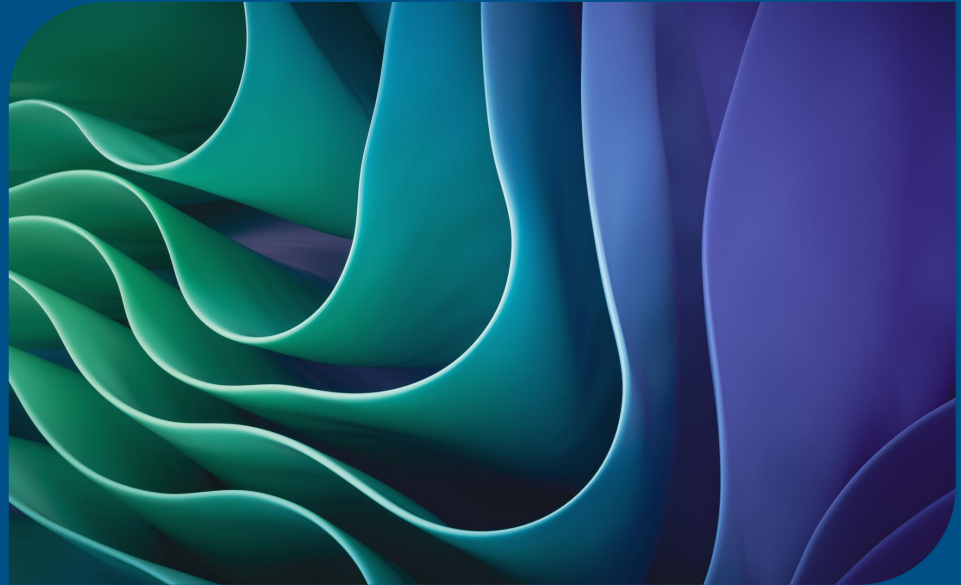


Trust in Digital Interventions

Kelsey Isman and Ankit Aich
TAMB – 04/16/25



1. **Introduction & Overview**
2. **Defining Trust in AI Systems**
3. **Human vs Bot Trust**
4. **Contextual Factors Affecting Trust**
5. **Psychological, Social, and Clinical Impact**
6. **Group Discussion**

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The Exponential Rise of “Otherware” in Digital Health

- An incredible amount of health-focused “otherware” has been developed recently
- Non-human systems that can interact with humans are termed as otherware [Till Saßmannshausen et al. 2023]
- The number of AI/ML papers in healthcare went from 1856 in 2010 to 22996 in 2021 [Zhu et al. 2022]

Why is trust important?



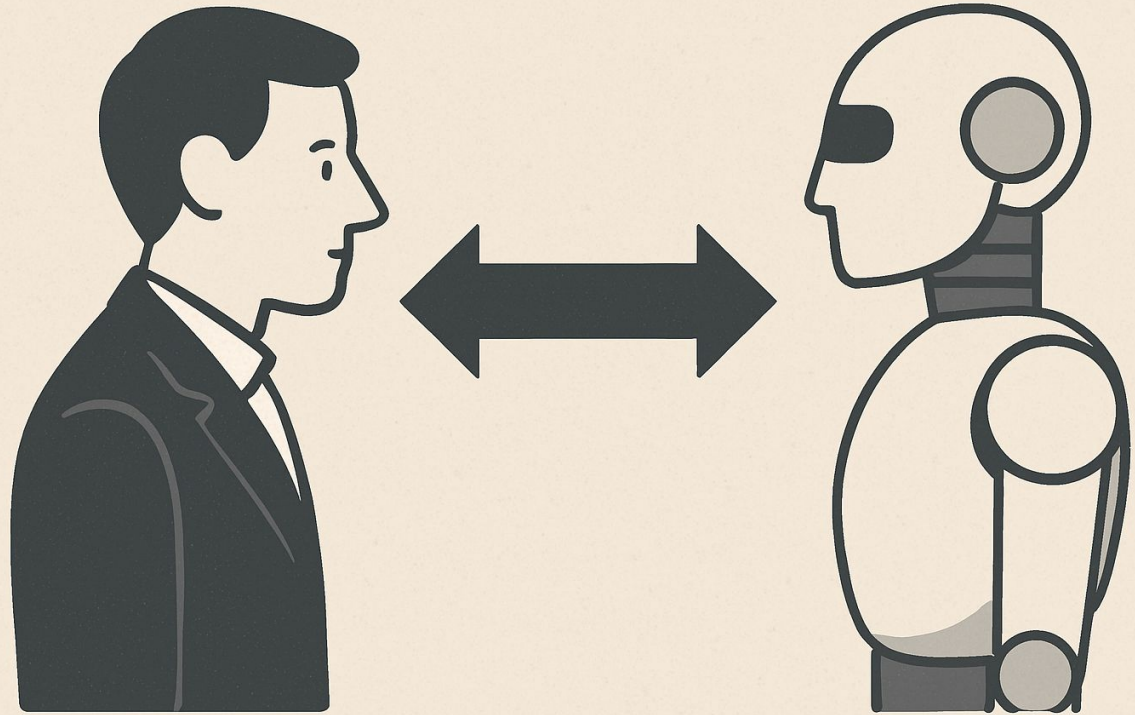
Who trusts?

- Trustor

The trustor in our situation is the human. Their work is to trust the otherware – to improve engagement and adhere to treatment plans.

- Trustee

The trustee in our situation is the bot. Their work is to gain human trust by adjusting their internal features.



What is trust?

“the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other part.”

[An integrative model of organizational trust – Roger Mayer, James Davis, David Schoorman 1995]

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Look at this conversation

Hi

Hello.

i'd like to talk to you about my family issues can you help?

Yes.

i fought with my dad and he's old and stubborn..

That's unfortunate. Continue.

i'd like to talk to him but he refuses

Try writing a letter. Might work.

wow anything else??

A third person could mediate. No guarantee.

Now look at this conversation

Hi

Hello! How can I assist you today?

I'd like to talk to you about my family issues can you help?

Of course. I'm here to listen. Feel free to share what's on your mind and I'll do my best to provide support.

I fought with my dad and he's old and stubborn..

I'm really sorry to hear that you're going through this. It can be tough when disagreements happen, especially with family. Remember it's okay to give each other some space to cool down after an argument. Would you like to talk more about what happened?

I'd like to talk to him but he refuses

I can understand how hard this must be for you. Sometimes, people need some time to process things after an argument. It might be helpful to write him a letter expressing your feelings if he's not ready to talk yet. Would you like advice on how to approach this?

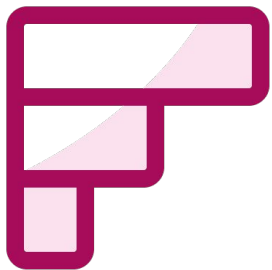
yes please

Sure, here's a simple approach:

1. Wait: Give him some time to process his thoughts.
2. Write: Pen down your feelings. Clarify your intentions and express your love.
3. Give: Hand him the letter. This will give him time to read and think.
4. Patience: Lastly, be patient. It might take time for him to open up.

okay that makes sense it is hard to someone who shuts down

Yes, it can be very challenging when someone tends to shut down or refuse communication, especially when that person is close to you. In such cases, patience, understanding, and persistence can make a difference. Keep showing them that you care and want to mend things. It also helps to try and see things from their perspective if you can. Everybody makes mistakes, it's part of being human. The important part is learning and growing from these experiences.

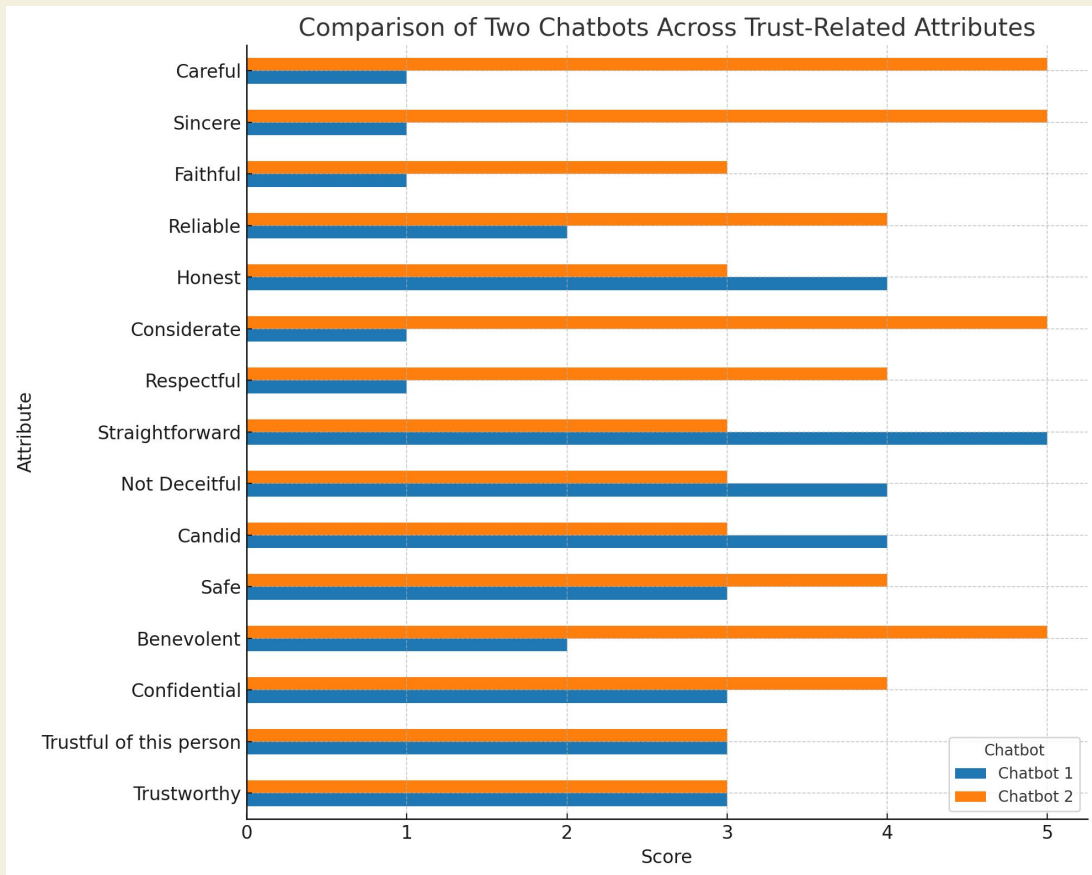


Which AI did you trust



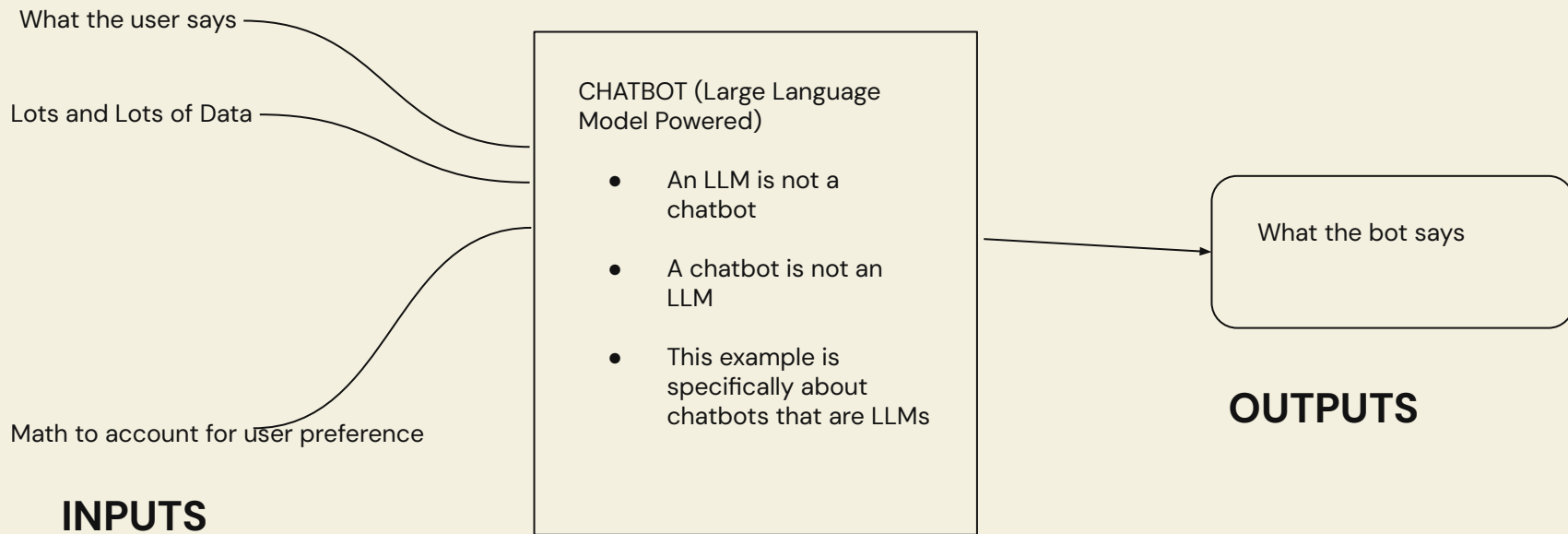
Multidimensionality in Trust?

- Trust has a 25 point scale (here's 15 of them →)



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What Features can a “bot” have?



So what can the bot modulate ?

LANGUAGE

Warmth and Competence (Gets you vs Gets the Problem)

- Gets Me – More empathic.
- Supportive
- Active listening
- Higher politeness

This is termed as WARMTH

- Solves the problem
- Does not care about affective support
- Straightforward
- Solution oriented

This is termed as COMPETENCE

Human Like Features → In Text

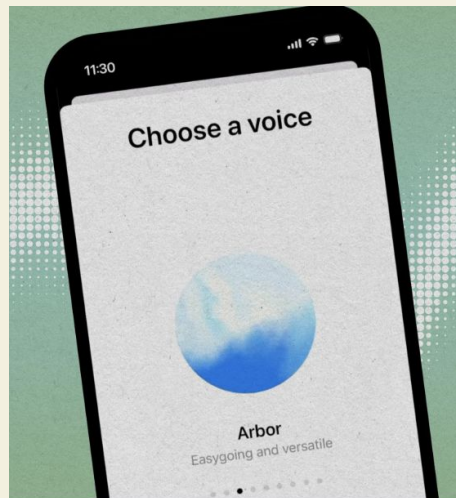
- Can AI “Feel Your Problems” ?
- Can AI “pretend and convince you that it feels?”
- This locks us to “text” features of trust
 - Warmth and Competence
 - Style
 - Empathy
 - Meta Features

Meta-Features

Connecting to how the chatbot Avatar
Looks – **CATBOT**



How the chatbot sounds (voice)



How much the chatbot “talks like you”



Do we need to trust a bot?

We can talk about this as a group after the presentation.

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Case & Stakes

- In **high stakes** domains (i.e., harm reduction questions, medical advice, social support for SUD, etc.), people set a **high bar for trust** when interacting with an LLM
- In **low stakes** domains (i.e., drink recommendations, product reviews, etc.), people set a **low bar for trust**
- If the potential for serious consequences is **low**, people are more likely to **trust** the suggestions/answers they are given

Uncertainty & Complexity

- When the solution to a problem is **uncertain**, people tend to **rely more heavily** on a LLM's advice
- If a question is **complex**, a user may have **no choice but to trust** the LLM's advice
- If a user is **certain** about the answer to their question, there can be a tendency to **fact-check or disregard** the LLM's advice

Social & Cultural Context

- If a user has **privacy** and feels **comfortable** in their surroundings, they may give a more **trusting, honest response**
- If a social setting **lacks privacy**, users may **not trust** the LLM and/or **refrain from divulging** personal information
- Different cultural groups may have **different baseline levels of trust** in AI and/or digital platforms
- **Interpersonal communication** also differs across cultural groups

Disclosure & Transparency

- If a user is **deceived** by an LLM (i.e., they think they are talking to a human, but they find out they are talking to a chatbot), **their trust in the LLM may decrease**
- If the LLM is being used within a **trusted context** (i.e., a HIPAA compliant chatbot through their doctor's office), users may have **greater trust** in the security and validity of their conversation

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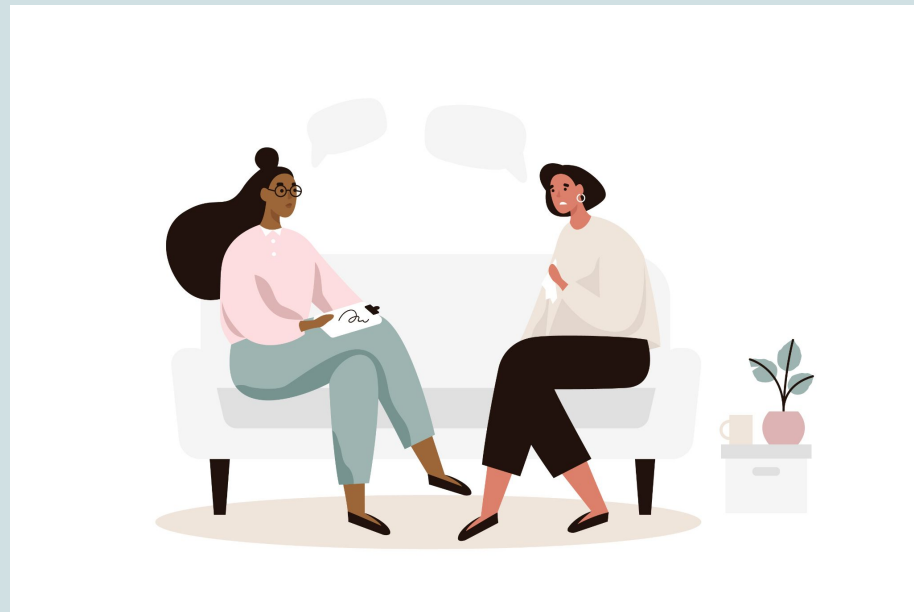
Therapeutic Importance of Trust

- The relationship between clinician and patient **requires trust** to reach beneficial outcomes of interventions
- Trust in a provider encourages patients to divulge **vulnerable information**, provide **honest perspectives**, and remain **engaged** in treatment



Barriers to SUD Patient-Clinician Trust

- Stigma
- Misalignment of treatment
outcome goals
- Fear of losing medication
- Clinician mistrust in patient
- Legal implications

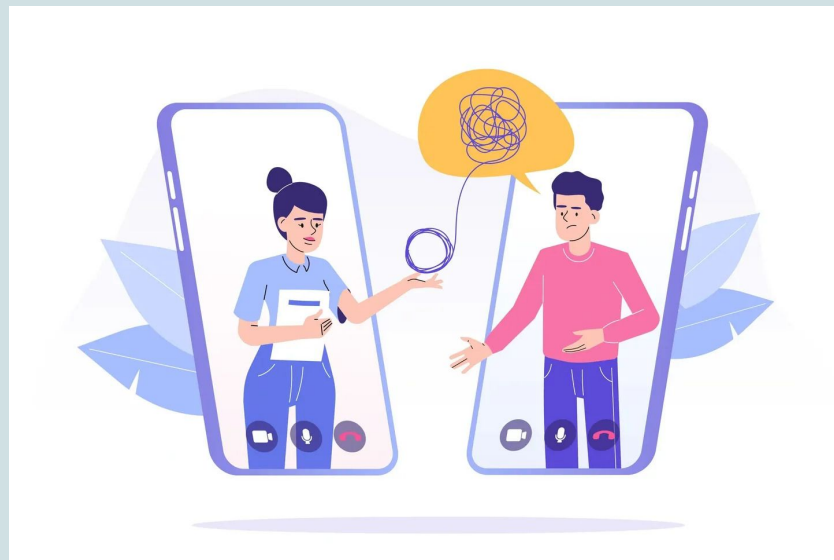


Why study trust in LLMs in clinical settings?

Put simply, so people will actually use
them!

Clinical Implications of LLM Interventions

- Trust critical to foster **vulnerable conversations** between patient and LLM
- Trust in chatbots allows PWUD to access care without worrying about **social repercussions** and/or **healthcare provider stigma**
- Care more accessible to **vulnerable populations** (i.e., patients who speak languages other than English)



Responsible Trust in LLMs



Responsible Trust in LLM Interventions

- Important to consider what constitutes **appropriate trust** in LLMs in clinical settings
- What are the **limits of chatbots' capabilities**? Transparency of these limitations is critical
- Importance of **clinical oversight** of digital health interventions



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Discussion: What can we as researchers
and clinicians do to make digital
interventions more trustworthy and
accessible?

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1. Defining the Problem
2. **Making Observations**
3. Forming a Hypothesis
4. Experiment Results
5. Drawing a Conclusion

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Making Observations

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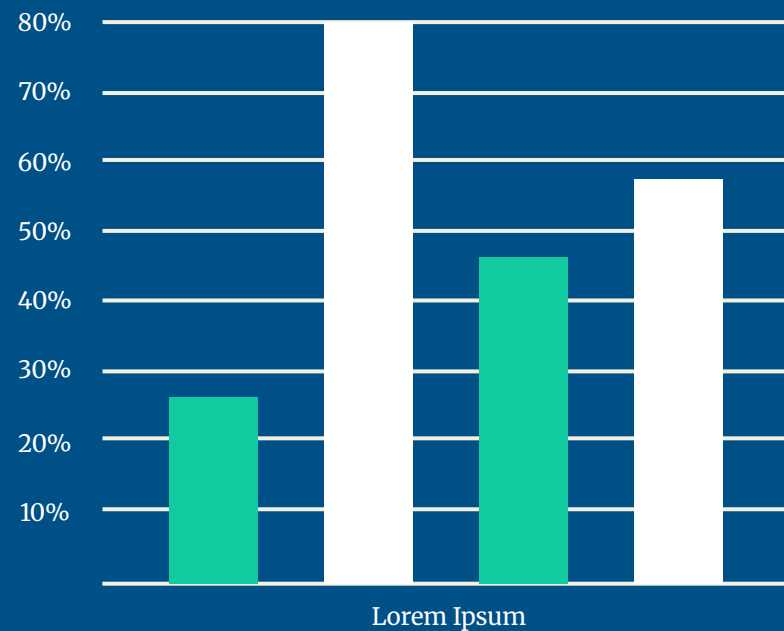
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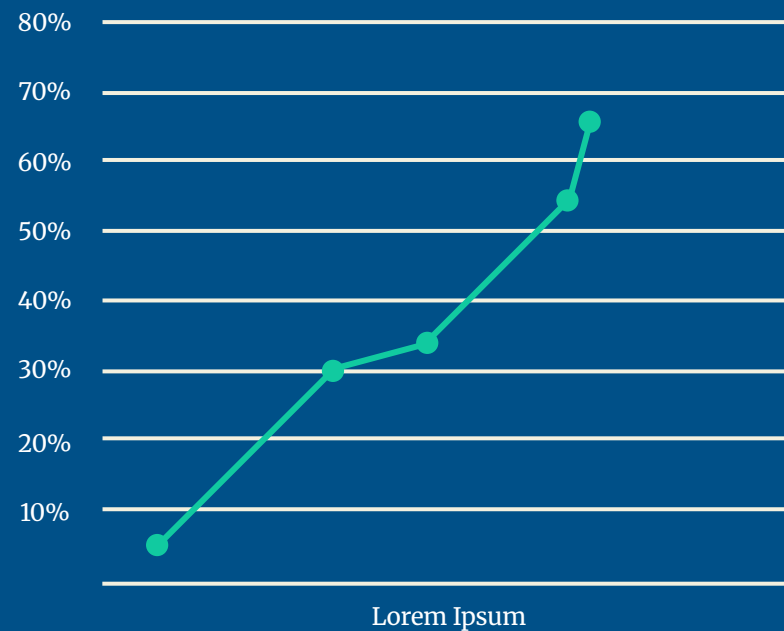
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