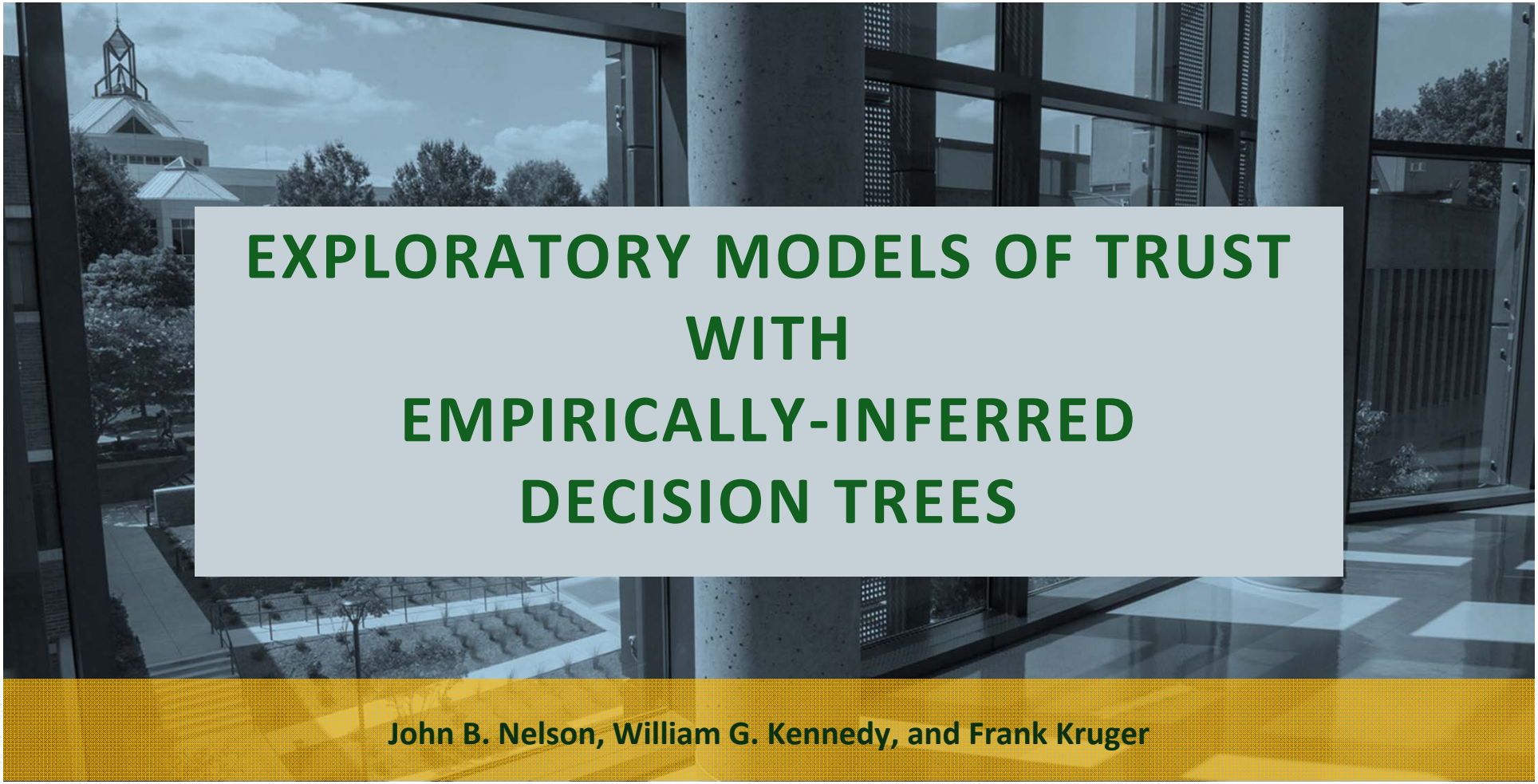

EXPLORATORY MODELS OF TRUST WITH EMPIRICALLY-INFERRED DECISION TREES

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Presented:

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at SBP-BRiMS 2016

on Friday July 1st, 2016

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RESEARCH QUESTION:

Why does **social trust** *vary across* **cultures**?

RELEVANT LITERATURE: DRIVERS OF SOCIAL TRUST

- Human **needs** form a hierarchy (Maslow, 1943).
- Expressed **values** also form a hierarchy (Schwartz, 1992).
  - Values drive and justify behavior, in contrast to beliefs which merely represent expectations.
- **Trust** appears to be a mixture of values (Devos, Spini, & Schwartz, 2002).
- Broadly, there are two kinds of social trust (ibid).
  1. Trust in **individuals**. Such a person values conformity and tradition.
  2. Trust in **institutions**. Such a person values autonomy and responsibility.
- Empirically, two broad dimensions predict trust (Tausch, 2015).
  1. **Traditional vs Secular-Rational**
  2. **Survival vs Self-Expression**

DATA & EXPLORATORY METHODOLOGY

How can we investigate this empirically?

The World Values Survey

- Started in 1981
- Six waves, spanning 34 years years observations
- Almost 100 countries sampled (90% of world population)
- Includes interviews with nearly 400,000 respondents
- See: www.worldvaluessurvey.org

Example Variables

V24	**Most People Can Be Trusted**	V23	Satisfaction With Your Life
V110	Confidence in the press	V117	Confidence: Parliament
V238	Subjective Social Class	V170	Secure in Neighborhood
V8	Important In Life: Work	V203	Justifiable: Homosexuality

EXPLORATORY METHODOLOGY: DECISION TREES

Classic Example of DT For Titanic Survivor Data

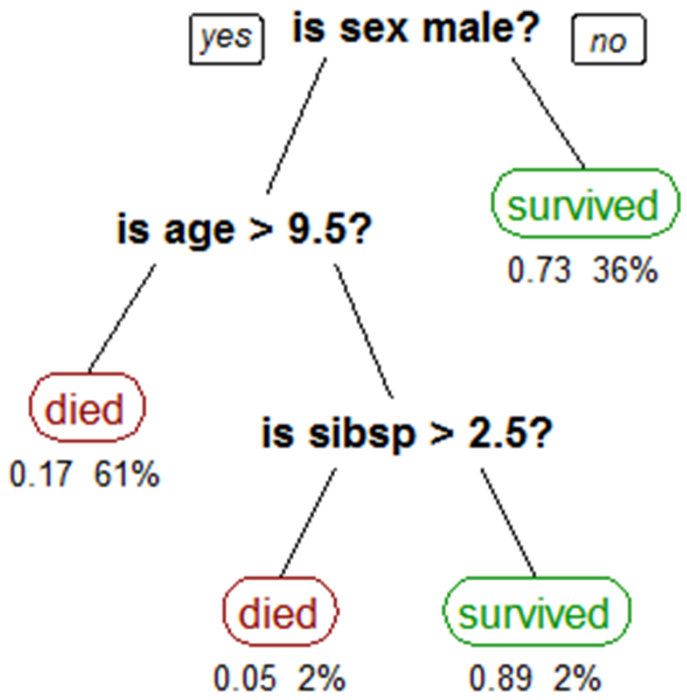


Image source: Stephen Milborrow, 2011

Procedure:

1. Use CART algorithm to induce decision tree over WVS respondent survey data for a particular country, wave pair.

2. Analyze the induced tree.
   - The tree partitions the respondents.
   - It classifies groups.
   - But, information gain – how CART infers a tree – correlates with salience.

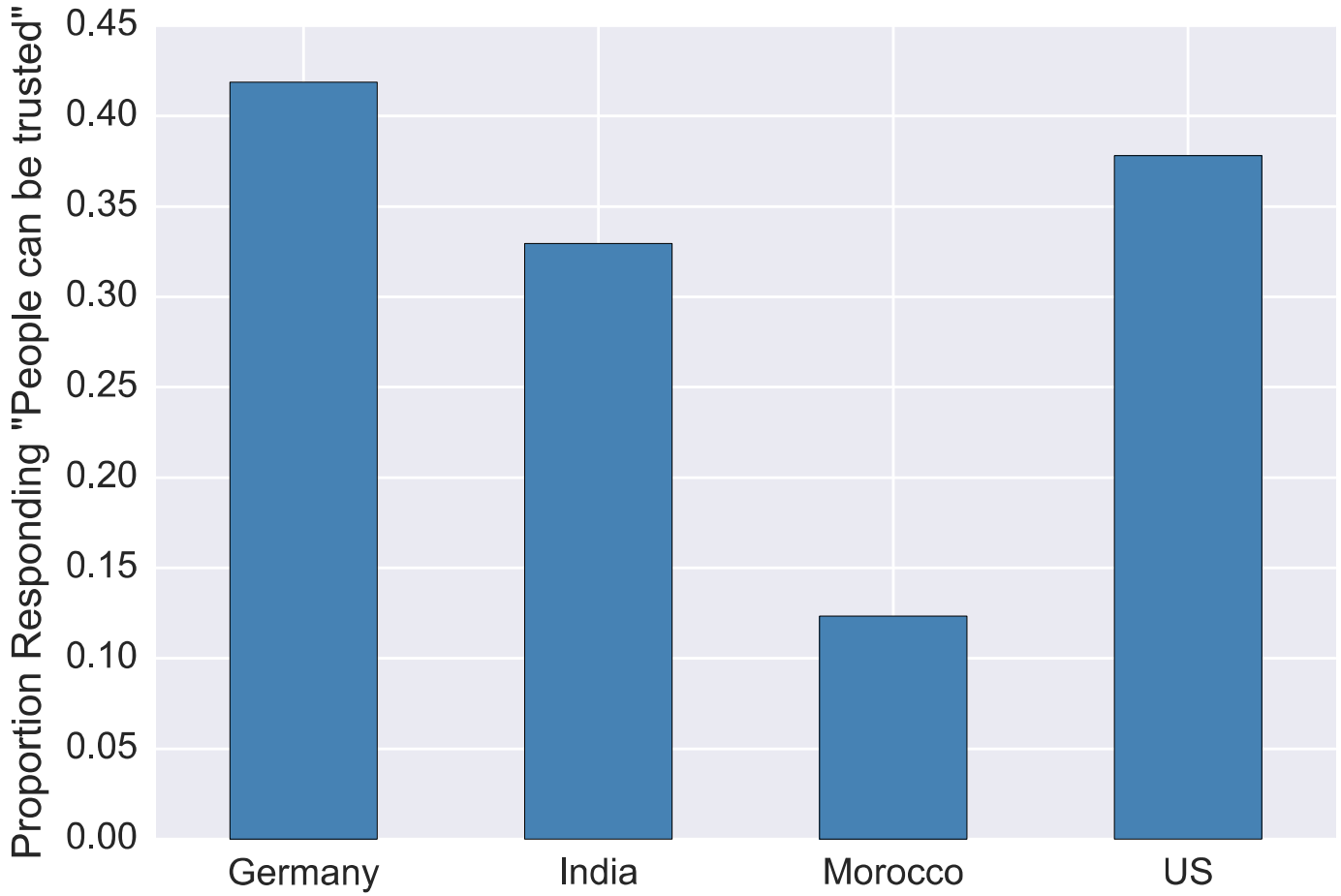
3. Form hypotheses. Reevaluate in different contexts. Where possible, build agent-based sub models

4. Repeat.

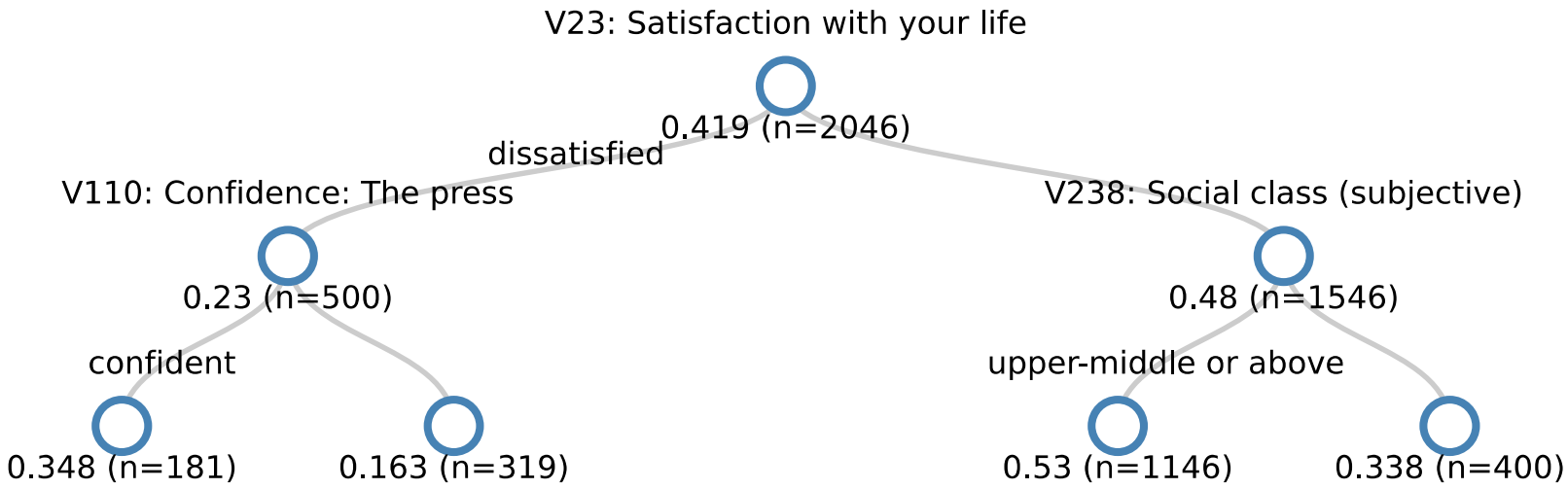
RESULTS

What (proxies for) values and beliefs seem to drive trust?

TARGET COUNTRIES



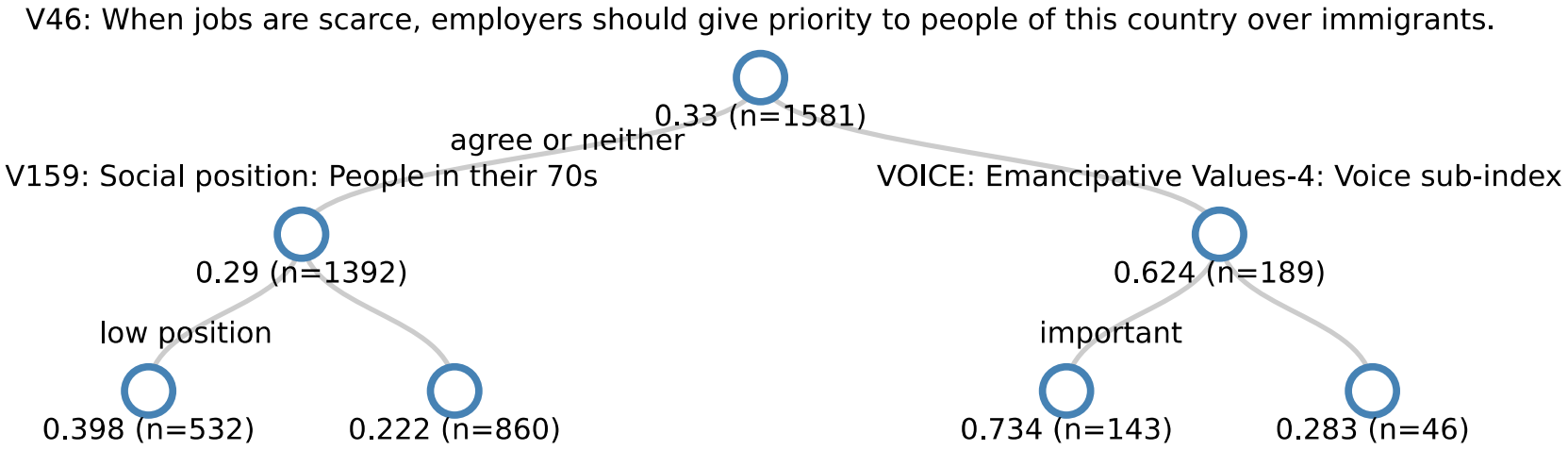
PRELIMINARY RESULTS: GERMANY



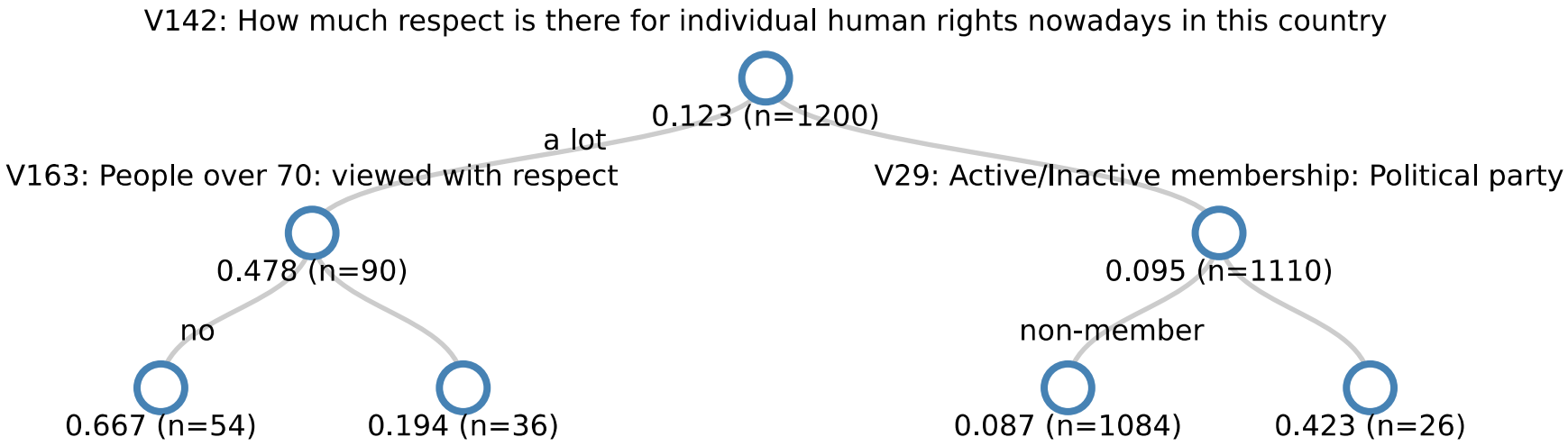
How to read:

- The `n` in each node corresponds to the number of respondents in that node, following the path from the root (top).
- The indicated proportion correspondents to the number of respondents answering `yes` to most people can be trusted.

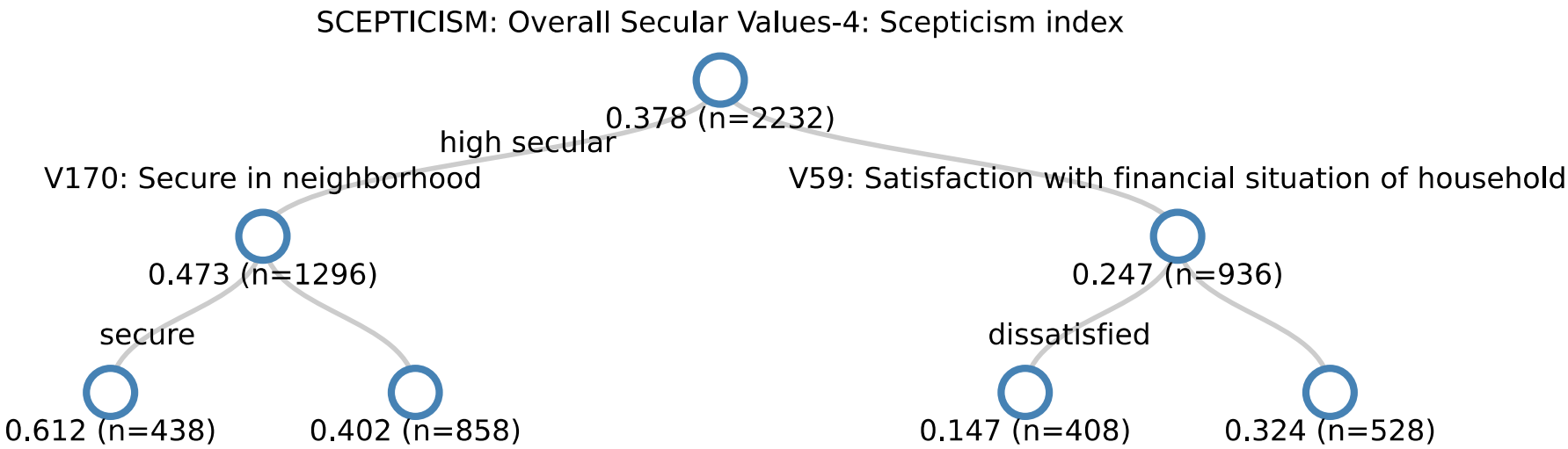
PRELIMINARY RESULTS: INDIA



PRELIMINARY RESULTS: MOROCCO



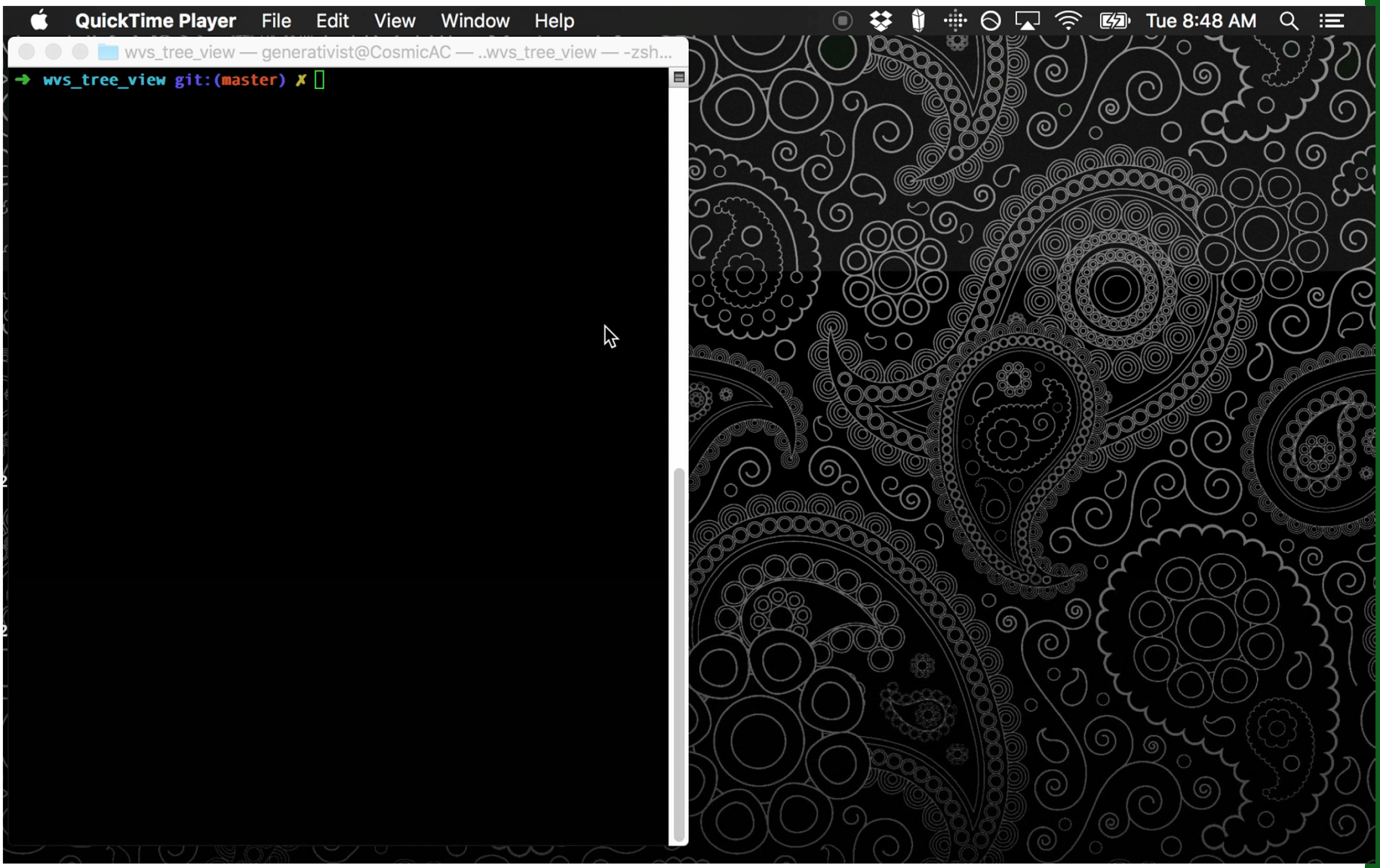
PRELIMINARY RESULTS: US



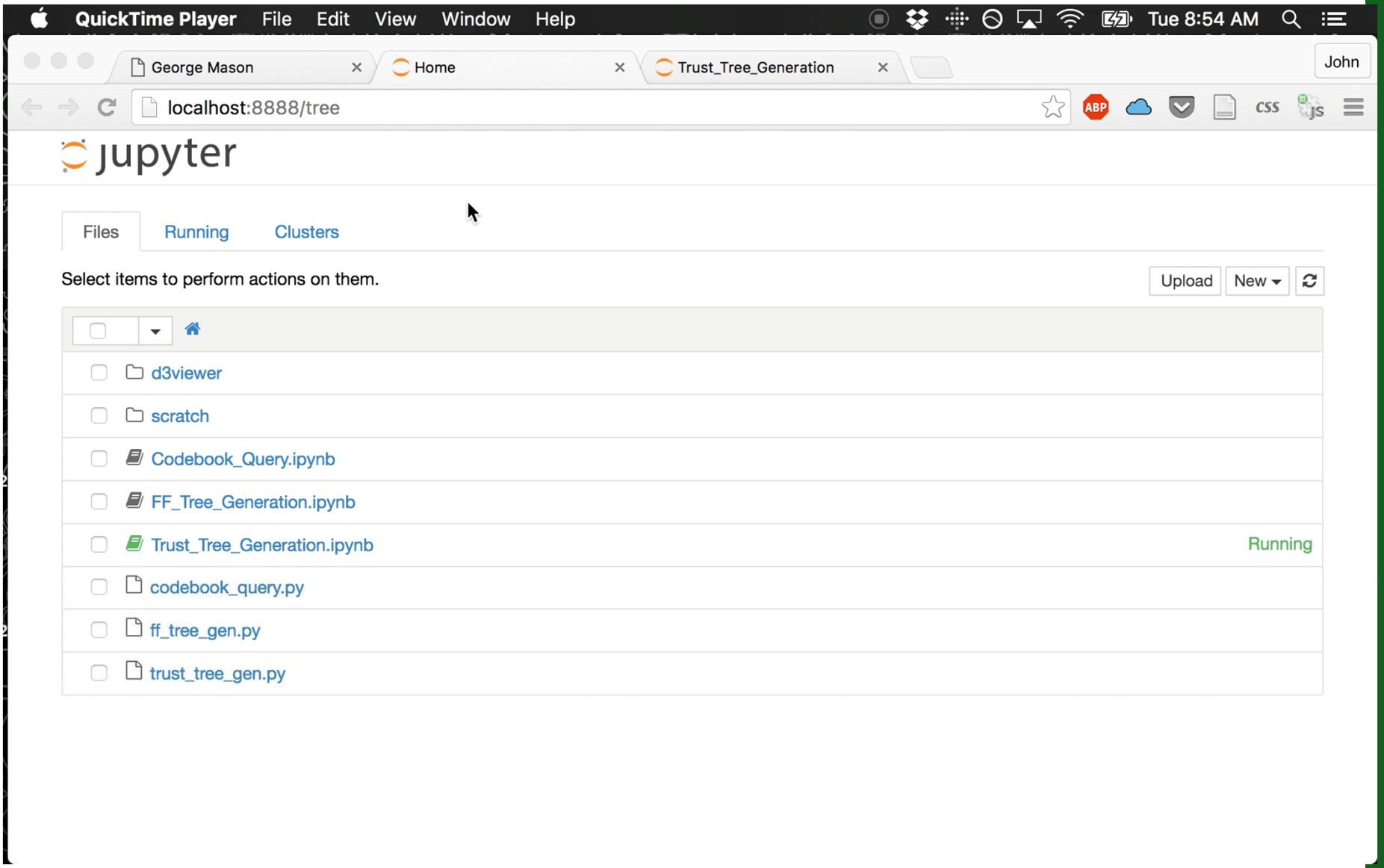
DISCUSSION

Theory [illegible]gnment and the v[illegible]f exploratory [illegible]ools.

AN EXPLORATORY INTERFACE: TRUST TREE GENERATION



AN EXPLORATORY INTERFACE: FLEXIBLE VARIABLE OF INTEREST



DISCUSSION: STYLIZED FACTS

The trees recovered structure which aligns well with the extant literature.

- In the US, root node partitions based on **trust in secular institutions**. The US is particularly religious amongst Western nations (Pew Research Center, 2011). No other country selected this node in tree generation.
- In Morocco, the root node partitions based on **importance of individual rights**. Why? Because, those who value them seem to be exceptionally trusting in that country.
- In India, the root node splits the respondents into those who **favor in groups when economic conditions are bad versus** those who do not. India has incredible ethnic and racial heterogeneity.
- In Germany, the root node revealed classic theoretical assertion: when you are **satisfied**, you have a higher propensity to trust.

DISCUSSION: DECISION TREES AS EXPLORATORY TOOLS

Decision trees:

- **Performant**: It takes at most a few seconds to learn a tree over WVS data.
- **Robust**: Easily copes with outliers. Implicitly finds interactions.
- **Transparent:** The trees are easy to interpret. Rules form `` `if-then` `` paths.

Research in practice:

- **Time is a scarce resource**. Exploratory tools which are easy-to-use, quick-to-execute, and easy-to-interpret save time.
- **Frictions are inhibitory.** Without a good tool, it's not that we take longer to conduct analyses -- it's that we skip some.

CONCLUSION

CONCLUSION

- Decision trees learners let you ***explore quickly***.
- The emitted trees ***replicated extant literature***, but by different methods.
- But, they also ***highlighted country-specific deviations***.

The tool acted as a tour guide. And, it assisted with subsequent theorizing.

POSTSCRIPT: TREE VIEWER TOOL

The tree-viewer tool is open source software (OSS):

- Includes Extract, Transform, and Load (ELT) scripts.
- Includes Anaconda-based environment with requirements.
- Does NOT include raw data from WVS.

See: https://bitbucket.org/johnnybjorn/wvstreeview