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BUSINESS PROJECT

EXPANDING TELEMEDICINE TO OFFSET COST OF MISSED APPOINTMENTS

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INTRODUCTION

Motivation

- ▶ Midtown New York primary care practice
- ▶ Patients older with **limited mobility** on public transportation
- ▶ Missed appointments cost the practice **\$200 on average** per unused hour [1].

Business Opportunity

- ▶ Medicare expanded **telehealth** coverage during COVID [2], accelerating its adoption [3].
- ▶ Telehealth could address patients' transportation issues.
- ▶ **How might we offset costs with telemedicine?**

Goal

- ▶ Assess patients' interest in telehealth to explore if investing in telehealth services would offset cost of missed appointments.



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METHODOLOGY

Dataset

- ▶ Medicare Current Beneficiary Survey, Winter 2021 ^[4]
- ▶ Subset: Northeast and West (n=4,305)
- ▶ Responses: Telehealth use, forgone care, technology at home

Solution Path

- ▶ Exploratory data analysis to understand factors that contribute to using telehealth among Medicare beneficiaries in 2021.

Impact Hypothesis

- ▶ Offering telehealth services would reduce costs the medical practice incurs due to missed appointments.

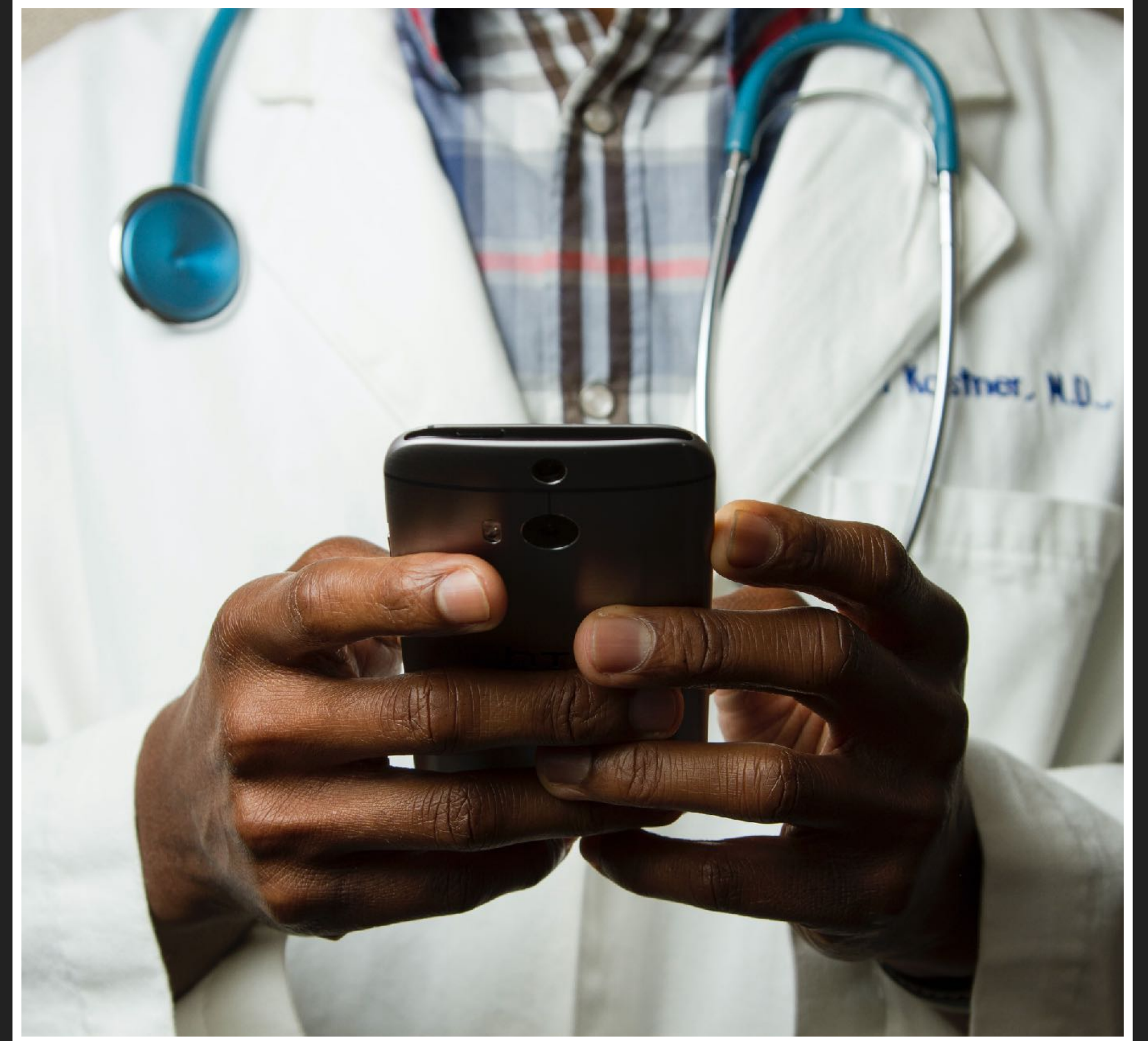


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METHODOLOGY

Success Metrics

- ▶ 15 % cost reduction from missed appointments
- ▶ 10% increase in appointment retainment
- ▶ 15% increase in patient overall health due to continuity of care

Assumptions

- ▶ Patients with **chronic conditions** are less likely use public transportation.
- ▶ Patients are **interested** in telemedicine if offered.

Risks

- ▶ **Hidden costs** that do not offset the income lost.
- ▶ The Medicare data does **not represent** the client's patient and is not generalizable.



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RESULTS

- ▶ What groups used telemedicine more?
 - ▶ Age: 65-75
 - ▶ Gender: female
 - ▶ Race: White
 - ▶ Income: over \$25,000
 - ▶ Metro: live in metro area
 - ▶ Northeast and West similar

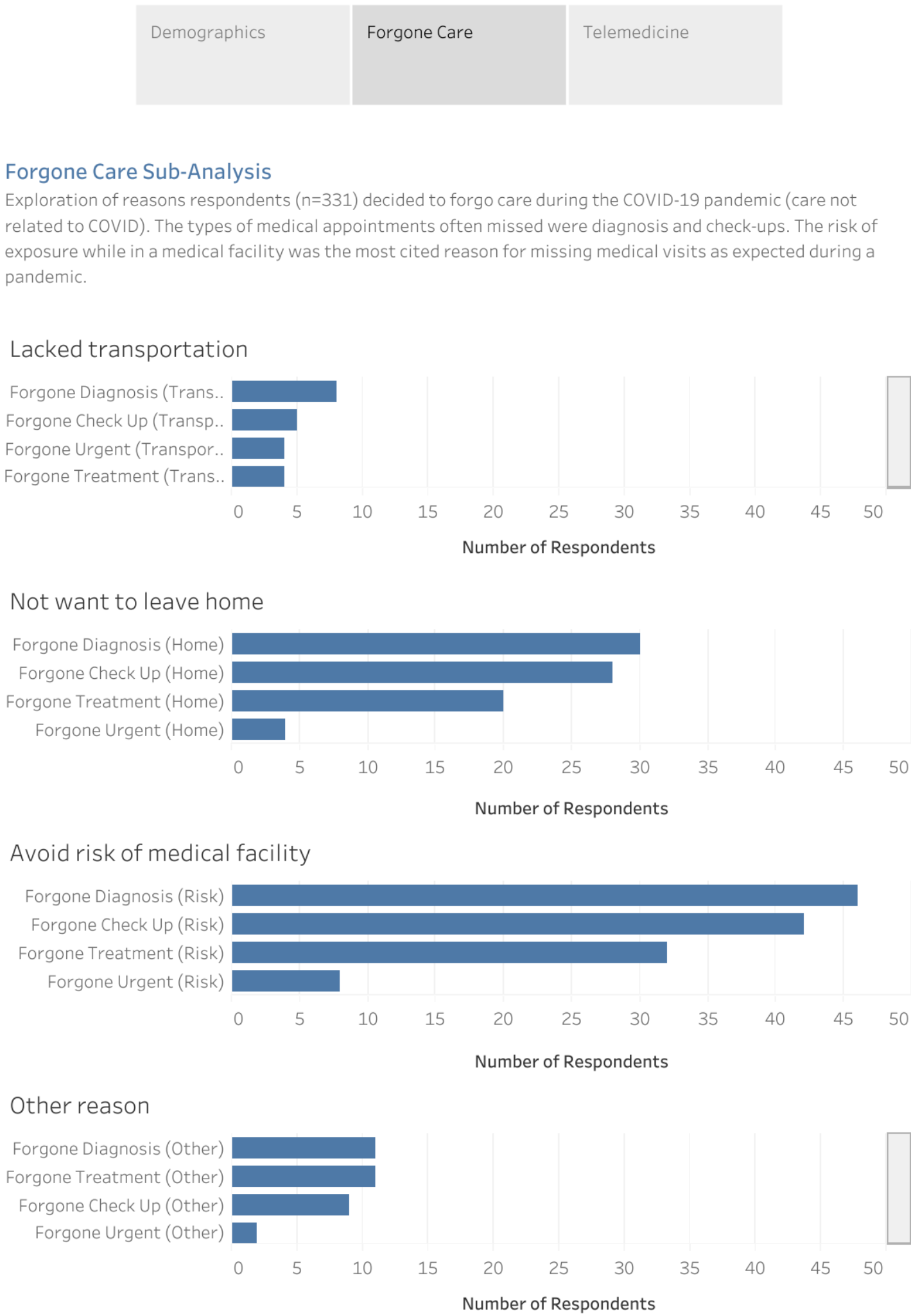
Tableau: Expanding Telemedicine to Offset Cost of Missed Appointments



RESULTS

- ▶ Top 3 reasons patients missed appointments:
 - ▶ Avoid **risking** exposure to COVID at a medical office
 - ▶ Not wanting to leave **home** during the pandemic
 - ▶ **Other** unspecified reasons
- ▶ Top 3 types of care most forgone:
 - ▶ Diagnosis or screening
 - ▶ Check-up
 - ▶ Treatment for existing condition
- ▶ Likelihood of respondent **using telemedicine**:
 - ▶ Income: over \$25k
 - ▶ Age: under 65
 - ▶ Smartphone: owns one
 - ▶ Video conferencing: experience

Tableau: Expanding Telemedicine to Offset Cost of Missed Appointments



CONCLUSIONS

Insights

- ▶ Survey during COVID-19 pandemic affected the reasons why people chose to forgo medical care.
- ▶ Health disparities seen in how many non-White respondents used telemedicine.

Recommendations

- ▶ EDA of Medicare Winter 2022 survey to compare reasons patient's missed appointments.
- ▶ EDA of Medicaid survey data to compare with lower income and younger patients.



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FUTURE WORK

- ▶ **Regression model** to predict which patients would use telemedicine.
- ▶ **Unsupervised clustering** to segment the current patient population and understand their likelihood of using telemedicine.
- ▶ Explore a different, large dataset focused more on patient's **attitudes and beliefs** of telemedicine visits for follow-up care.
- ▶ **Survey client's patients** about interest in telemedicine, technology at home, and reasons they miss appointments.



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APPENDIX

- ▶ Summary, data, and slides are available at github.com/slp22/business-project



Photo by Joshua Hoehne on Unsplash

SOURCES

1. Missed appointment costs: <https://www.hcinnovationgroup.com/clinical-it/article/13008175/missed-appointments-cost-the-us-healthcare-system-150b-each-year>
2. Medicare telehealth expansion: <https://www.medicare.gov/coverage/telehealth>
3. Telehealth adoption: [https://c8y.doxcdn.com/image/upload/v1/Press Blog/Research Reports/2020-state-telemedicine-report.pdf](https://c8y.doxcdn.com/image/upload/v1/Press%20Blog/Research%20Reports/2020-state-telemedicine-report.pdf)
4. Medicare Current Beneficiary Survey <https://www.cms.gov/Research-Statistics-Data-and-Systems/Downloadable-Public-Use-Files/MCBS-Public-Use-File>