TEXAS COASTAL BEND COVID-19 PANDEMIC REPORT

April 10, 2020
CC TAMU-CC Joint COVID-19 Modelling Task Force
Speakers: Dr. Philippe Tissot & Dr. Chris Bird
The joint taskforce was created by Judge Canales, City leadership including City Manager Zanoni, TAMU-CC President Miller and Vice President Mahdy

Many Organizations and People Contributed to this Work

Including: Philippe Tissot, Keren Costanzo, Chris Bird, Daniel McGinn, Steve Viera, Lucy Huang, Jason Selwyn, Bryan Gillis, Meng Zhao, Greg Buck, Jason Louis, Hilary Watt, Annette Rodriguez, Mike Mohat, Scott King, Evan Krell, Mahmoud Eldefrawy, Roy Roberts, Audrey Garza, Gina Concannon, Davey Edwards, Qianqian Liu, Leisha Martin, Ed Warga, Dante Gonzalez, Tiffany Anderson, Maggie Turner
REGION COVERED BY REPORT: TEXAS COASTAL BEND

- Aransas
- Bee
- Brooks
- Duval
- Jim Wells
- Kenedy

Population: Approx. 595,870

- Kleberg
- Live Oak
- Nueces
- McMullen
- Refugio
- San Patricio
No indication of plateau, yet

09 April 2020

89 LABORATORY-CONFIRMED COVID-19 CASES IN COASTAL BEND
TASK FORCE OBJECTIVE 1
ADDRESS PUBLIC CONCERNS & QUESTIONS ABOUT COVID-19 & SOCIAL DISTANCING

TASK FORCE OBJECTIVE 2
ENABLE EVIDENCE-BASED DECISION MAKING
PRESSING QUESTIONS ADDRESSED

• What would have happened if we never enacted social distancing orders?

• What would happen if we ended social distancing orders today?

• Is social distancing working in the Coastal Bend?

• What could happen if we ignore social distancing to celebrate holiday?
WE EMPLOYED 4 MODELS

• All Models were Applied, Where and When Possible
  • Data from local, state, national, and international sources employed

• Imperial College Model
  • Fatality data from: Texas: Bexar, Dallas, Tarrant, Harris & International

• COVID-19 Scenarios Model, University of Basel
  • Case data from 12 Coastal Bend counties

• IHME Model, University of Washington
  • We tuned CHIME to IHME Texas Model, and applied to Coastal Bend

• CHIME (COVID-19 Hospital Impact Model), University of Pennsylvania
  • Hospital parameters from 12 Coastal Bend Counties
WE STOP A PANDEMIC BY EXTINGUISHING IT BEFORE IT GETS OUT OF CONTROL

UPPER ESTIMATED TRANSMISSION RATIO OF COVID-19 FOR TEXAS IS 4

Model based on Texas COVID-19 Fatalities
COVID-19 WILL SPREAD IF TRANSMISSION RATIO IS ABOVE 1

ESTIMATED TRANSMISSION RATIO OF COVID-19 FOR TEXAS IS 2-4

Model based on Texas COVID-19 Fatalities
GOAL OF SOCIAL DISTANCING IS TO REDUCE TRANSMISSION RATE BELOW 1

ESTIMATED TRANSMISSION RATIO OF COVID-19 FOR TEXAS WITH SOCIAL DISTANCING IS 1 (0.2-2)

Effect of Social Distancing on Transmission Ratio Based on Study of 11 European Countries: Imperial College COVID-19 Report 13
Estimated **Transmission Ratio** of COVID-19 in Texas w/o social distancing is **2-4**

Social distancing is estimated to decrease Transmission Ratio to **0.2-2**

The outbreak will be extinguished if Transmission Ratio is less than **1**
  - And when all *infected* people are no longer *infectious*

We took a conservative “plan for the worst” approach by using a **Transmission Ratio** of **4** without social distancing for the modelled scenarios that follow
“SOCIAL DISTANCING” HAS MANY FACETS

• What we really mean by “social distancing” is all actions that can reduce the transmission ratio of COVID-19

  • Reducing close contacts among people
    • “Stay-at-Home”, close schools, Space out, no Public gatherings, Breathing masks, self-isolate when symptomatic
  • Hygiene: wash hands & sanitize frequently
  • Laboratory testing for infection
1. No Social Distancing: never any social distancing

2. End Social Distancing: repeal social distancing today

3. Keep Social Distancing: maintain present mandate
Social Distancing Reduces ICU Overflow

WE ESTIMATED “THE CURVE” WITH 3 MODELS

Projected Daily Census Infected

No Social Distancing

Best Case Projected “Peak”

Worst Projected “Peak”

96-300k
WE ESTIMATED “THE CURVE” WITH 3 MODELS

Projected Daily Census Infected

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Social Distancing

End

Today

SUBSTANTIAL “PEAK”
WE ESTIMATED “THE CURVE” WITH 3 MODELS

Social Distancing Reduces ICU Overflow

Projected Daily Census Infected

- No Social Distancing: 96-300k
- End Social Distancing: 92-200k
- Social Distancing Today: 10-87k

Keep Social Distancing

FLATTEST “CURVE”

POSSIBLY NO “PEAK”
SOCIAL DISTANCING FLATTENS THE CURVE

Projected Daily Census Infected

- No Social Distancing: 96-300k
- Social Distancing Today: 10-87k
- Flattest "Curve": 92-200k

WORST PROJECTED "PEAK": 96-300k
LARGE "PEAK": 92-200k
FLATTEST "CURVE": 10-87k

Keep Social Distancing
SOCIAL DISTANCING PREVENTING DISASTER AT HOSPITALS

No Social Distancing

MANY FOLD OVER CAP

TSUNAMI OF SEVERE CASES

WITHIN CAPACITY

Keep Social Distancing

Hospital Projected Daily Census

End

Today

Today

Social Distancing

Hospital Capacity

Apr

May

Jun

Jul

Aug
THOUSANDS OF FATALITIES AVERTED BY SOCIAL DISTANCING

For Clarity, Results of Only 1 Model Presented

PROJECTION: 4000+ Fatalities Averted

Keep Social Distancing
MAINTAINING SOCIAL DISTANCING OVER HOLIDAY WEEKEND PROJECTED TO AVERT COVID-19 FATALITIES

Projected Fatalities Averted

Model based on Texas COVID-19 Fatalities & Scaled to Coastal Bend

5-20 Fatalities Averted by mid-June
SUMMARY: SOCIAL DISTANCING IS LIKELY TO BE DECREASING IMPACT OF COVID-19

• We took a conservative “plan for the worst” approach (Baseline Transmission Ratio = 4)

• Models indicate social distancing leads to substantial reductions and delays in the number of infections, hospital & ICU overflow, and fatalities

• Continuing to obey social distancing guidelines over this holiday weekend is estimated to avoid up to 5-20 COVID-19 fatalities by mid-June.
SUMMARY: TOO SOON TO STOP SOCIAL DISTANCING

• If estimated effects of social distancing are removed today,
  • the number of infections and death projected to spike between May and June
  • Hospital and ICU capacity are projected to be overwhelmed

• Models indicate that the Transmission Ratio is straddling the tipping point between increasing and decreasing depending on how adherent we are to social distancing and the true Transmission Ratio
SUMMARY: WHEN CAN WE SAFELY LIFT SOCIAL DISTANCING POLICIES?

• The more adherent citizens are to social distancing policies, the faster the COVID-19 outbreak can be extinguished.
• Present levels of social distancing may be enough, if kept in place.
• There is too much variation in model inputs to project a safe end date, but it is clear today is not that day.
• New information is becoming available every day, and we expect the variation in model output to decrease as new data becomes available.
SOCIAL DISTANCING SAVE LIVES

• TAMUCC models show that the decision to implement social distancing orders at all levels of Texas government plays a major role in preventing hospitals from becoming overloaded with potential COVID-19 patients.
• These orders are only effective when the community chooses to engage in SDO practices.
• A vaccine would likely change the need to implement social distancing orders.
Cannot Allow Wave of Potential COVID-19 Hospitalizations

• Ensuring our hospitals are not overwhelmed is a key factor in preventing COVID-19 deaths.

• Personnel and equipment is limited, social distancing orders are proven to slow the influx of patients.

• This requires that current social distancing orders are maintained until hospitalization numbers can be reduced, whether through a vaccine or new approach to treatment.
YOU CAN HELP PUSH THE TRANSMISSION RATIO BELOW 1 TO EXTINGUISH COVID-19

• Follow Local, State and Federal Guidelines
• Wash your hands often (20 sec)
• Avoid close contact (6 feet)
• Cover your mouth and nose with a cloth face cover when around others
• Cover coughs and sneezes
• Clean and disinfect