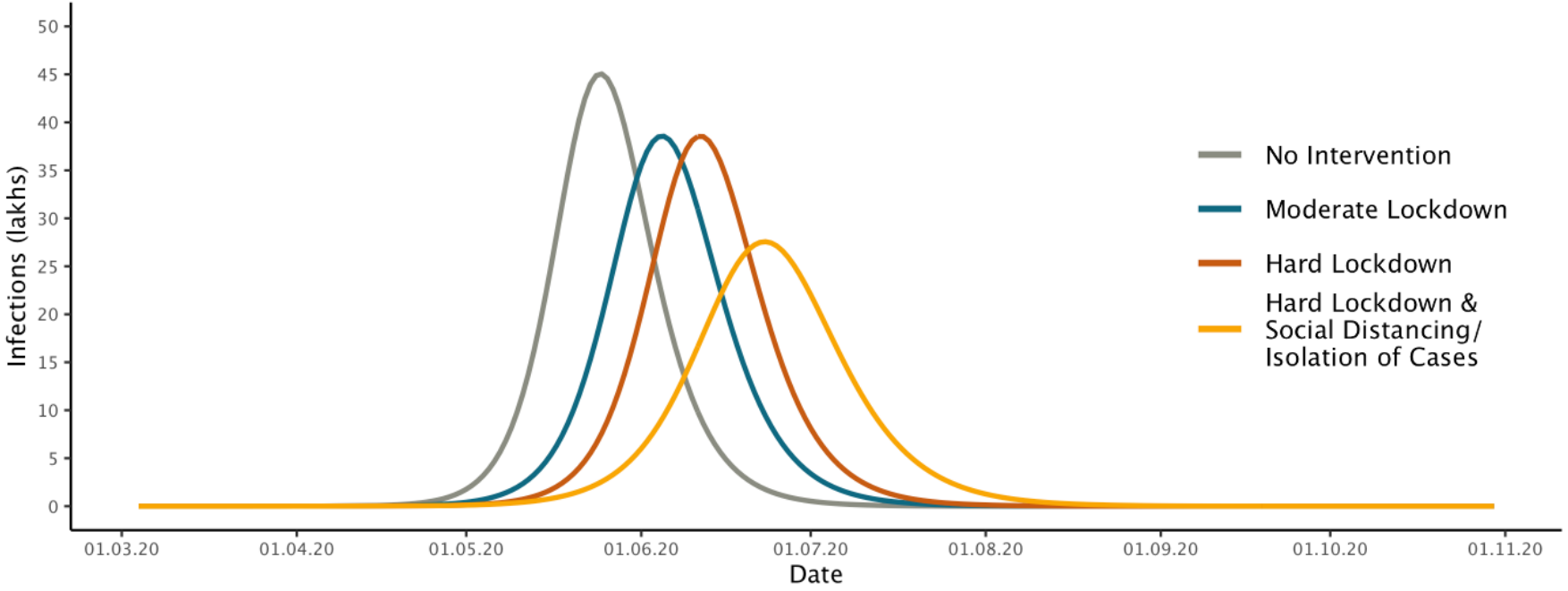
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Kerala

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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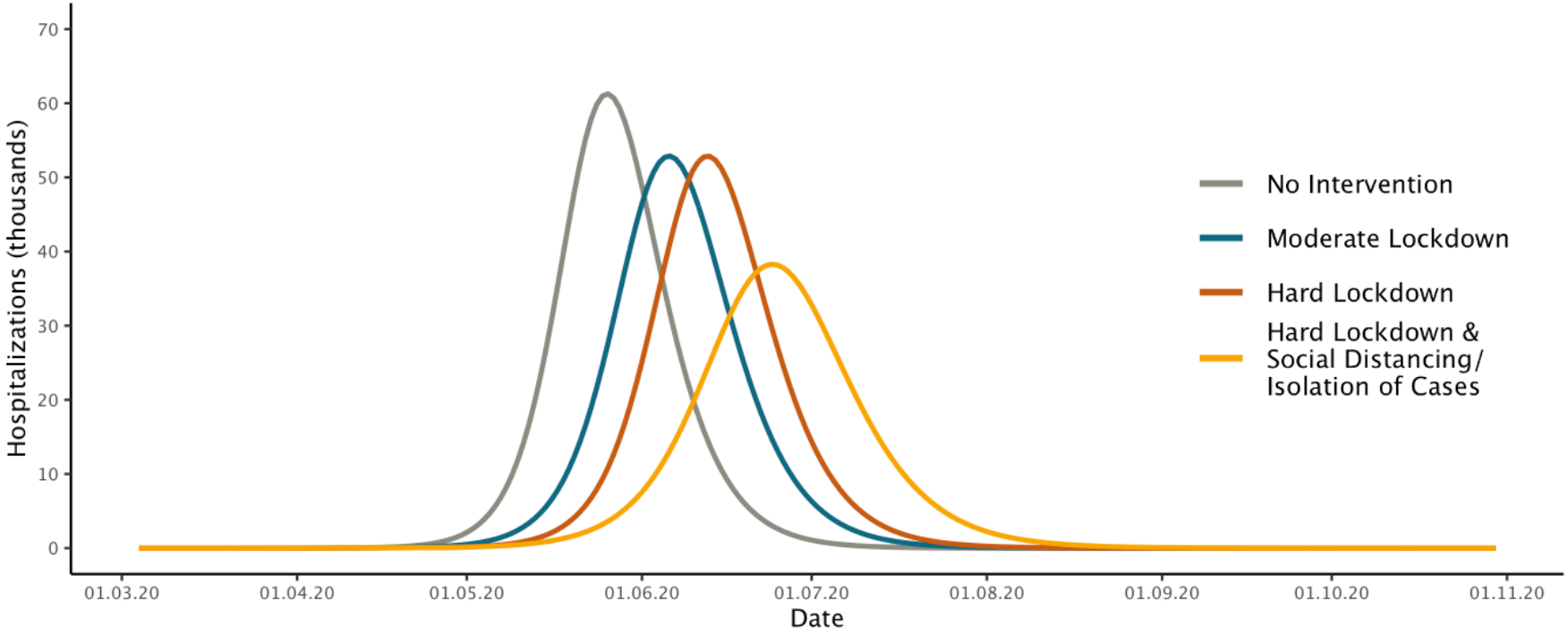
Projected Hospitalizations Under Various Scenarios



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Projected Peak Values for Various Scenarios: Kerala

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	61,255 (30,627–91,882)	10,37,391 (5,18,696–15,56,087)	45,04,858 (22,52,429–67,57,287)
Moderate Lockdown	52,867 (26,434–79,301)	8,97,772 (4,48,886–13,46,658)	38,55,505 (19,27,752–57,83,257)
Hard Lockdown	52,828 (26,414–79,241)	8,97,639 (4,48,819–13,46,458)	38,52,874 (19,26,437–57,79,312)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	38,279 (19,139–57,418)	6,52,364 (3,26,182–9,78,546)	27,56,479 (13,78,240–41,34,718)

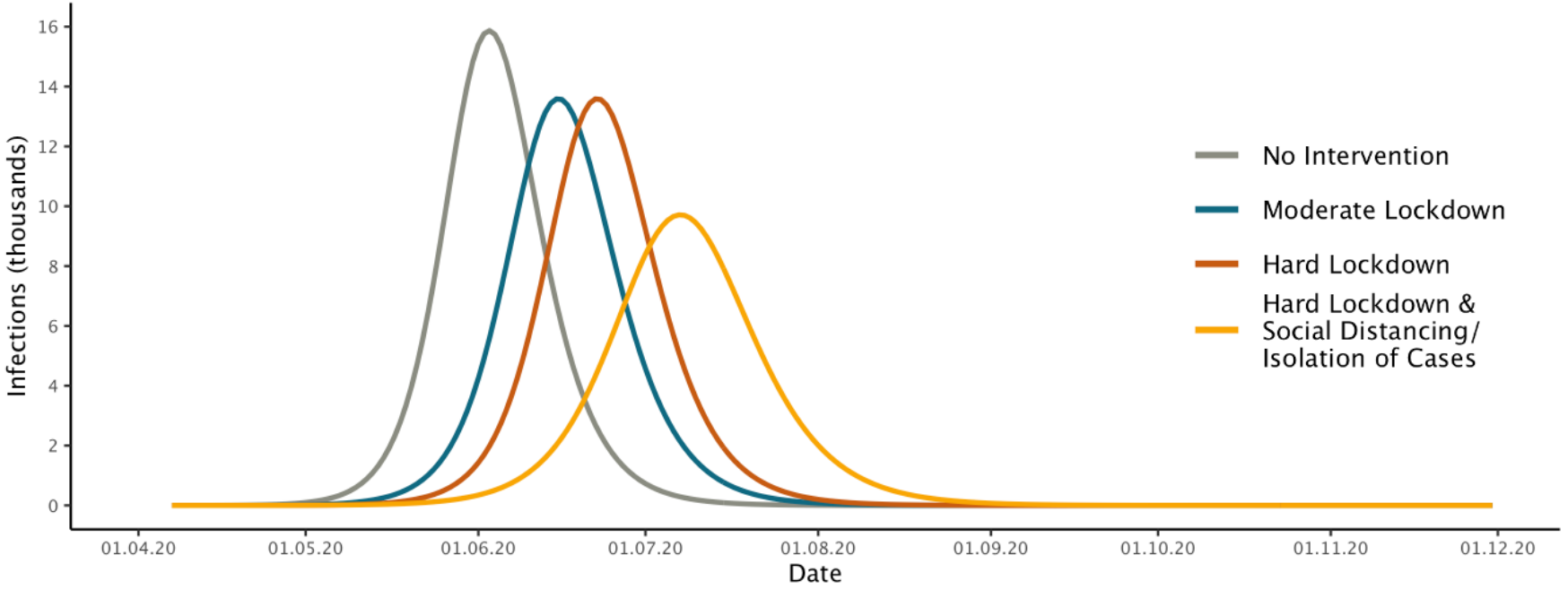
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Lakshadweep

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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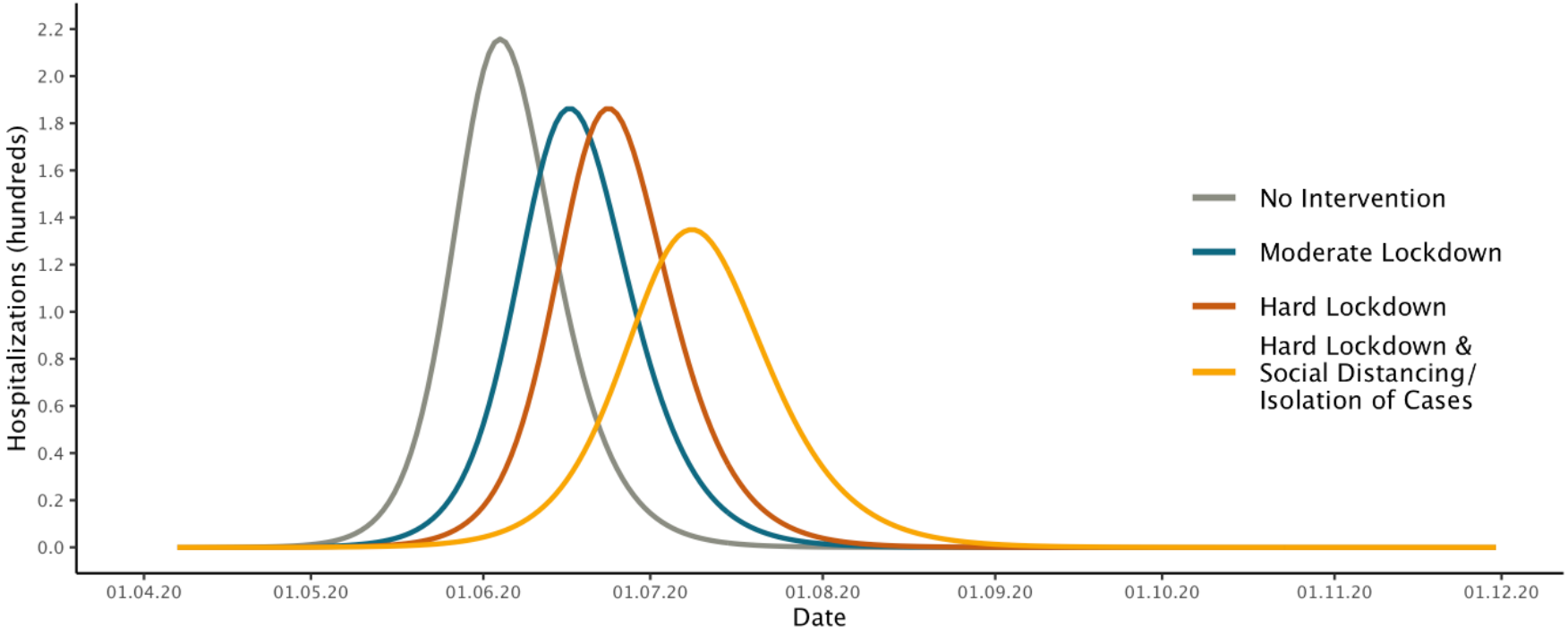
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Lakshadweep

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	216 (108–324)	3,651 (1,826–5,477)	15,869 (7,935–23,804)
Moderate Lockdown	186 (93–279)	3,163 (1,582–4,745)	13,585 (6,792–20,377)
Hard Lockdown	186 (93–279)	3,163 (1,581–4,744)	13,586 (6,793–20,379)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	135 (67–202)	2,300 (1,150–3,450)	9,712 (4,856–14,568)

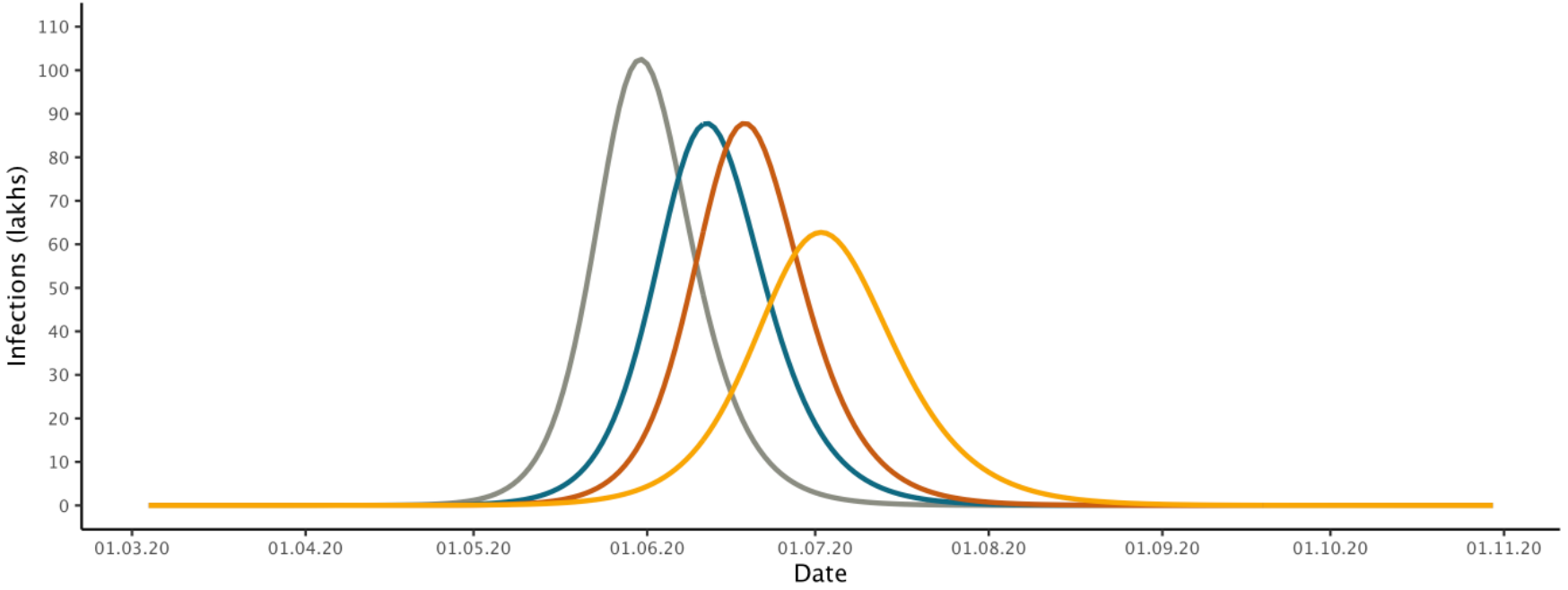
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Madhya Pradesh

Scenarios

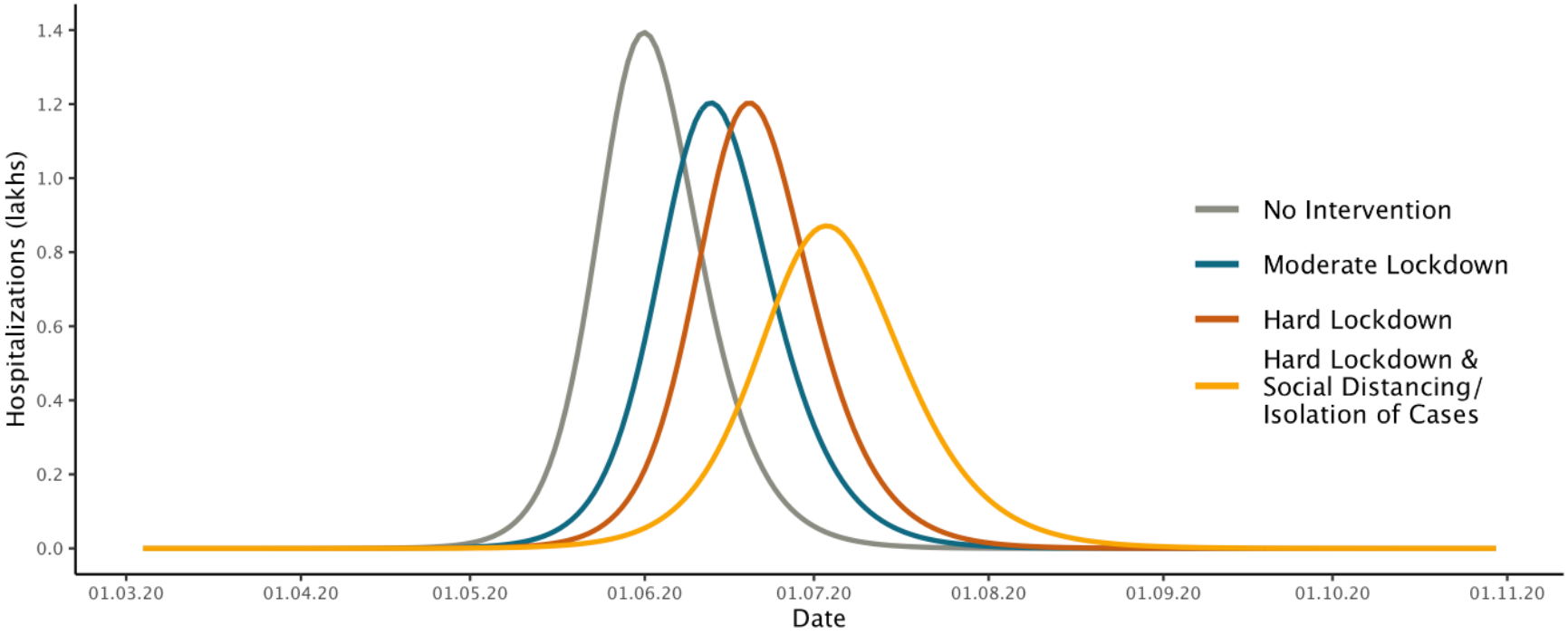
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Madhya Pradesh

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,39,346 (69,673-2,09,018)	23,59,494 (11,79,747-35,39,242)	1,02,48,521 (51,24,260-1,53,72,782)
Moderate Lockdown	1,20,314 (60,157-1,80,471)	20,43,436 (10,21,718-30,65,154)	87,73,702 (43,86,851-1,31,60,553)
Hard Lockdown	1,20,217 (60,108-1,80,325)	20,43,041 (10,21,521-30,64,562)	87,72,701 (43,86,350-1,31,59,052)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	87,106 (43,553-1,30,658)	14,84,664 (7,42,332-22,26,997)	62,74,184 (31,37,092-94,11,276)

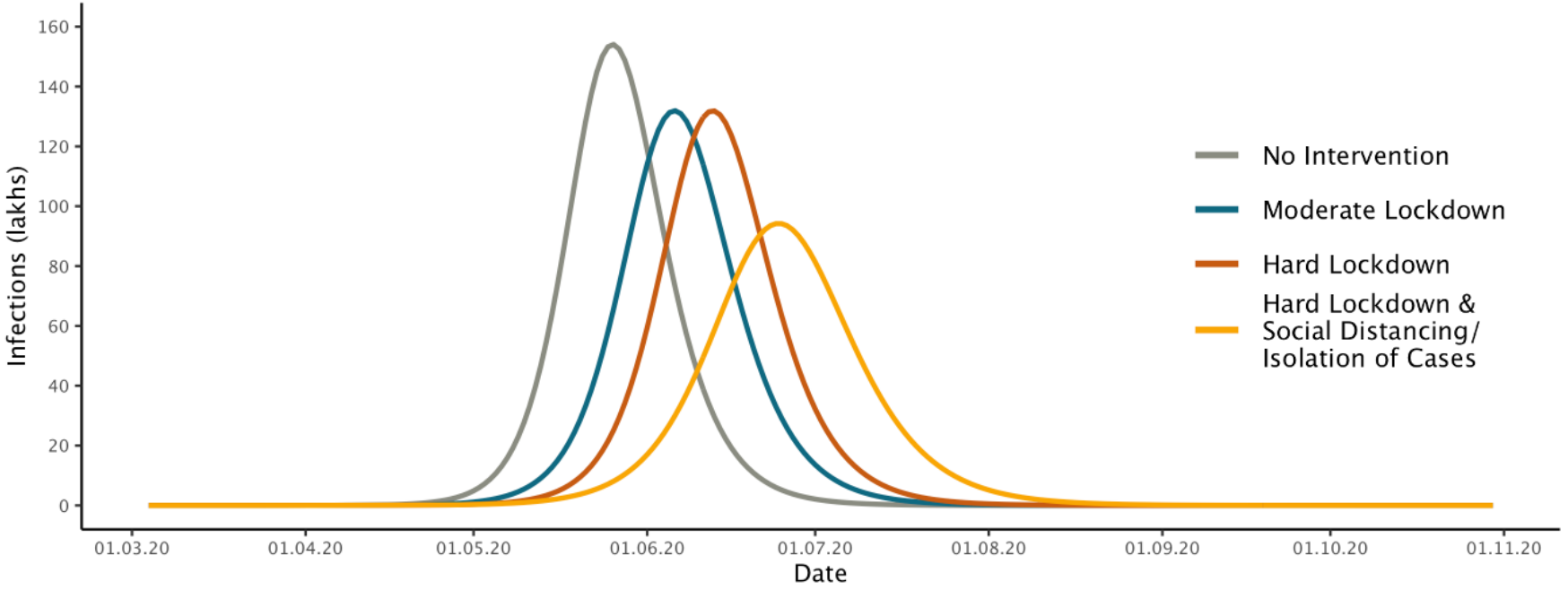
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Maharashtra

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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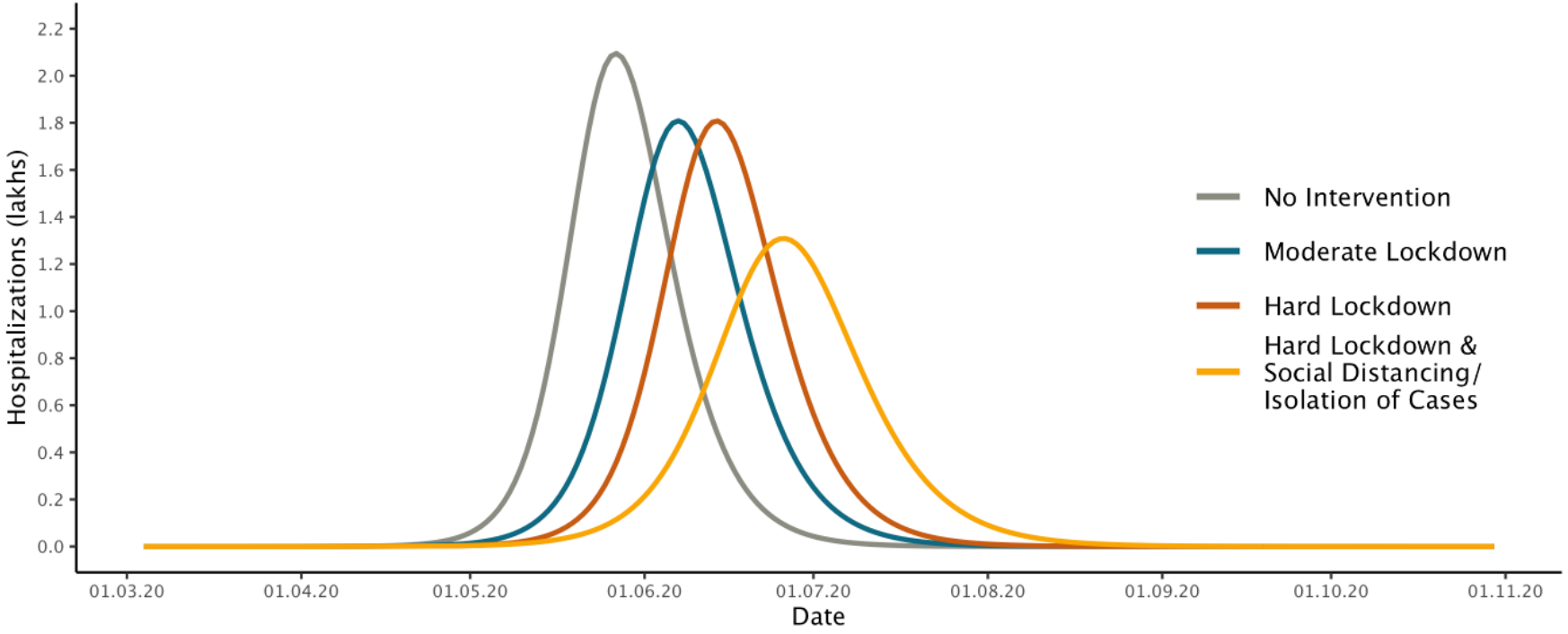
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Maharashtra

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	2,09,452 (1,04,726-3,14,178)	35,46,490 (17,73,245-53,19,736)	1,54,04,815 (77,02,408-2,31,07,222)
Moderate Lockdown	1,80,836 (90,418-2,71,254)	30,68,847 (15,34,424-46,03,270)	1,31,92,347 (65,96,174-1,97,88,520)
Hard Lockdown	1,80,781 (90,391-2,71,172)	30,69,747 (15,34,874-46,04,621)	1,31,84,554 (65,92,277-1,97,76,832)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,30,849 (65,425-1,96,274)	22,31,979 (11,15,989-33,47,968)	94,18,971 (47,09,486-1,41,28,456)

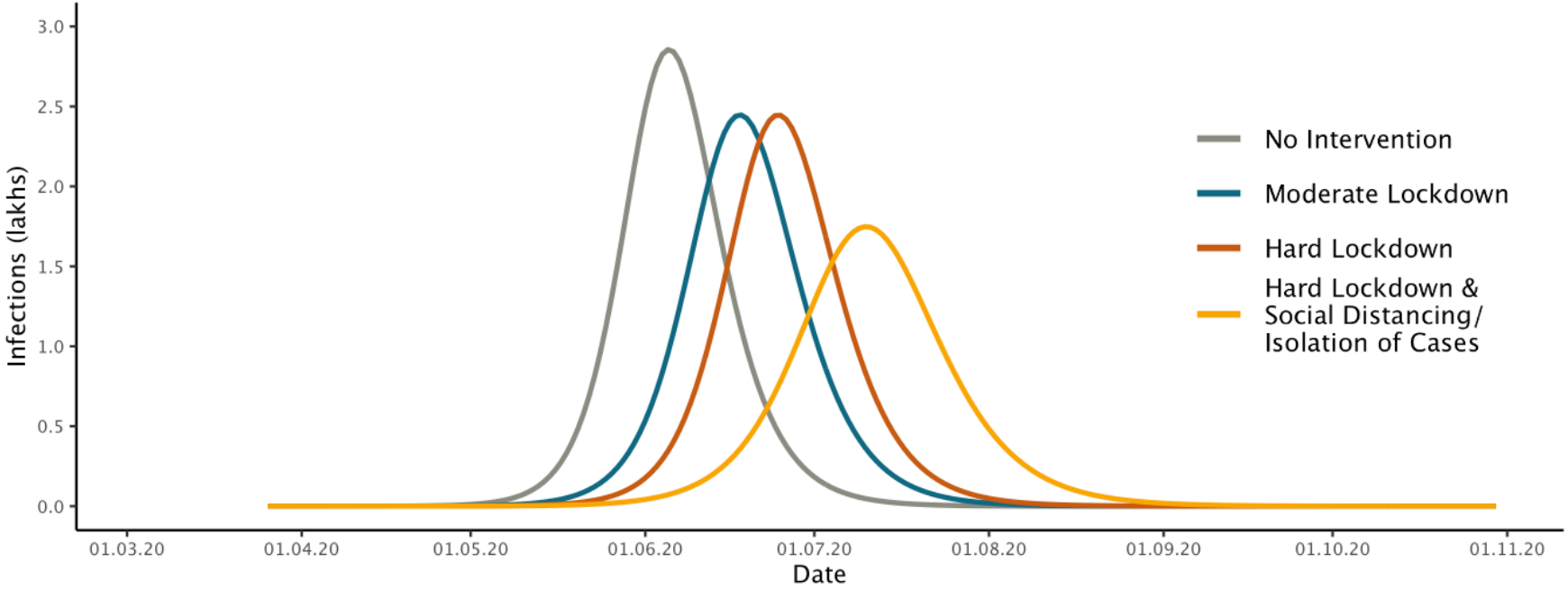
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Manipur

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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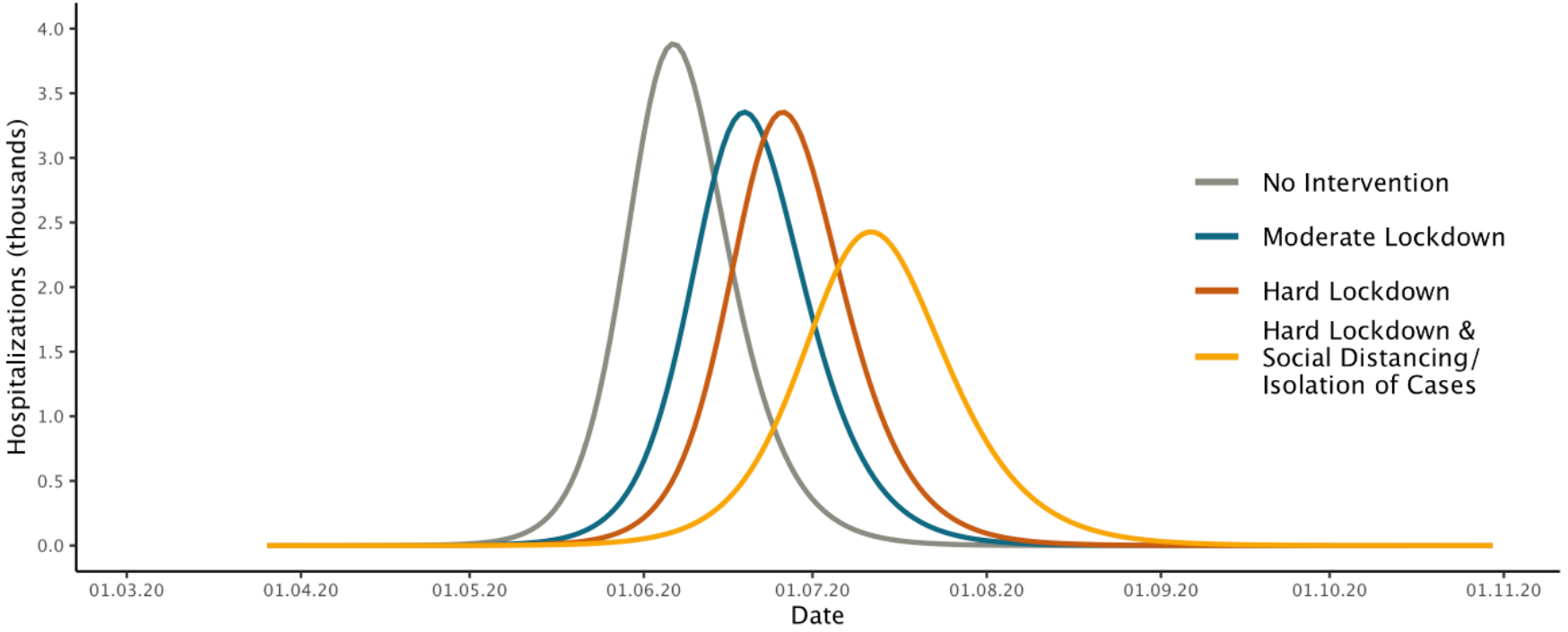
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Manipur

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	3,881 (1,941-5,822)	65,660 (32,830-98,490)	2,85,564 (1,42,782-4,28,347)
Moderate Lockdown	3,354 (1,677-5,031)	56,937 (28,469-85,406)	2,44,669 (1,22,335-367,004)
Hard Lockdown	3,353 (1,676-5,029)	56,947 (28,474-85,421)	2,44,487 (1,22,243-3,66,730)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	2,427 (1,213-3,640)	41,390 (20,695-62,085)	1,74,828 (87,414-2,62,241)

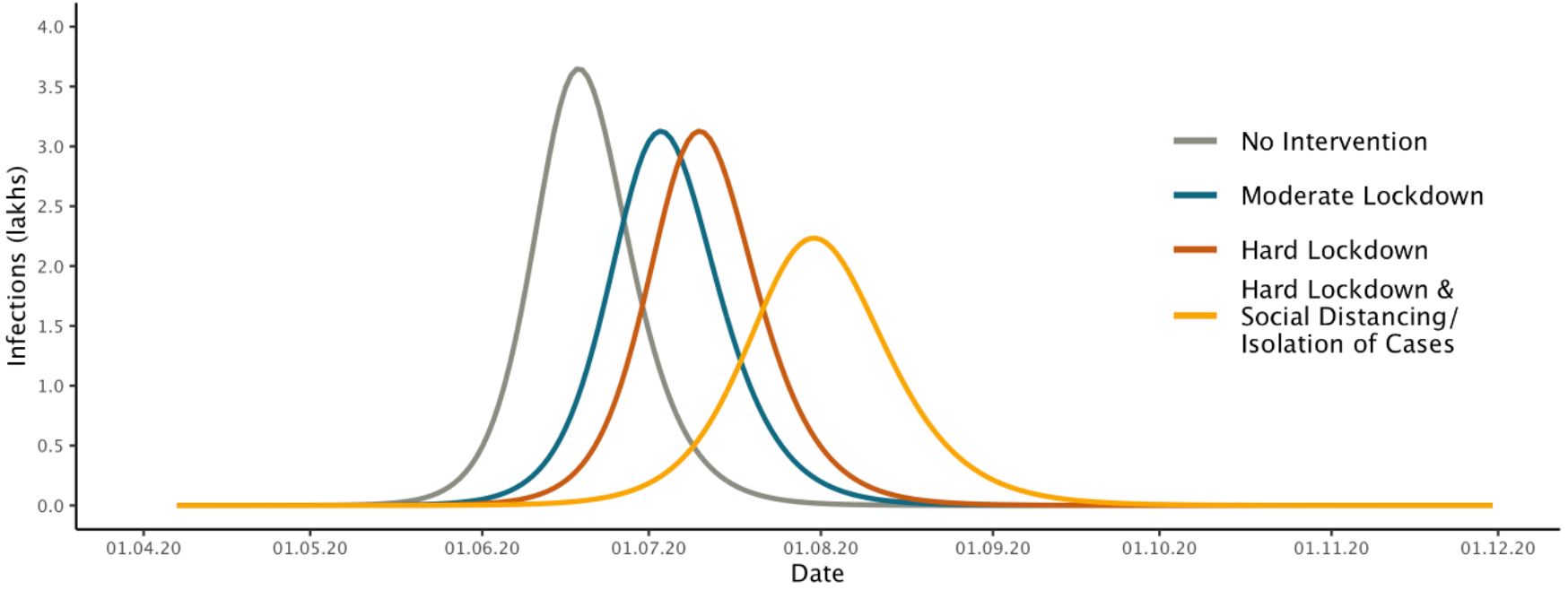
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Meghalaya

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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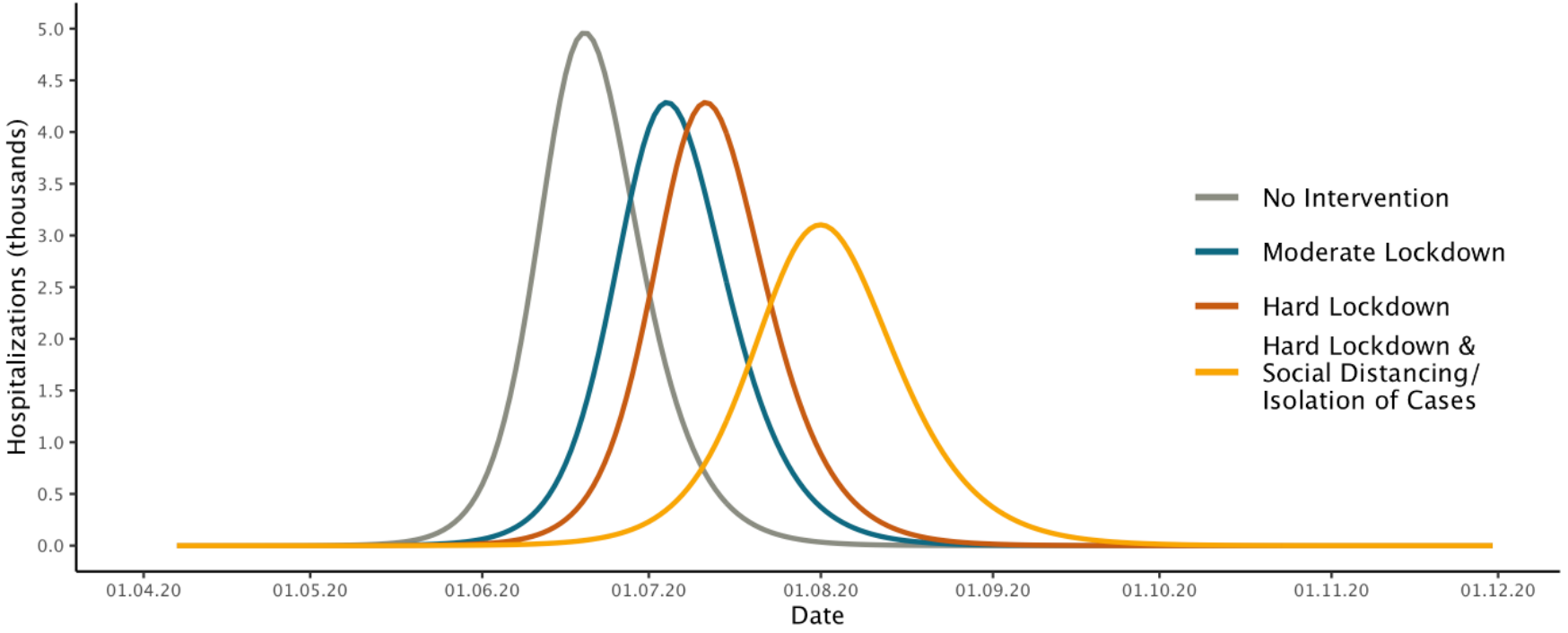
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Meghalaya

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	4,954 (2,477–7,432)	83,982 (41,991–1,25,974)	3,64,557 (1,82,278–5,46,835)
Moderate Lockdown	4,285 (2,142–6,427)	72,702 (36,351–1,09,053)	3,12,702 (1,56,351–4,69,054)
Hard Lockdown	4,285 (2,143–6,428)	72,693 (36,347–1,09,040)	3,12,717 (1,56,358–4,69,075)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	3,103 (1,551–4,654)	52,891 (26,446–79,337)	2,23,388 (1,11,694–3,35,081)

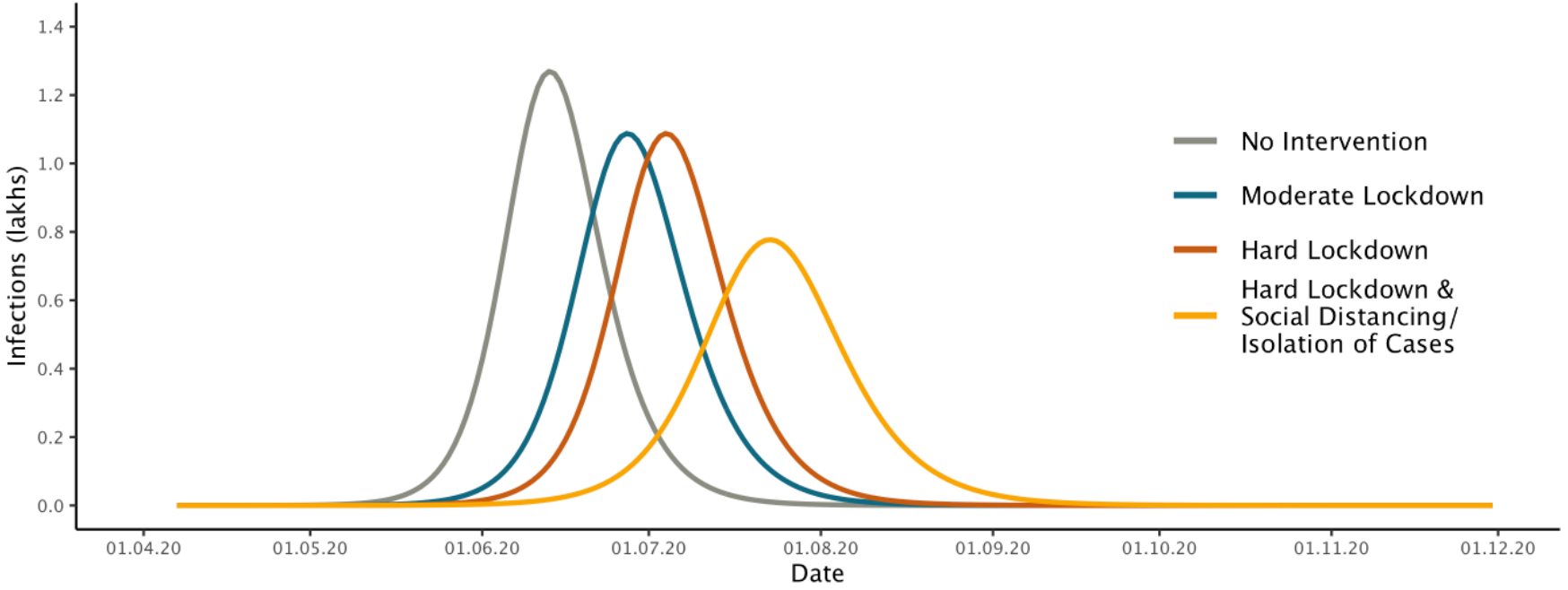
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Mizoram

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in $R0$ is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in $R0$ after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in $R0$ in the "Hard Lockdown & Social Distancing" scenario.

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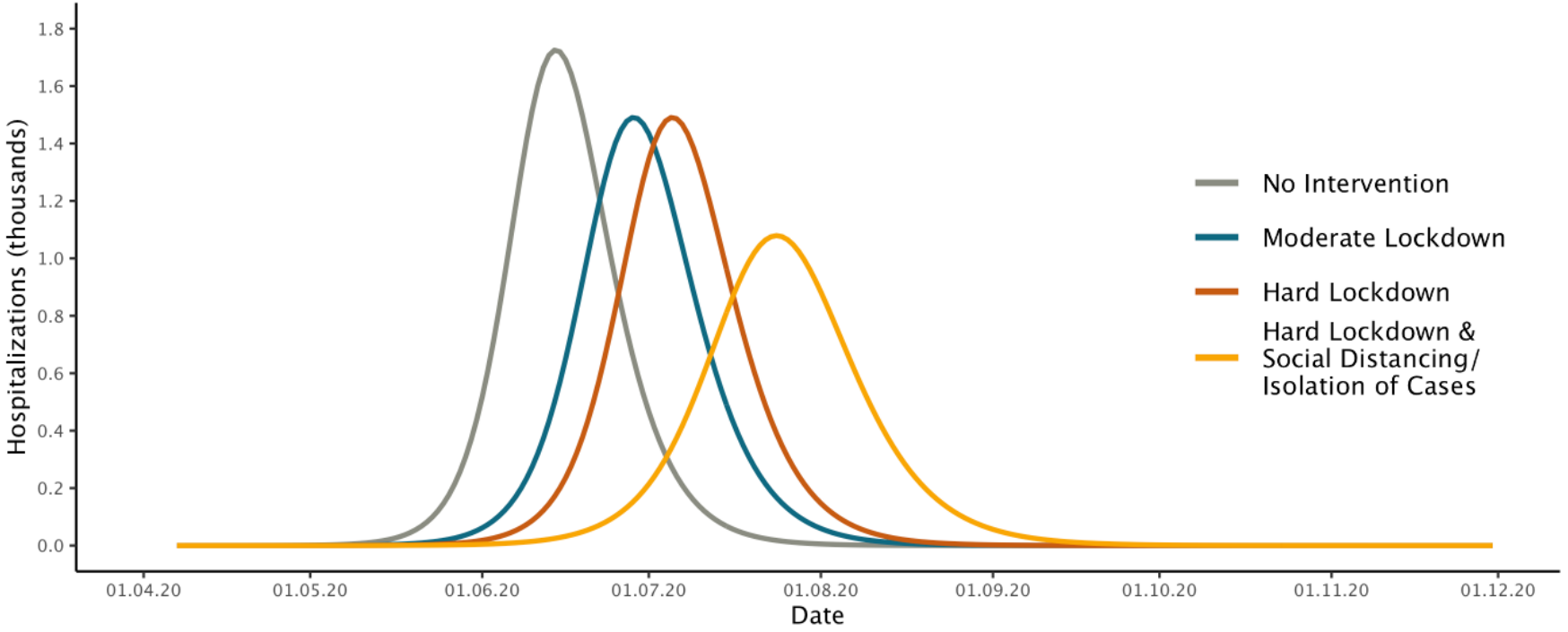
Projected Hospitalizations Under Various Scenarios



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Projected Peak Values for Various Scenarios: Mizoram

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,725 (863-2,588)	29,183 (14,592-43,775)	1,26,916 (63458-190374)
Moderate Lockdown	1,490 (745-2,235)	25,289 (12,644-37,933)	1,08,762 (54,381-1,63,144)
Hard Lockdown	1,490 (745-2,236)	25,286 (12,643-37,929)	1,08,768 (54,384-1,63,152)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,079 (540-1,619)	18,393 (9,197-27,590)	77,711 (38,855-1,16,566)

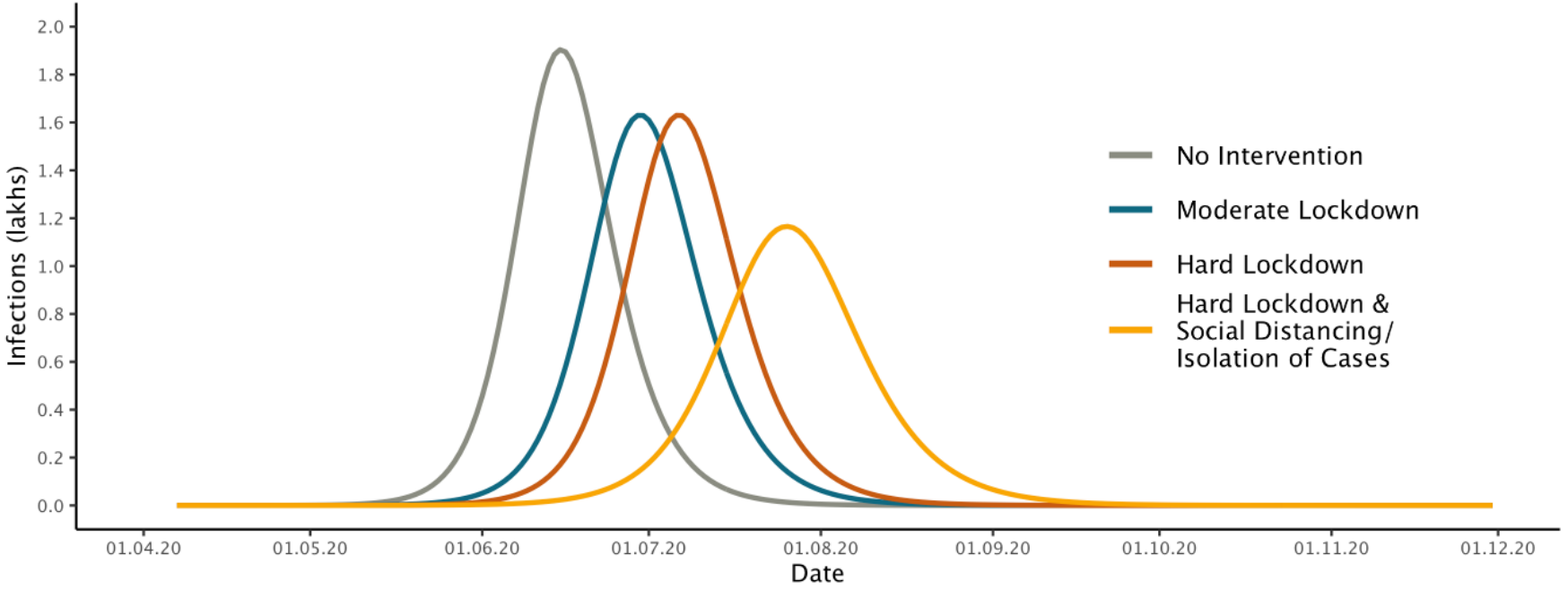
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Nagaland

Scenarios

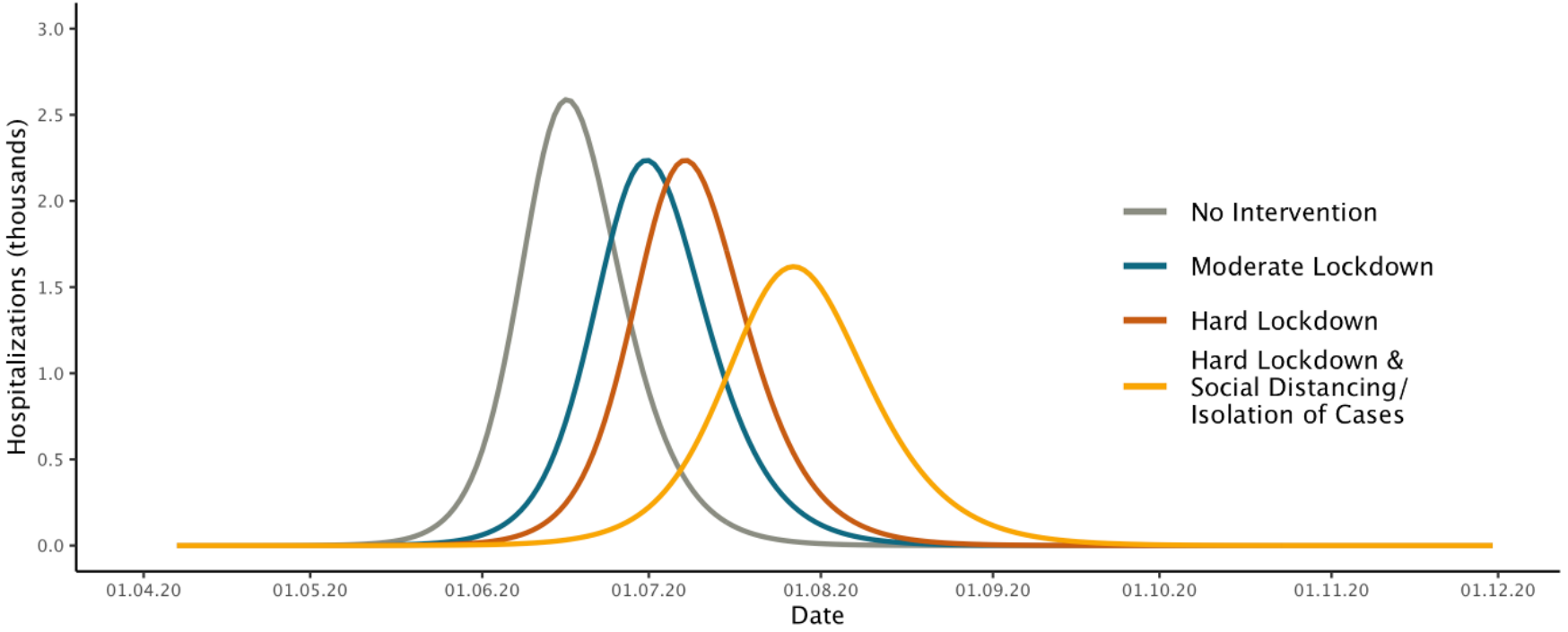
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



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Projected Peak Values for Various Scenarios: Nagaland

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	2,588 (1294-3881)	43,774 (21,887-65,661)	1,90,375 (95,187-2,85,562)
Moderate Lockdown	2,234 (1,117-3,352)	37,965 (18,983-56,948)	1,62,955 (81,477-2,44,432)
Hard Lockdown	2,234 (1,117-3,351)	37,964 (18,982-56,946)	1,62,978 (81,489-2,44,467)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,619 (809-2,428)	27,588 (13,794-41,381)	1,16,571 (58,285-1,74,856)

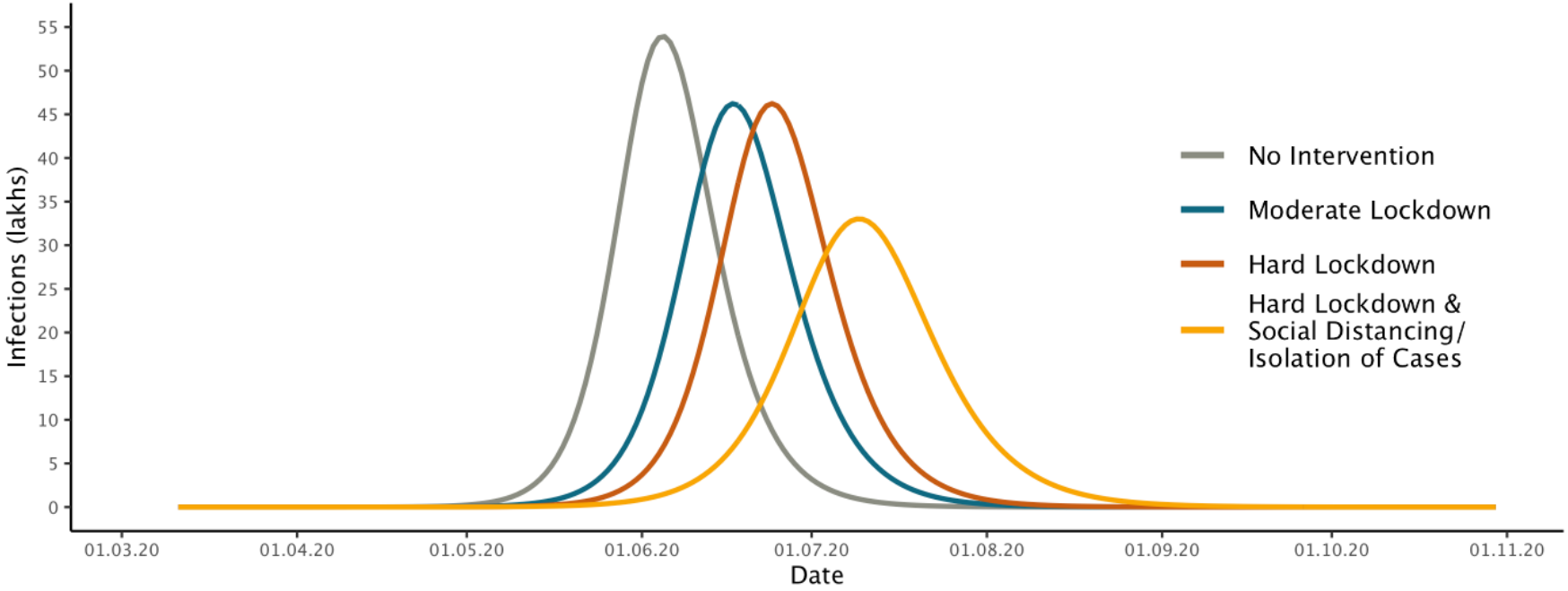
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Odisha

Scenarios

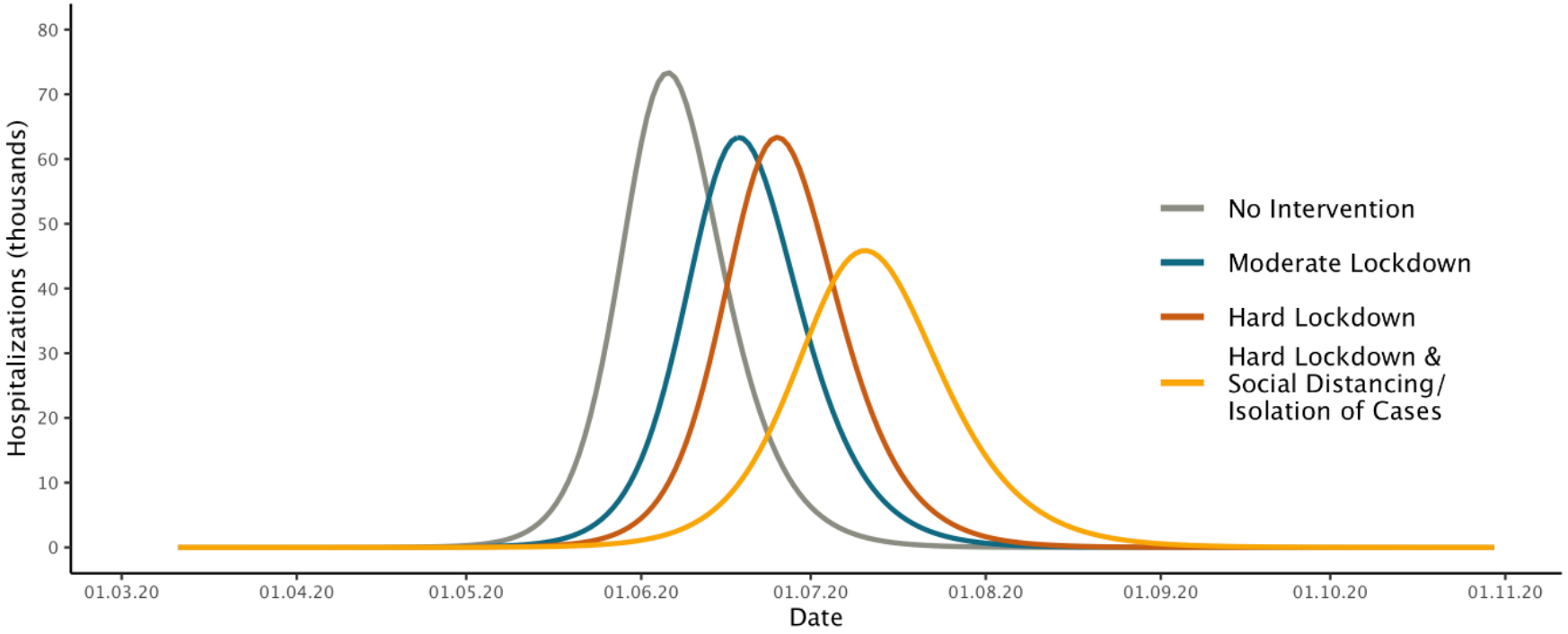
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



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Projected Peak Values for Various Scenarios: Odisha

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	73,309 (36,654-1,09,963)	12,42,051 (6,21,026-18,63,077)	53,90,501 (26,95,250-80,85,752)
Moderate Lockdown	63,331 (31,665-94,996)	10,74,678 (5,37,339-16,12,017)	46,22,004 (23,11,002-69,33,005)
Hard Lockdown	63,356 (31,678-95,034)	10,74,797 (5,37,398-16,12,195)	46,22,770 (23,11,385-69,34,155)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	45,837 (22,918-68,755)	7,81,981 (3,90,991-11,72,972)	33,00,787 (16,50,393-49,51,180)

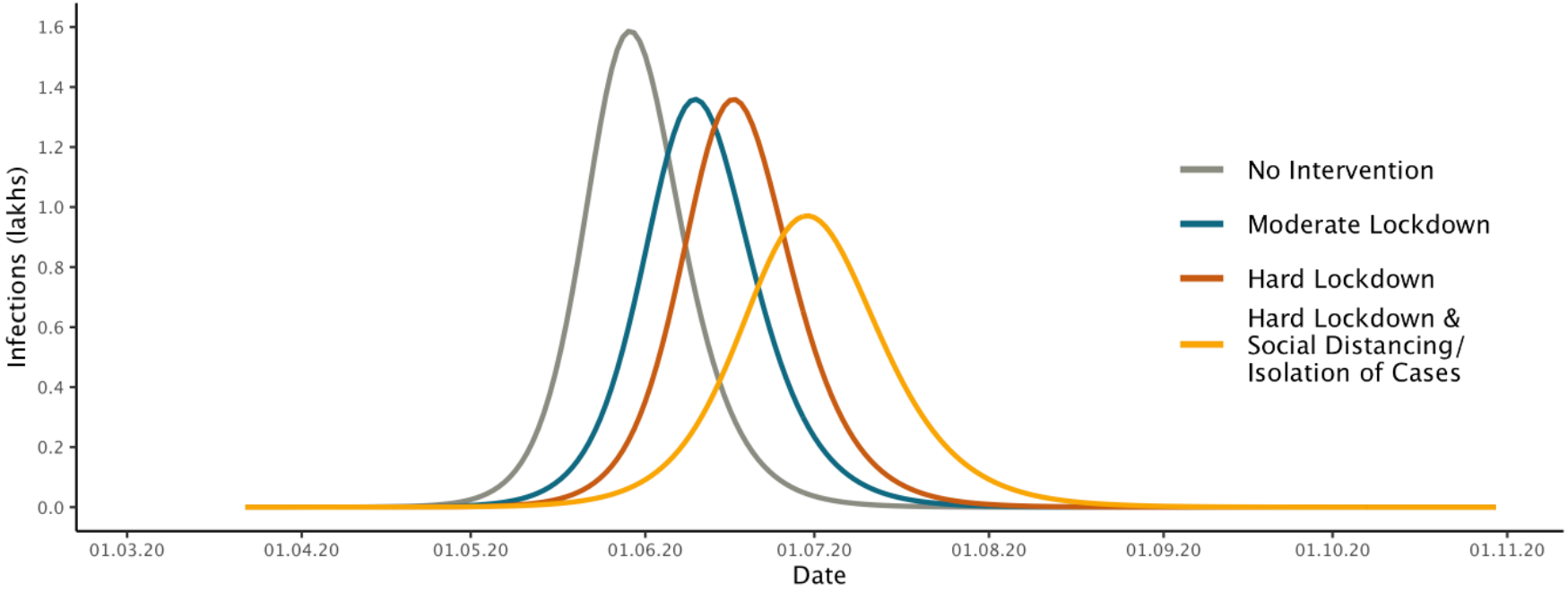
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Puducherry

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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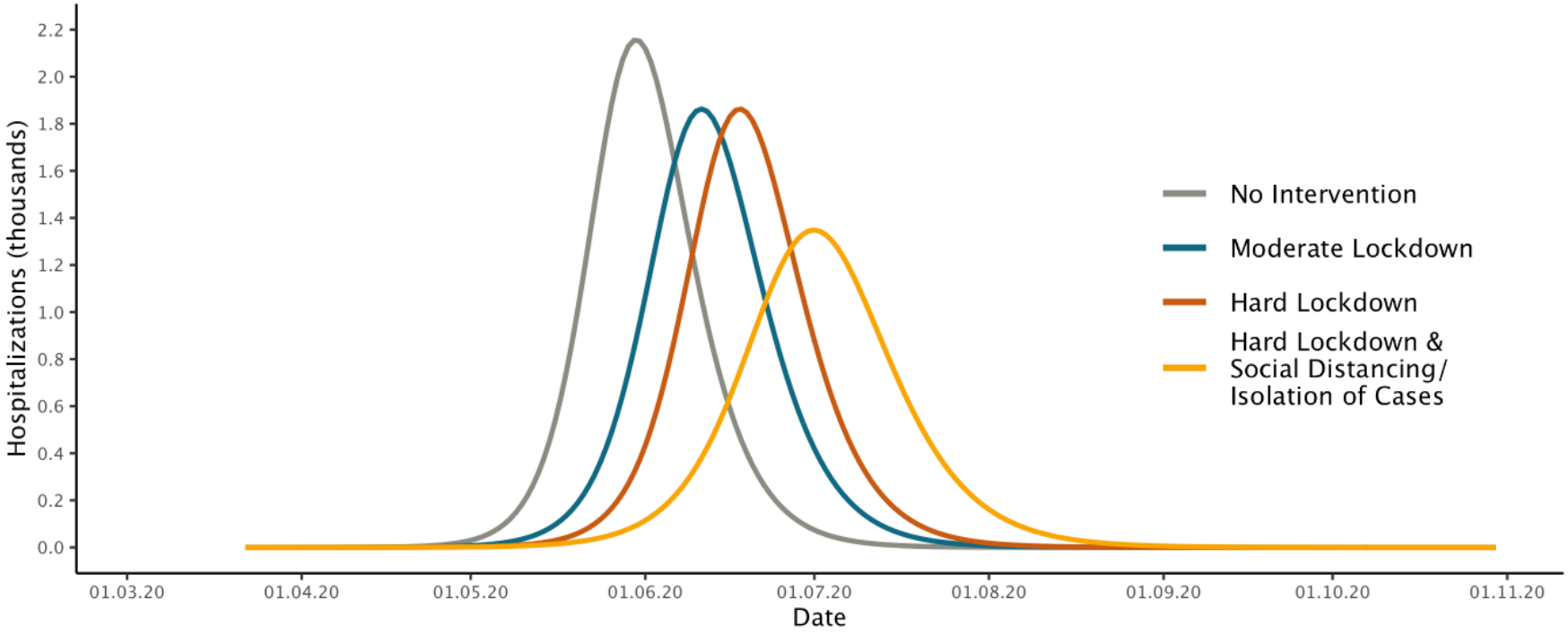
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Puducherry

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	2,155 (1,078–3,233)	36,499 (18,249–54,748)	1,58,587 (79,294–2,37,881)
Moderate Lockdown	1,863 (932–2,795)	31,618 (15,809–47,427)	1,35,911 (67,955–2,03,866)
Hard Lockdown	1,862 (931–2,794)	31,628 (15,814–47,441)	1,35,829 (67,914–2,03,743)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,349 (674–2,023)	22,989 (11,495–34,484)	97,090 (48,545–1,45,635)

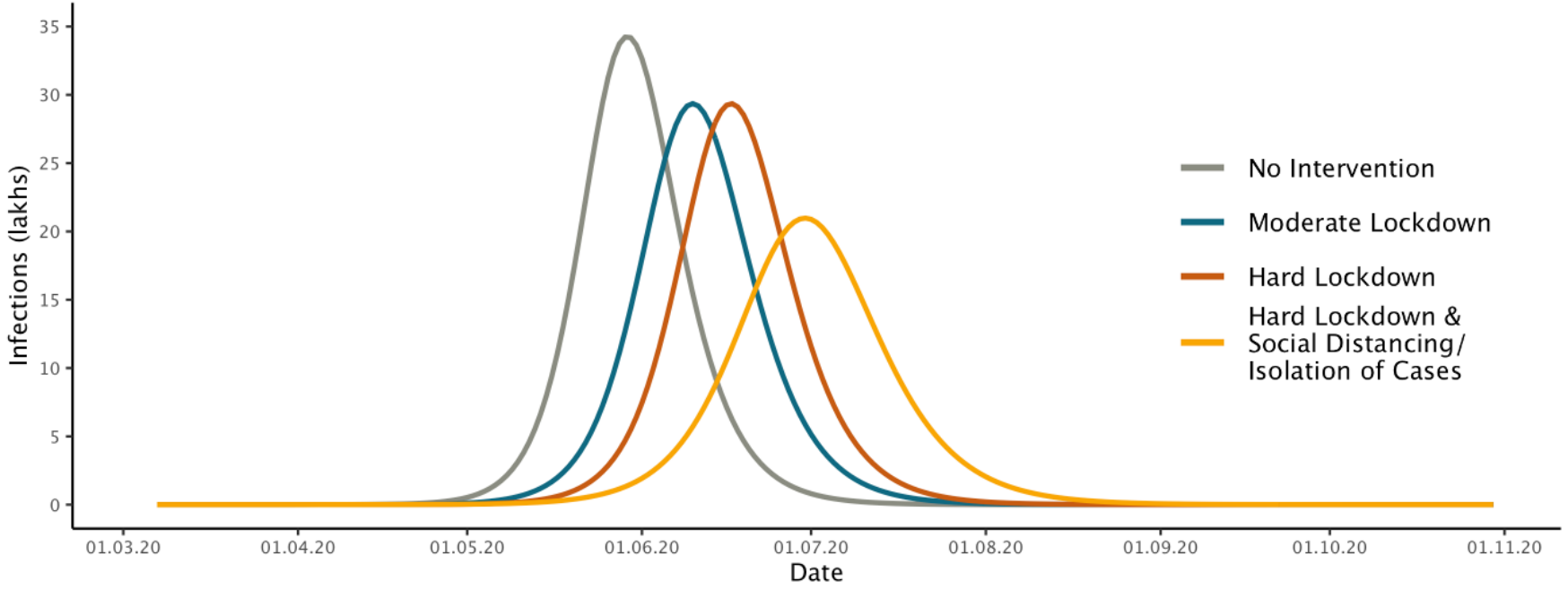
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Punjab

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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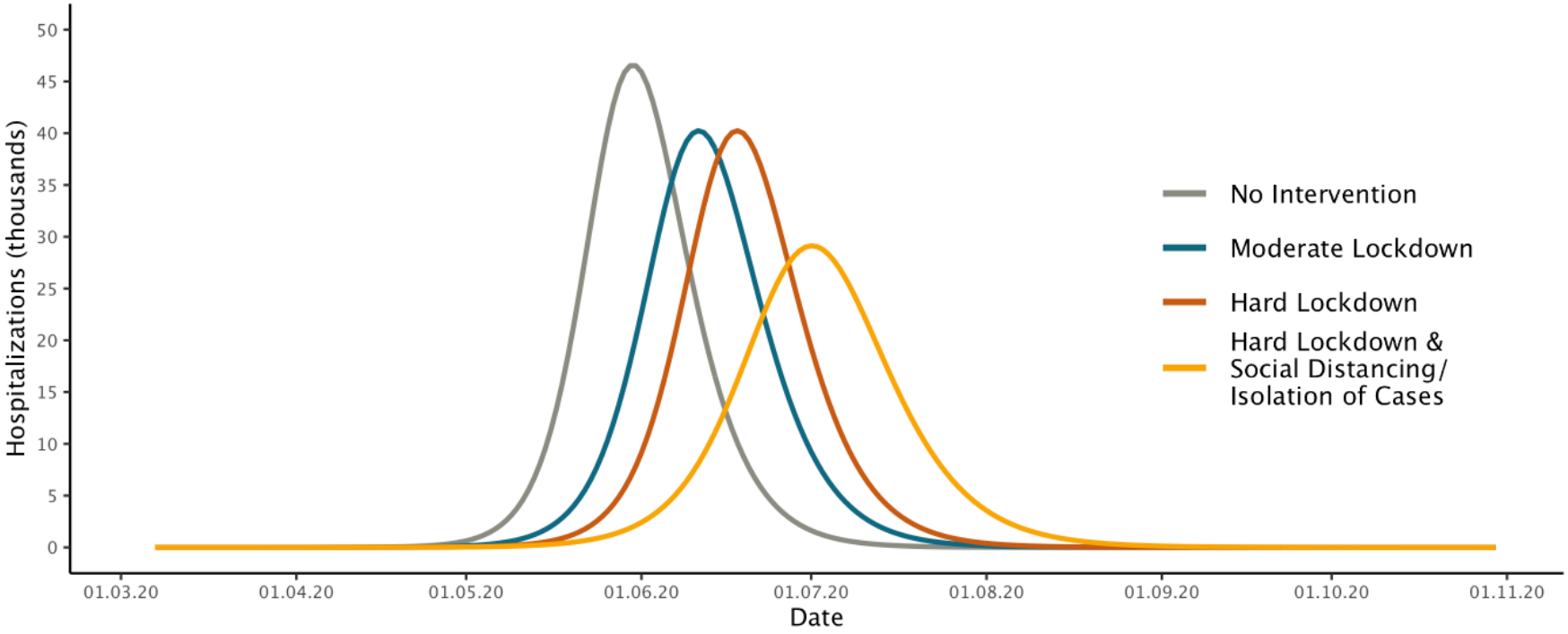
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Punjab

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	46,519 (23,259-69,778)	7,88,784 (3,94,392-11,83,177)	34,22,990 (17,11,495-51,34,486)
Moderate Lockdown	40,239 (20,120-60,359)	6,82,585 (3,41,292-10,23,877)	29,36,100 (14,68,050-44,04,150)
Hard Lockdown	40,240 (20,120-60,359)	6,83,001 (3,41,500-10,24,501)	29,35,356 (14,67,678-44,03,034)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	29,127 (14,564-43,691)	4,96,331 (2,48,165-7,44,496)	20,97,678 (10,48,839-31,46,516)

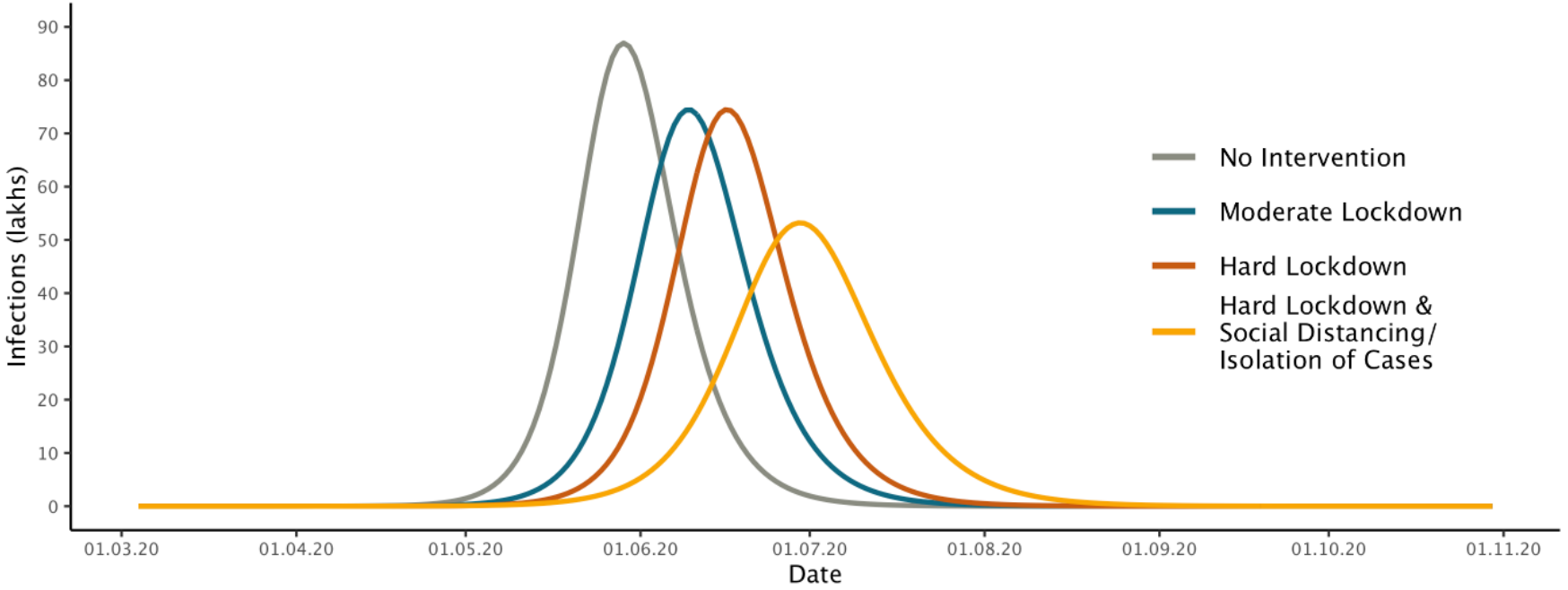
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Rajasthan

Scenarios

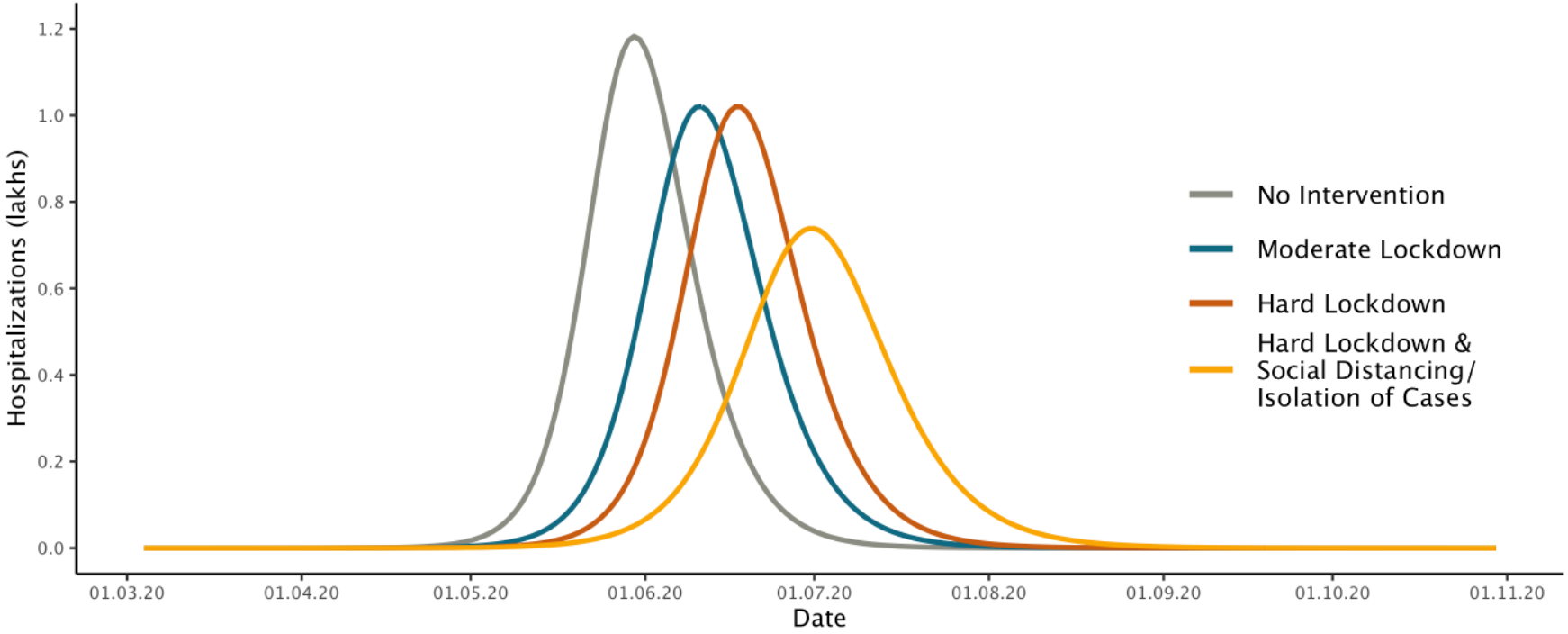
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Rajasthan

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,18,212 (59,106-1,77,318)	20,00,274 (10,00,137-30,00,411)	86,96,037 (43,48,018-1,30,44,056)
Moderate Lockdown	1,02,021 (51,010-1,53,031)	17,33,199 (8,66,600-2599,799)	74,38,616 (37,19,308-1,11,57,923)
Hard Lockdown	1,01,977 (50,989-1,52,966)	17,32,558 (8,66,279-25,98,836)	74,43,602 (37,21,801-1,11,65,402)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	73,836 (36,918-1,10,754)	12,59,930 (6,29,965-18,89,895)	53,20,088 (26,60,044-79,80,131)

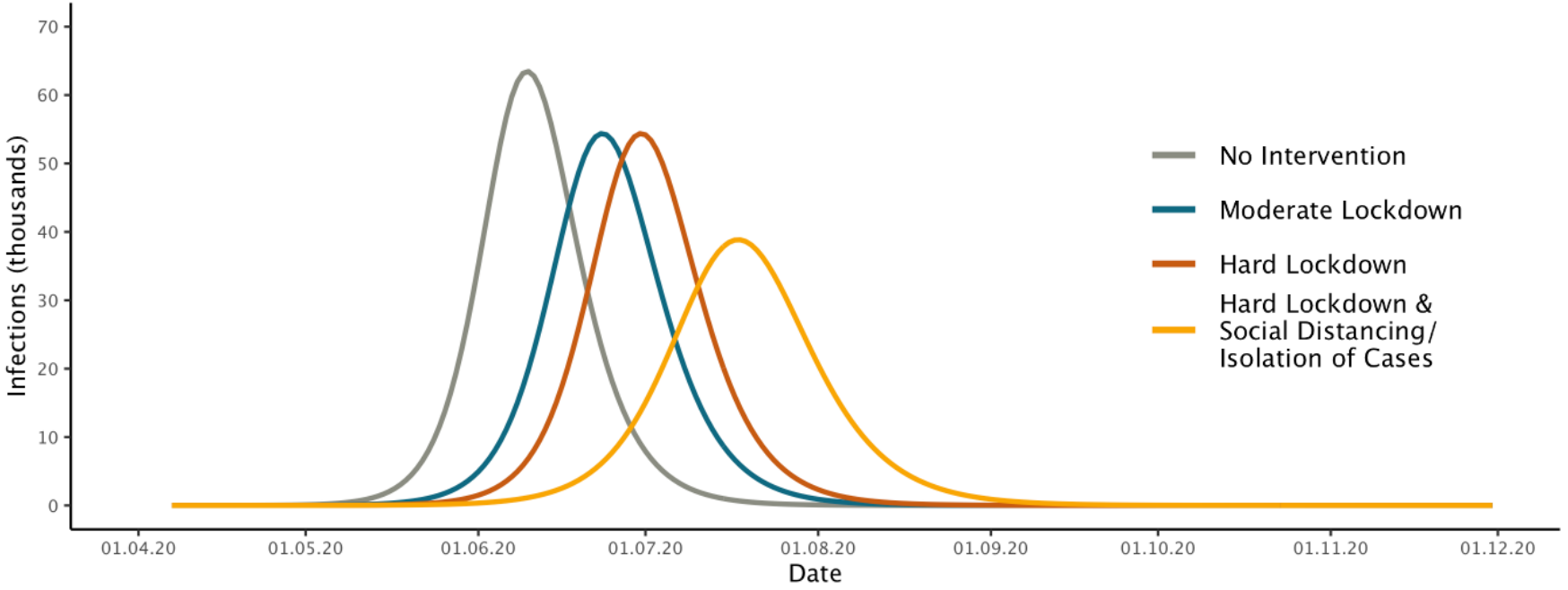
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Sikkim

Scenarios

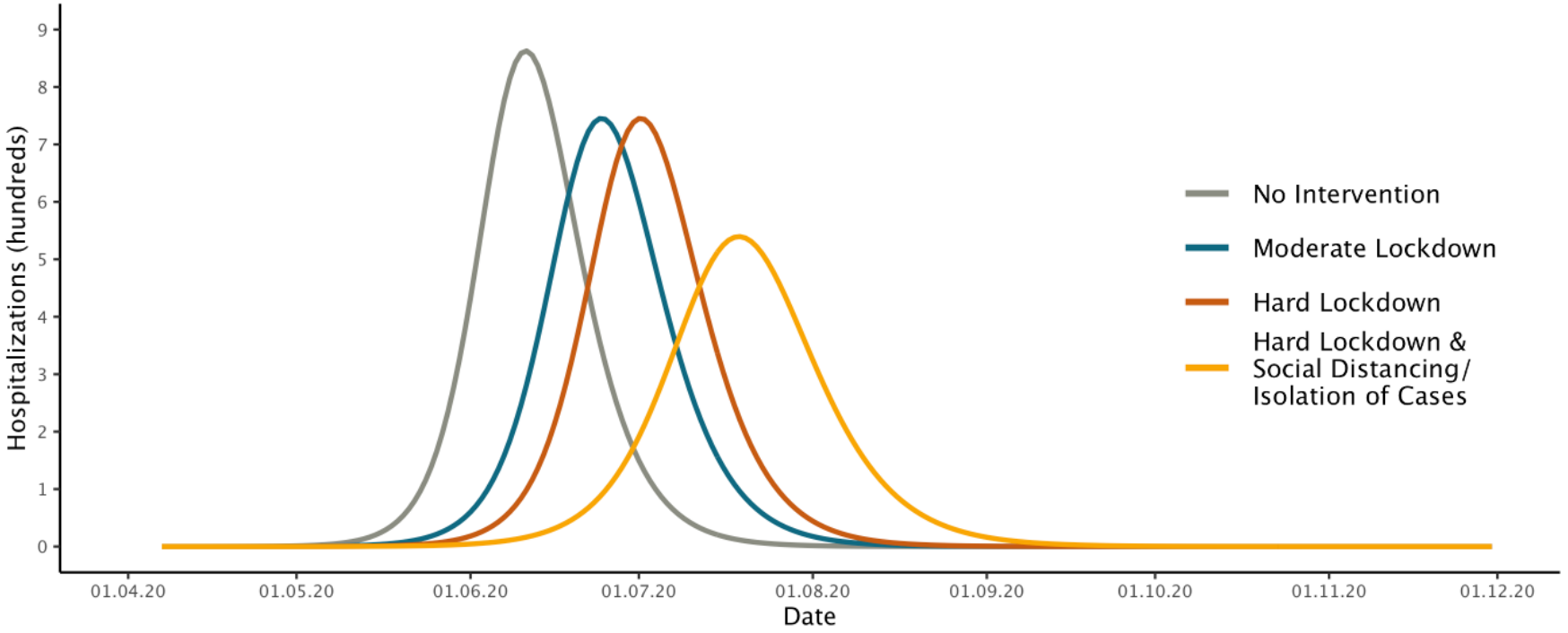
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Sikkim

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	863 (431–1,294)	14,611 (7,306–21,917)	63,451 (31,725–95,176)
Moderate Lockdown	745 (372–1,117)	12,648 (6,324–18,972)	54,371 (27,186–81,557)
Hard Lockdown	745 (373–1,118)	12,647 (6,323–18,970)	54,375 (27187–81,562)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	540 (270–809)	9,200 (4,600–13,800)	38,841 (19,420–58,261)

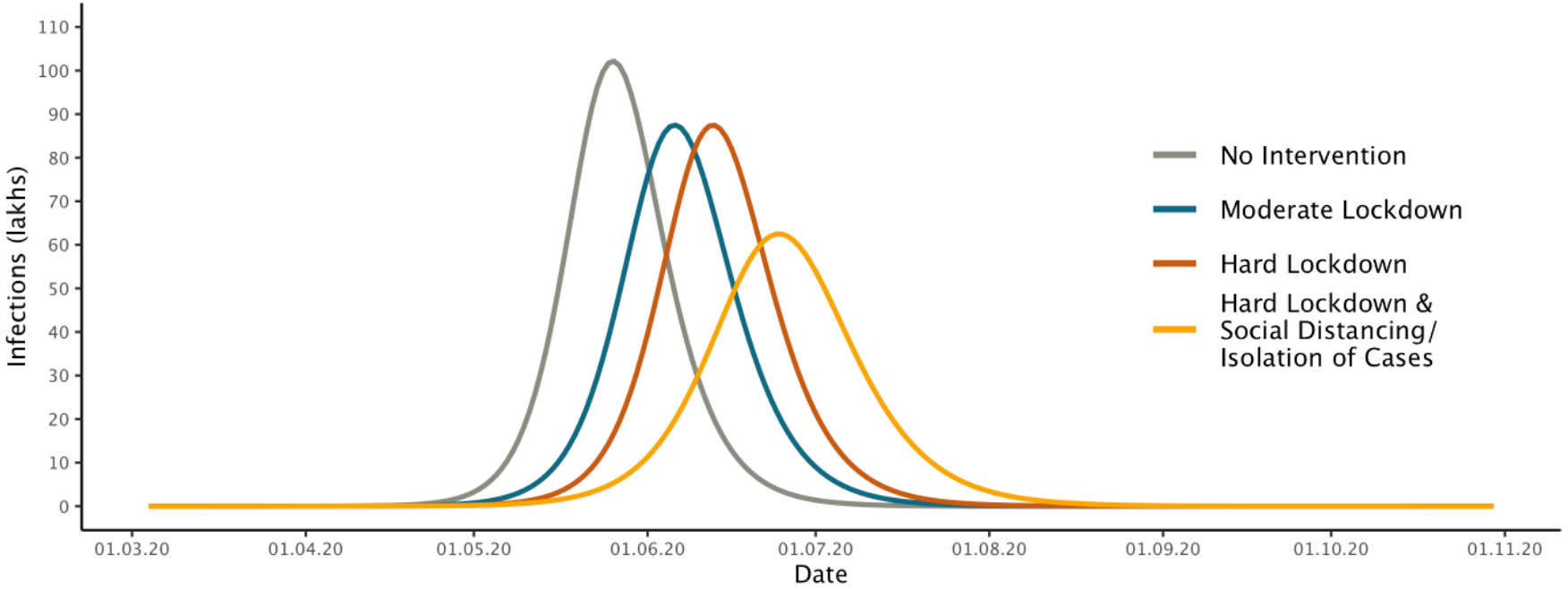
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Tamil Nadu

Scenarios

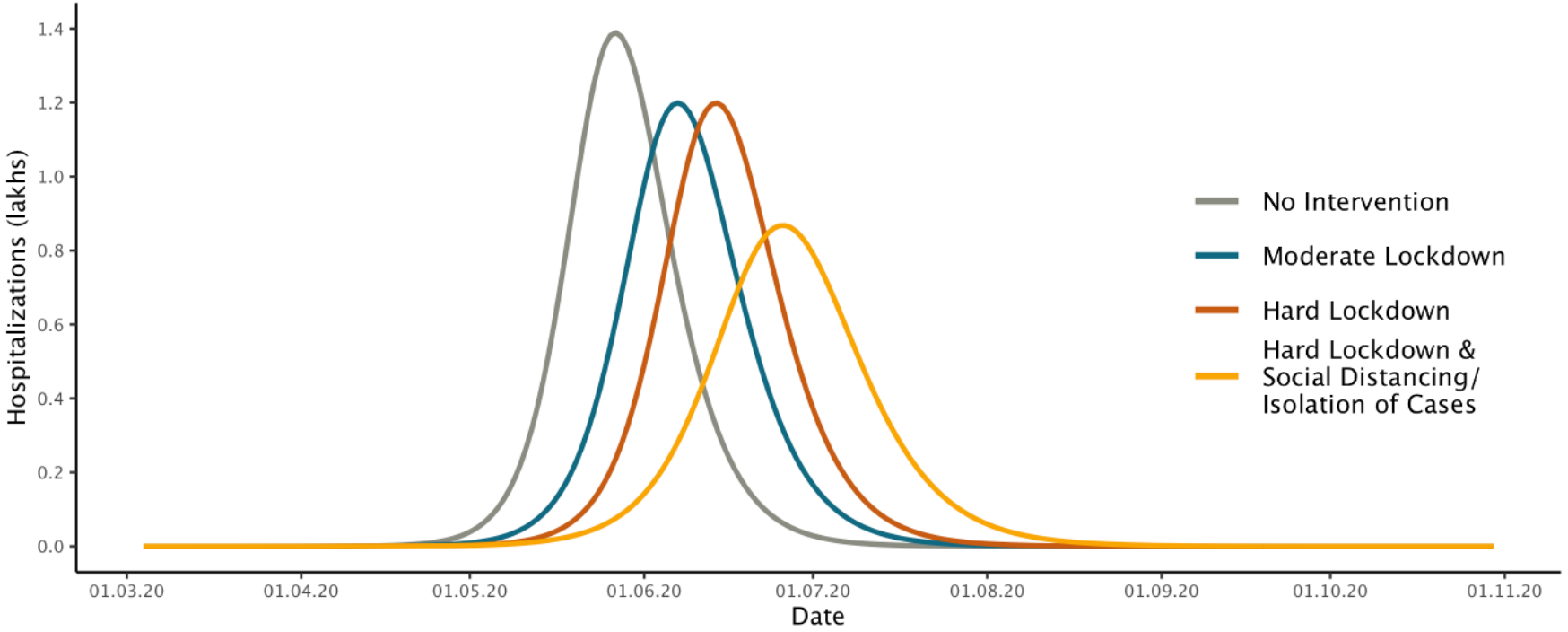
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Tamil Nadu

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,38,912 (69,456–2,08,368)	23,52,238 (11,76,119–35,28,356)	1,02,16,500 (51,08,250–1,53,24,750)
Moderate Lockdown	1,19,935 (59,968–1,79,903)	20,35,472 (10,17,736–30,53,207)	87,49,292 (43,74,646–1,31,23,938)
Hard Lockdown	1,19,894 (59,947–1,79,842)	20,35,987 (10,17,993–30,53,980)	87,43,733 (43,71,866–1,31,15,600)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	86,778 (43,389–1,30,167)	14,80,316 (7,40,158–22,20,474)	62,47,511 (31,23,756–93,71,266)

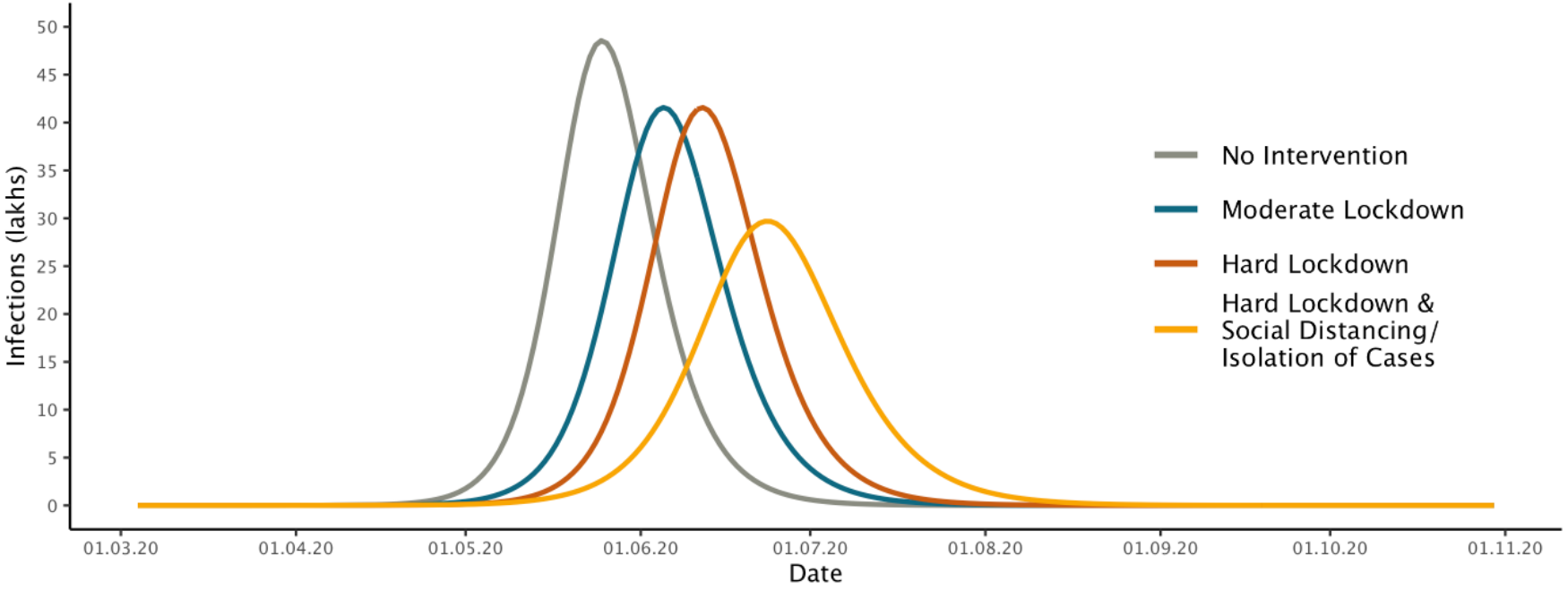
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Telangana

Scenarios

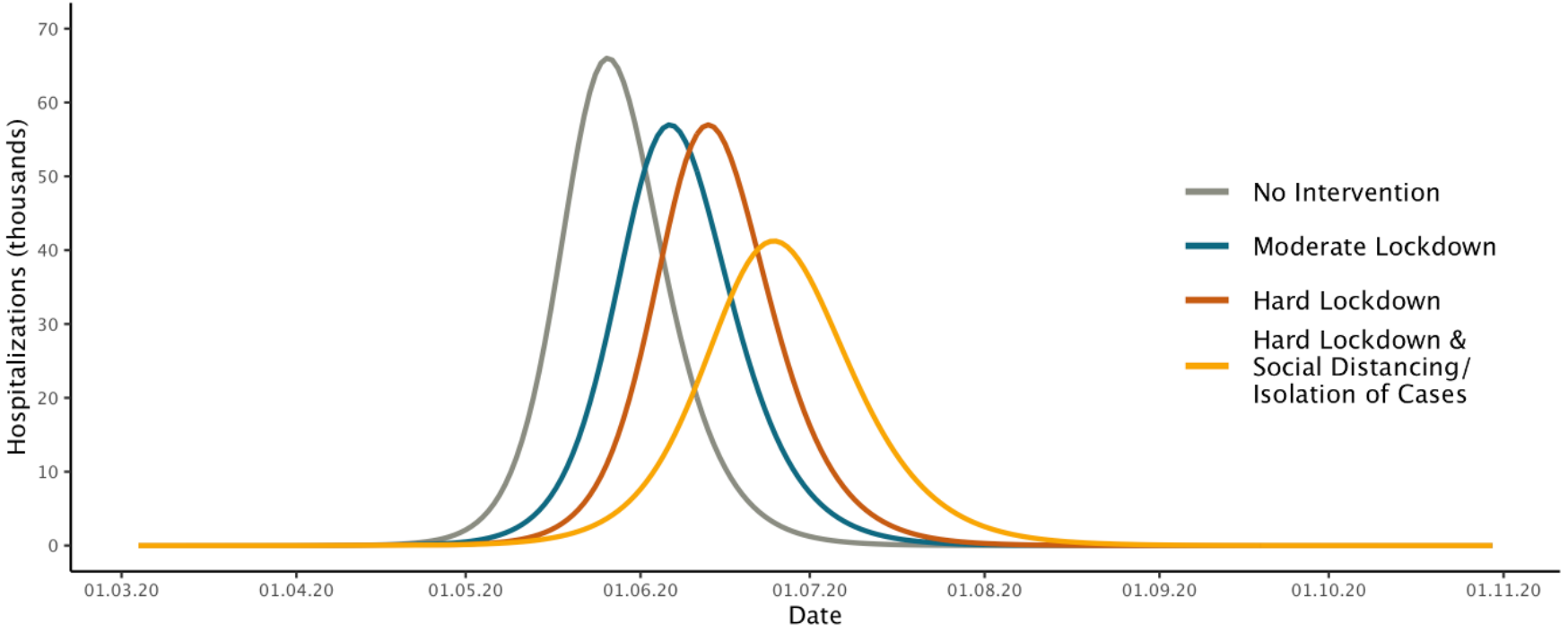
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: Telangana

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	65,992 (32,996-98,988)	11,16,135 (5,58,067-16,74,202)	48,55,143 (24,27,572-72,82,714)
Moderate Lockdown	56,971 (28,485-85,456)	9,66,186 (4,83,093-14,49,278)	41,57,263 (20,78,631-62,35,894)
Hard Lockdown	56,978 (28,489-85,466)	9,66,869 (4,83,434-14,50,303)	41,56,740 (20,78,370-62,35,110)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	41,227 (20,614-61,841)	7,03,307 (3,51,654-10,54,961)	29,68,398 (14,84,199-44,52,597)

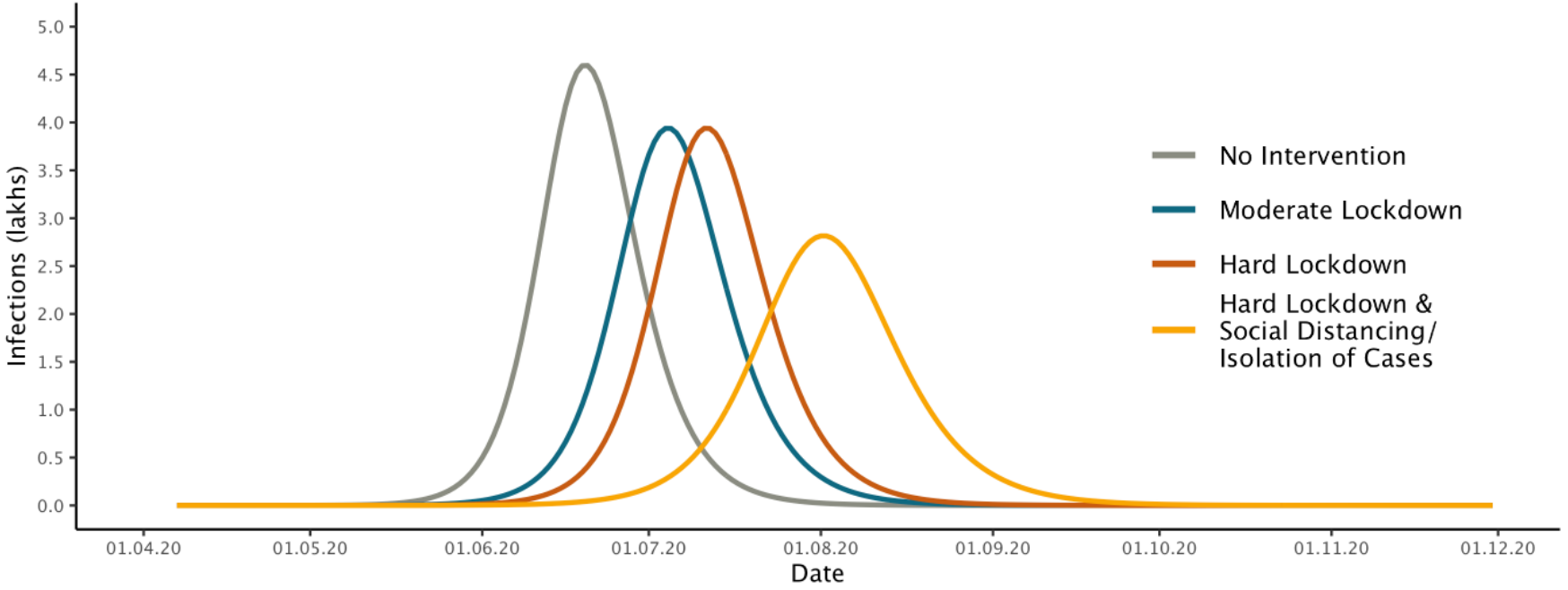
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Tripura

Scenarios

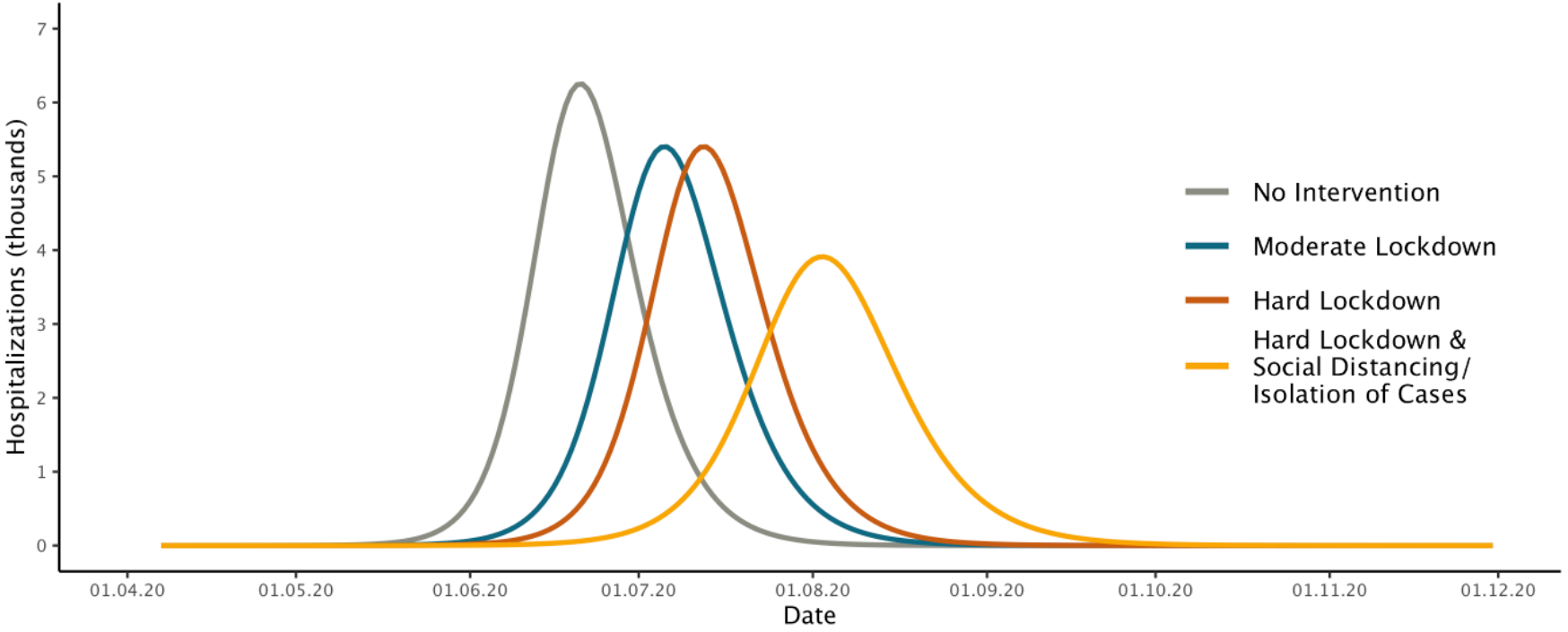
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Tripura

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	6,249 (3,125-9,374)	1,05,929 (52,965-1,58,894)	4,59,429 (2,29,714-6,89,143)
Moderate Lockdown	5,400 (2,700-8,100)	91,750 (45,875-1,37,626)	3,93,803 (1,96,901-5,90,704)
Hard Lockdown	5,399 (2,700-8,099)	91,747 (45,874-1,37,621)	3,93,859 (1,96,930-5,90,789)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	3,911 (1,955-5,866)	66,705 (33,353-1,00,058)	2,81,495 (1,40,747-4,22,242)

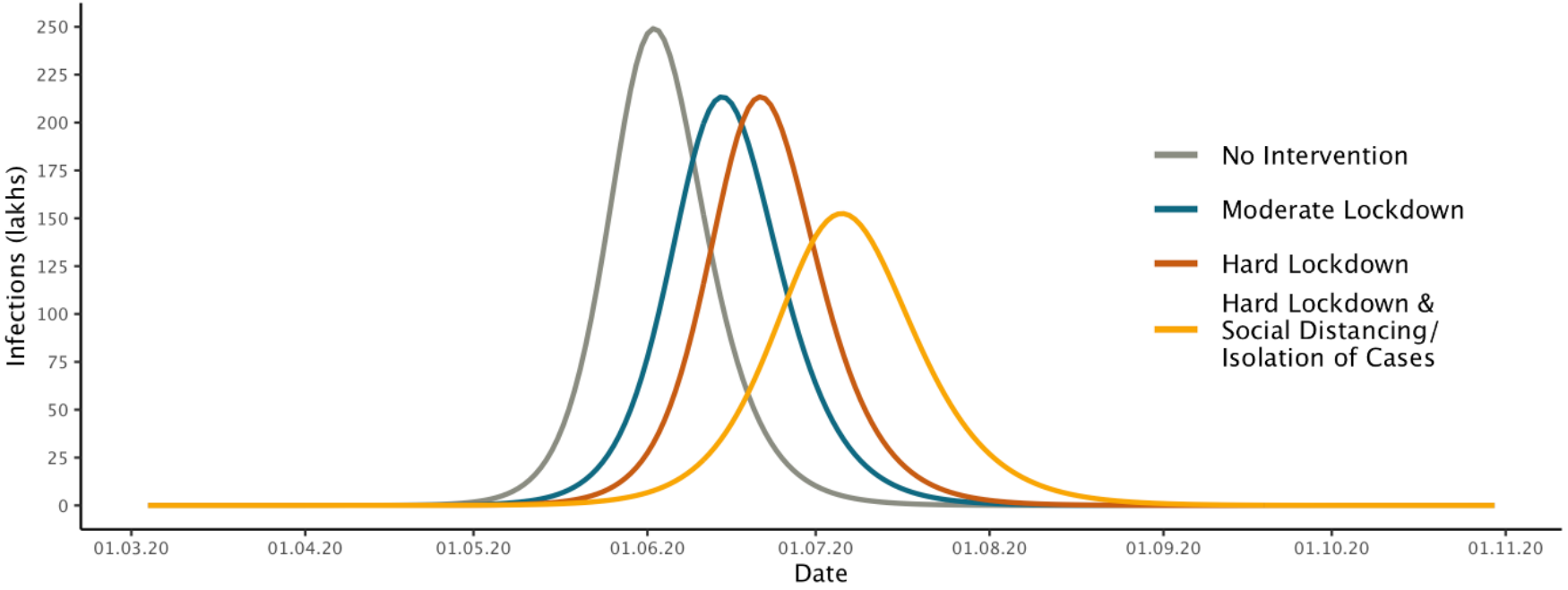
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Uttar Pradesh

Scenarios

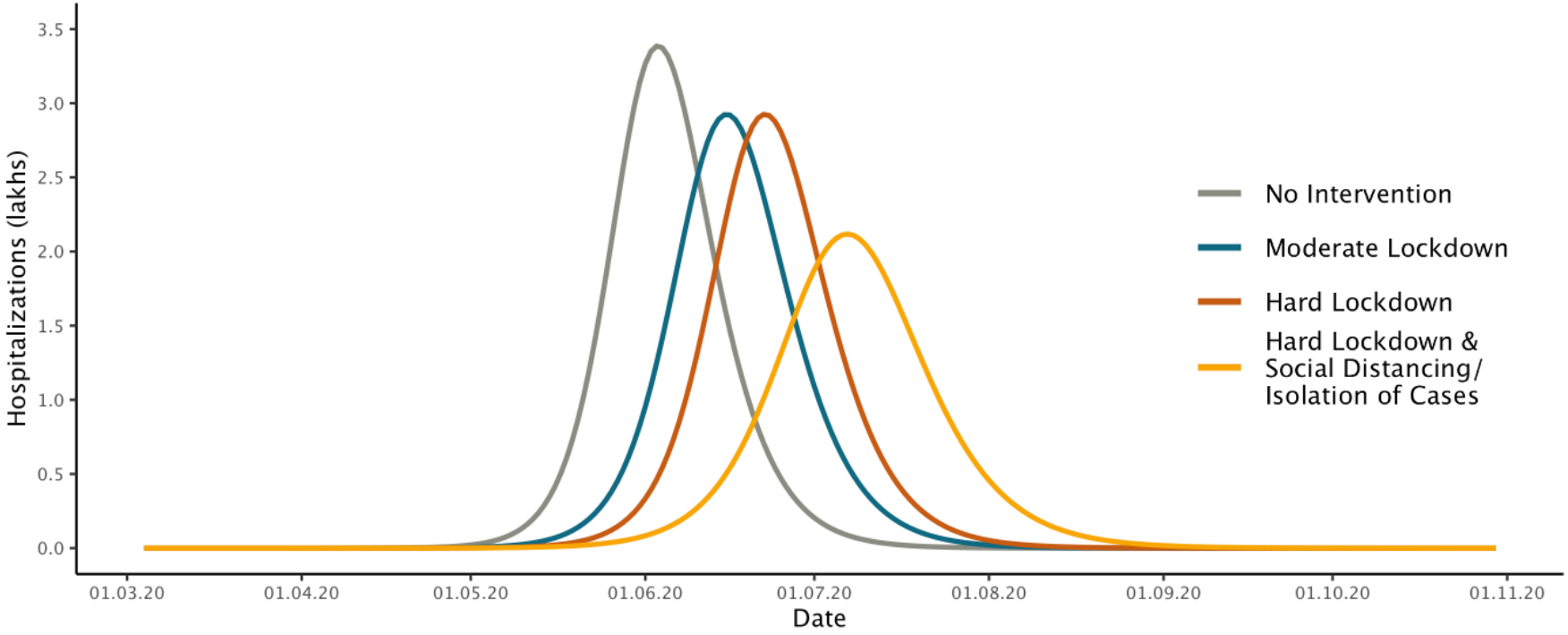
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Uttar Pradesh

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	3,38,530 (1,69,265-5,07,794)	57,27,209 (28,63,604-85,90,814)	2,49,07,056 (1,24,53,528-3,73,60,584)
Moderate Lockdown	2,92,229 (1,46,114-4,38,343)	49,65,022 (24,82,511-74,47,533)	2,13,30,848 (1,06,65,424-31,9,96,272)
Hard Lockdown	2,92,444 (1,46,222-4,38,666)	49,61,384 (24,80,692-74,42,077)	2,13,42,286 (1,06,71,143-3,20,13,428)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	2,11,745 (1,05,872-3,17,617)	36,10,362 (18,05,181-54,15,543)	1,52,43,332 (76,21,666-2,28,64,998)

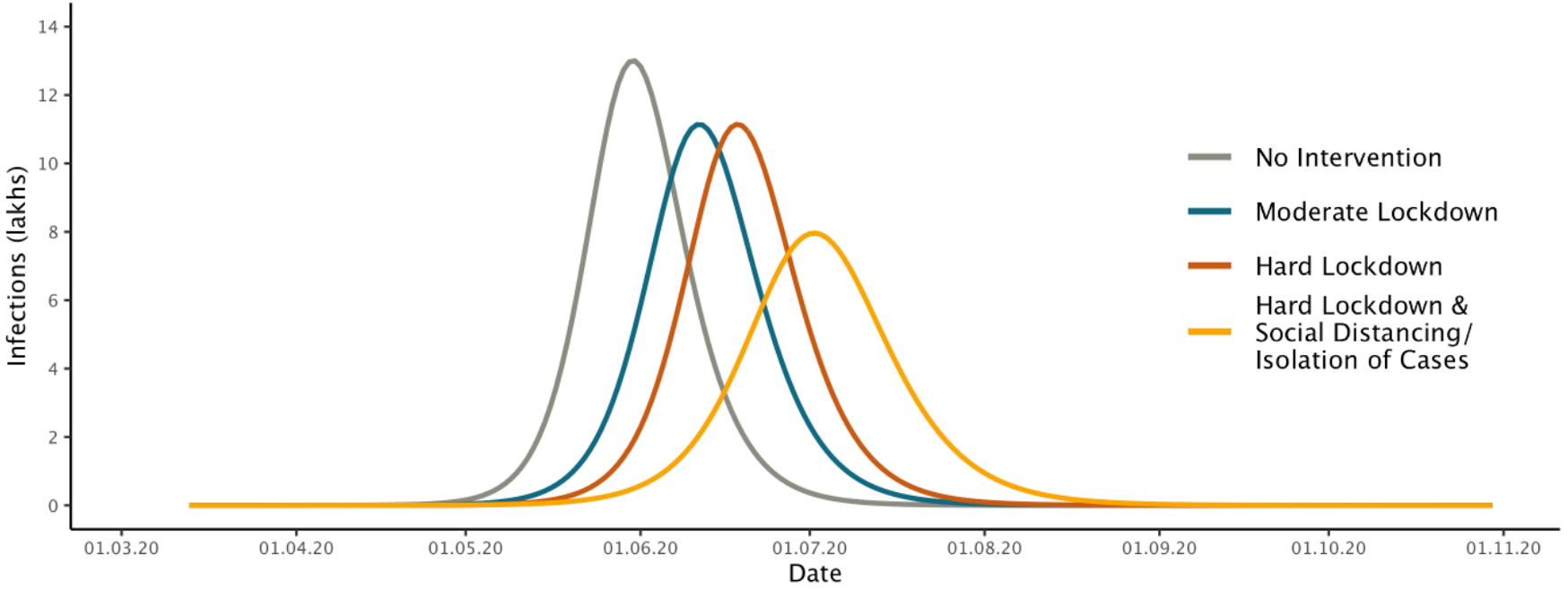
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

Uttarakhand

Scenarios

- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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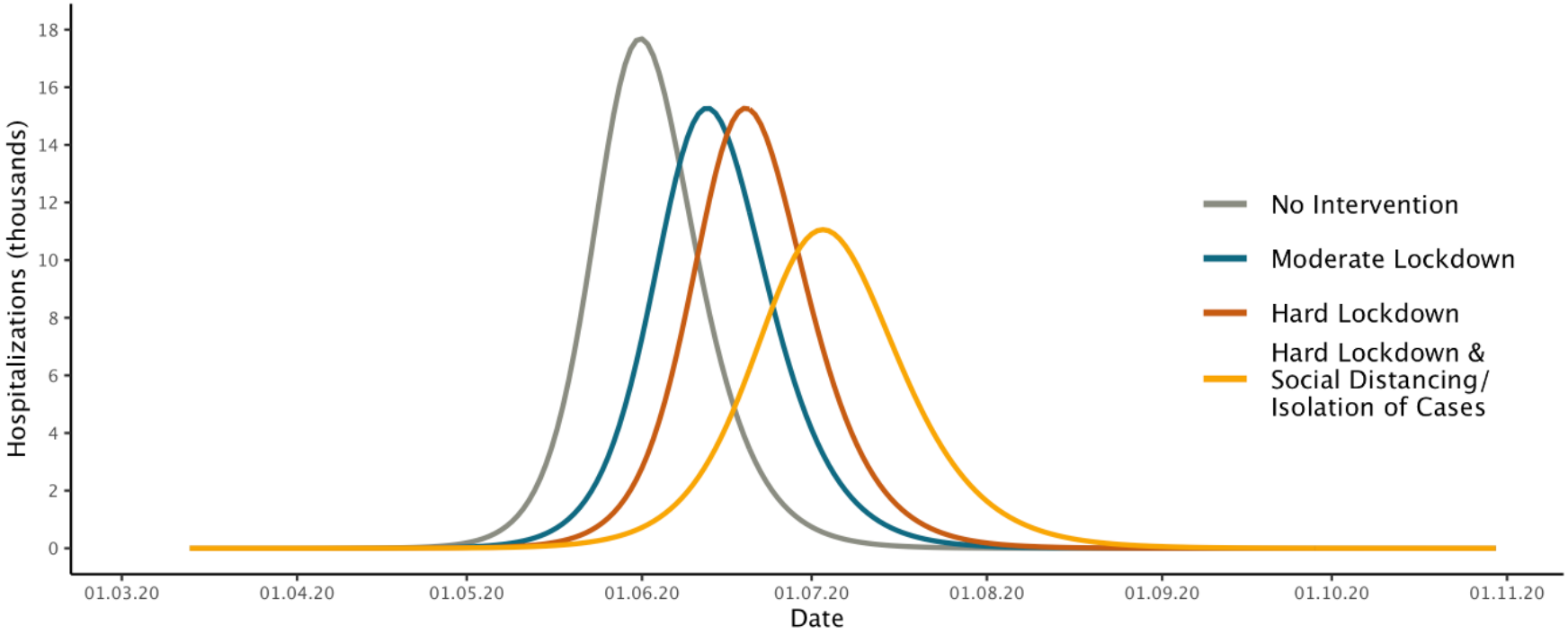
Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Peak Values for Various Scenarios: Uttarakhand

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	17,680 (8,840-26,520)	2,99,554 (1,49,777-4,49,330)	13,00,031 (650015-19,50,046)
Moderate Lockdown	15,260 (7,630-22,890)	2,59,339 (1,29,670-3,89,009)	11,13,566 (5,56,783-16,70,348)
Hard Lockdown	15,268 (7,634-22,902)	2,59,190 (1,29,595-3,88,784)	11,14,358 (5,57,179-16,71,536)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	11,059 (5,529-16,588)	1,88,501 (94,251-2,82,752)	7,96,295 (3,98,148-11,94,443)

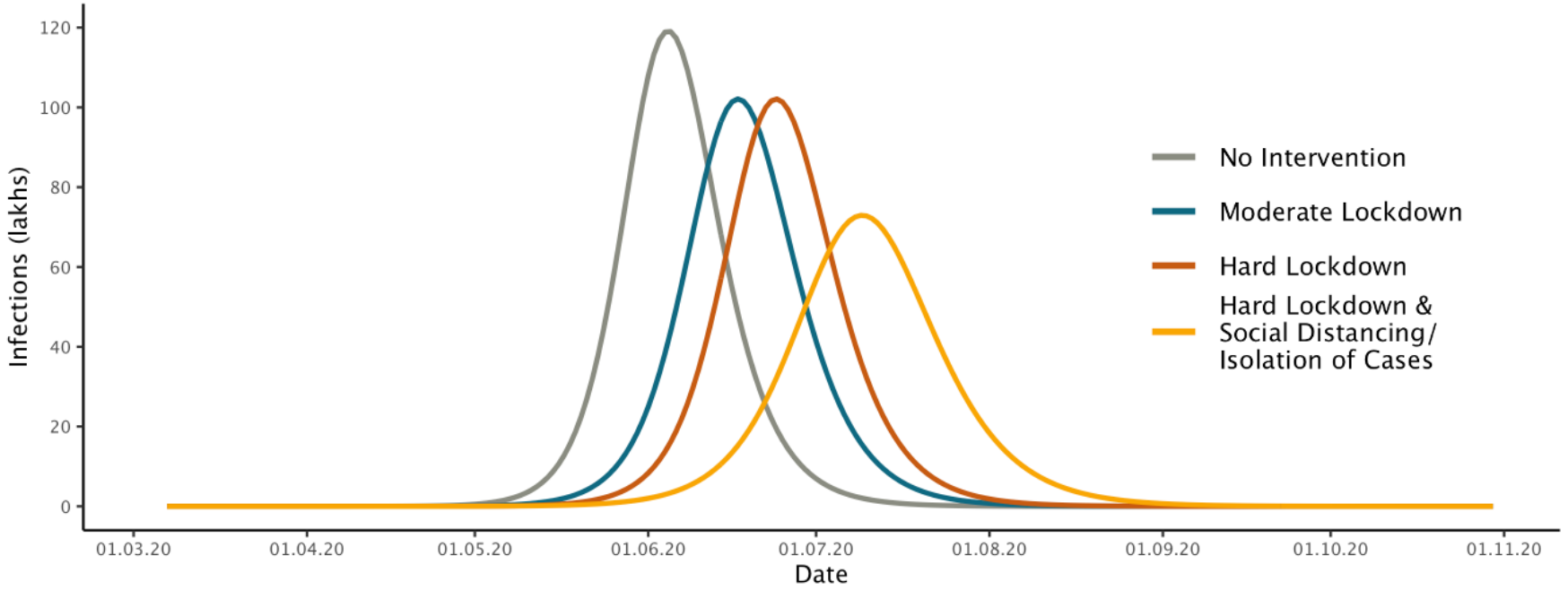
Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

West Bengal

Scenarios

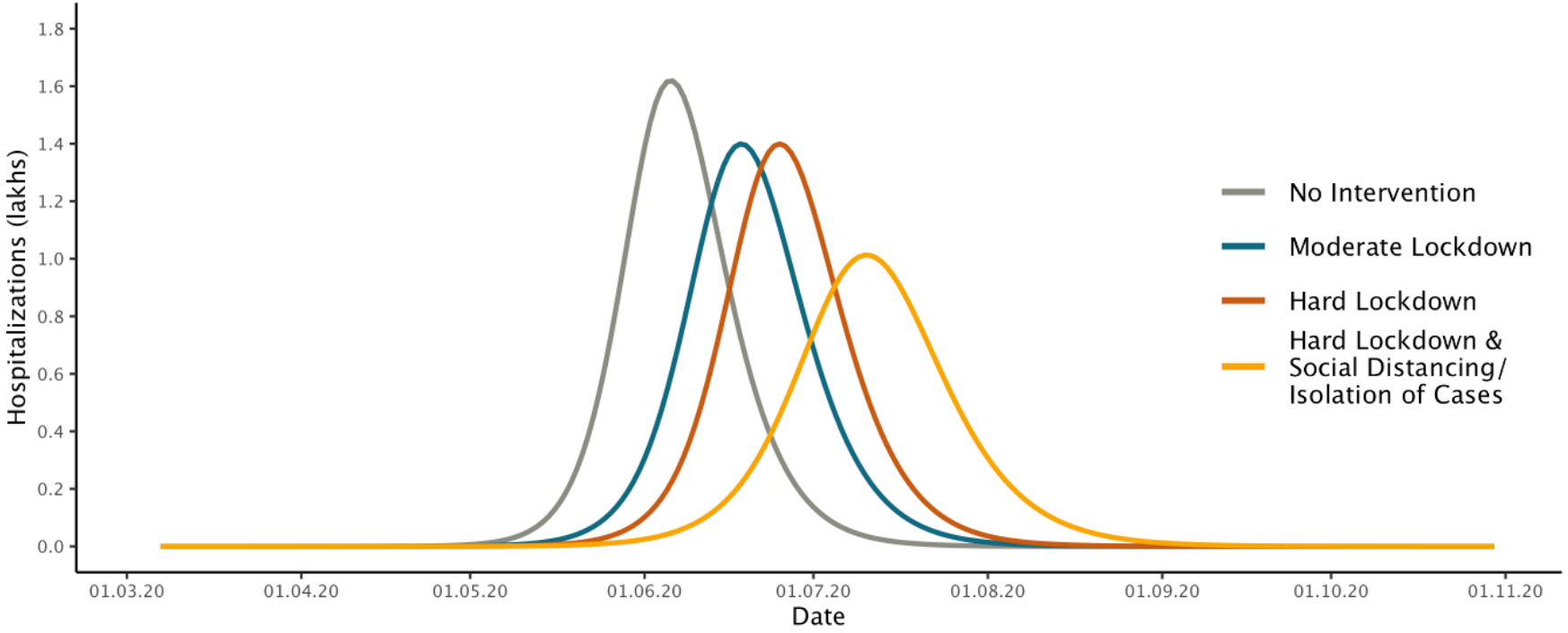
- **Baseline** – Disease continues to spread with no lockdown, social distancing, or other intervention and no change in transmission rate. $R_0 = 2.66$.
- **Moderate Lockdown** – Reduce transmission to R_0 of 2 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown** – Reduce transmission to R_0 of 1.5 during lockdown period, then transmission resumes at R_0 of 2.4.
- **Hard Lockdown and Continued Social Distancing/Isolating Cases**– Reduce transmission to R_0 of 1.5 during lockdown period, then, through social distancing regulations and isolation of symptomatic individuals, resumes at R_0 of 2.

Projected Total COVID-19 Infections Under Various Scenarios (Asymptomatic, Symptomatic, Hospitalized)



Note: A temporary lockdown can delay peak infections, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

Projected Hospitalizations Under Various Scenarios



Note: A temporary lockdown can delay peak hospitalizations, but a long-term reduction in R_0 is needed to reduce the peak. Here, we model scenarios assuming a small permanent reduction in R_0 after the lockdown in the "Moderate Lockdown" and "Hard Lockdown" scenarios, and a larger permanent reduction in R_0 in the "Hard Lockdown & Social Distancing" scenario.

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Projected Peak Values for Various Scenarios: West Bengal

SCENARIOS	Peak Hospitalizations	Peak Symptomatic Non-Hospitalized Infections	Peak Total Infections
Baseline	1,61,858 (80,929-2,42,787)	27,43,304 (13,71,652-41,14,955)	1,18,99,807 (59,49,904-1,78,49,710)
Moderate Lockdown	1,39,927 (69,963-2,09,890)	23,73,162 (11,86,581-35,59,743)	1,02,10,764 (51,05,382-1,53,16,146)
Hard Lockdown	1,39,949 (69,975-2,09,924)	23,74,970 (11,87,485-35,62,455)	1,02,09,809 (51,04,904-1,53,14,714)
Hard Lockdown and Continued Social Distancing/ Isolating Cases	1,01,229 (50,614-1,51,843)	17,27,008 (8,63,504-25,90,513)	72,93,442 (36,46,721-1,09,40,163)

Note: Values in parentheses represent a range of 50 percent to 150 percent of the point estimate and represent the range of probable values. Estimates are based on latest available data but given the novelty of the SARS-CoV-2 virus, these estimates still have some inherent uncertainty.

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