

# **“Grammatical Profiles: What Inflectional Forms Tell us about Lexicon and Grammar”**

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Cognitive Linguistics: Empirical Approaches to Russian

# Overview

- Introduction
  - What is a Grammatical Profile?
  - Tense, Aspect and Mood in Russian
- 2 Studies of TAM in Russian
  - Study 1: prefixes and suffixes
    - Are pairs formed via both prefixes and suffixes?
  - Study 2: TAM and outlier verbs
    - What verbs are most attracted to TAM combinations?
- Conclusion
  - Perfective vs. imperfective pairs formed with prefixes and suffixes behave the same way
  - Grammatical “idioms” in interaction of aspect and inflection

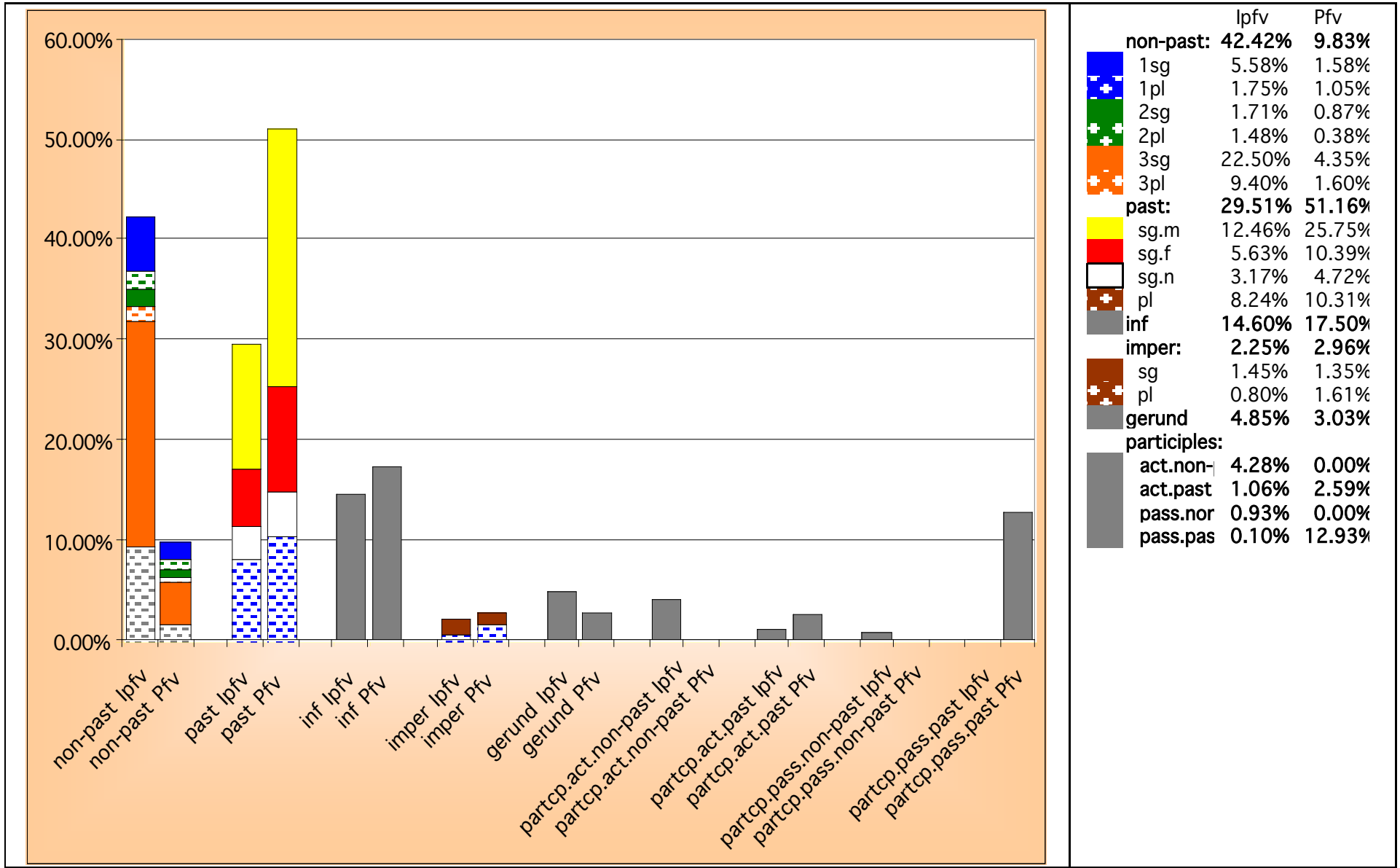
# Introduction

- Why use grammatical profiles?
  - Subset of behavioral profiles (Divjak & Gries 2006, Gries & Divjak 2009)
  - Some verbs used in some forms more frequently than others (Šteinfeldt 1970)
  - Differences are relevant to TAM

# Introduction

- What is a grammatical profile?
  - Relative frequency distribution of the inflected forms of a word in a corpus
  - Take verb X (e.g., *delat'* 'do') and find out how many times it appears in various forms in a corpus and calculate percentages
  - For example, the mean distribution of imperfective verbs in the Russian National Corpus is:

• non-past	42%
• past	30%
• infinitive	15%
• imperative	2%
• gerund	5%
• participles	6%



# Tense in Russian

- Past
- Non-Past
  - Imperfective = Present tense
  - Perfective = Future tense

# Aspect in Russian

- All forms of all verbs express aspect
  - (residue of biaspectual verbs are syncretic)
- Two types of verbs in Russian, often referred to as “paired”:
  - Perfective
  - Imperfective

# Mood in Russian

- Infinitives used in modal constructions
- Russian lacks modal verbs
- Mood in Russian can be:
  - Indicative
  - Infinitive + modals
  - Imperative



## 2 Studies of TAM in Russian

- Insights into Russian aspect
  - Are aspectual pairs formed only by suffixation (Isačenko) or by both suffixation and prefixation (traditional view)? **Study 1**
  - Which verbs characterize various TAM intersections? **Study 2**
    - For example, which verbs are used most in a given TAM combination, such as perfective imperative or imperfective non-past?

# Level of Analysis

- Subparadigm level (non–past, past, infinitive, imperative) is optimal for study of Russian aspect because it
  - yields 85% of total data for verbs after participles and gerunds are excluded
  - includes categories acknowledged to interact with aspect (finiteness, mood, tense)
  - excludes categories not acknowledged to interact with aspect (person, number, gender)

# Major Patterns of Russian aspectual morphology

- Simplex verbs
  - nearly all imperfective (*delat'* 'do')
- Prefixed verbs (prefix + simplex)
  - nearly all perfective (*sdelat'* 'do', *peredelat'* 'redo')
- Prefixed and suffixed verbs (prefix + simplex + suffix)
  - secondary imperfectives (*peredelyvat'* 'redo')

# Aspect Study 1: prefixes & suffixes

- Study 1 involves only aspectual “partners”
  - **p-partners** (Natural Perfectives):
    - *delat* ‘do’ & ***sdelat*** ‘do’
  - **s-partners** (Specialized Perfectives):
    - *peredelat* ‘redo’ & *peredelyvat* ‘redo’
- Study 1 excludes
  - habituals (*govarivat* ‘talk, say habitually’)
  - semelfactives (*čixnut* ‘sneeze once’)
  - stacked prefixes (*poperepisyvat* ‘spend some time rewriting’ )
  - suppletive pairs (*govorit*–*skazat* ‘say’)

# Aspect Study 1: prefixes & suffixes

- **Traditional hypothesis**
  - both p-partners and s-partners form aspectual pairs
- **Corollary**
  - p-partners and s-partners should behave the same
- **Isačenko hypothesis**
  - only s-partners form aspectual pairs
- **Corollary**
  - p-partners and s-partners should behave differently

**The corollaries can be tested empirically**

# Aspect Study 1: prefixes & suffixes

- Databases of p-partners and s-partners
  - Based on Modern subcorpus (1950–2007; 92M words) of Russian National Corpus
  - Excludes all verbs with <100 attestations
- p-partners: 264 pairs, over 1.6M forms
  - Based on Exploring Emptiness database at UiT
  - <http://emptyprefixes.uit.no/index.php>
  - Excludes verbs with multiple prefixes, biaspectual verbs, homonymy
- s-partners: 1,311 pairs, over 4.3M forms
  - Based on Zaliznjak 1980

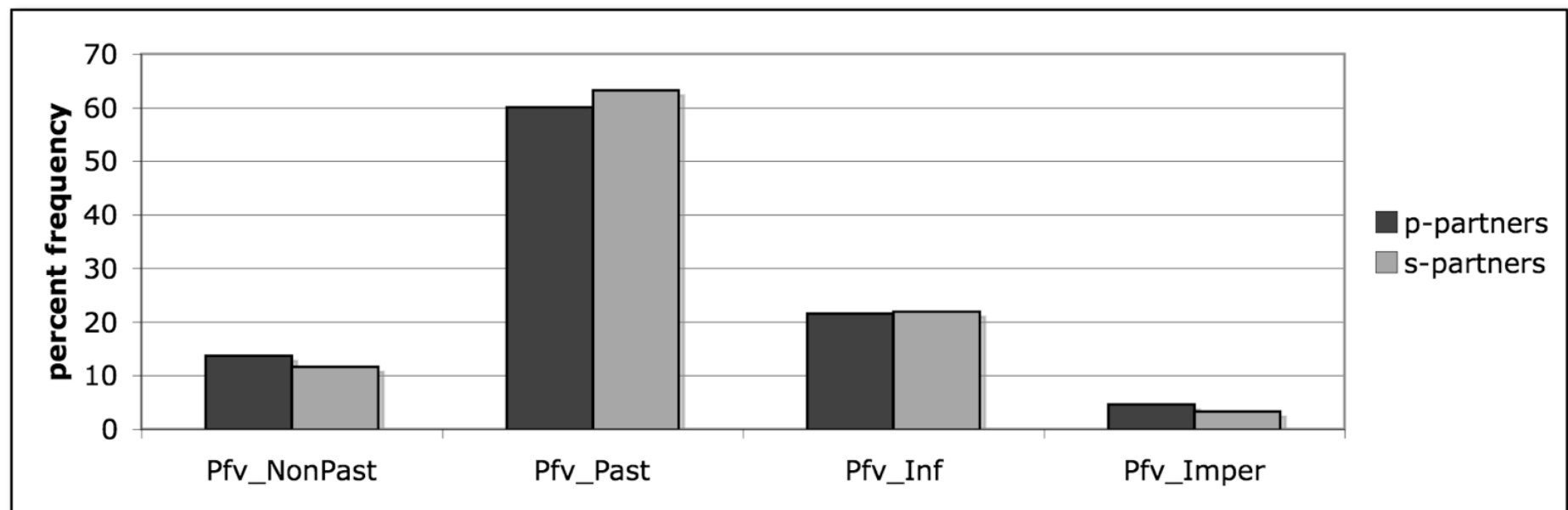
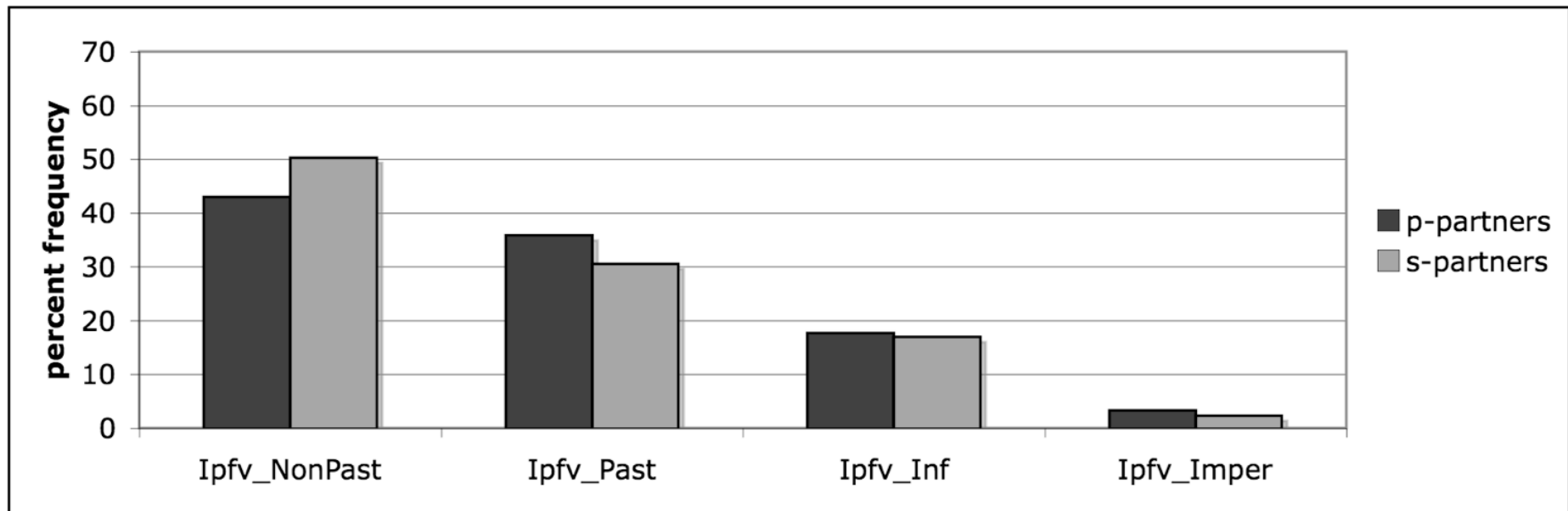
# Aspect Study 1: prefixes & suffixes

- Table 1: Imperfective vs. Perfective verbs
  - **Statistically significant:** chi-squared = 947756,  $df = 3$ ,  $p\text{-value} < 2.2e-16$
  - With nearly 6M datapoints, too much statistical power
  - **Effect size moderate/large:** Cramer's  $V = 0.399$
  - (0.1 = small, 0.3 = moderate, 0.5 = large)

# Aspect Study 1: prefixes & suffixes

- Table 2: p-partners vs. s-partners
  - **Imperfectives:** chi-squared = 16155.13, df = 3, p-value <  $2.2e-16$ , but Cramer's V = 0.076, **below “small”**
  - **Perfectives:** chi-squared = 4365.078, df = 3, p-value <  $2.2e-16$ , but Cramer's V = 0.037, **below “small”**
  - (0.1 = small, 0.3 = moderate, 0.5 = large)
- See Figure 1 on handout (p. 2)



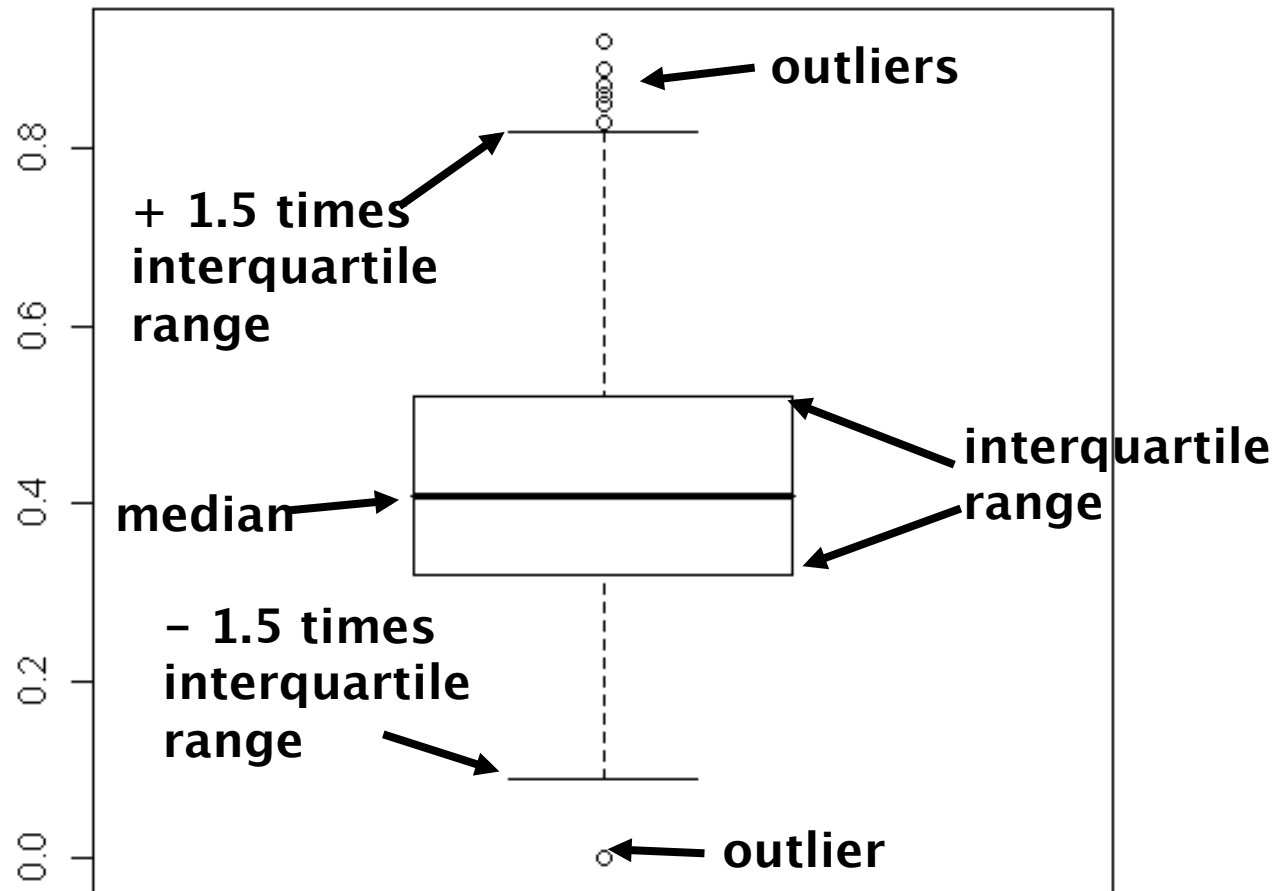


# Aspect Study 1: prefixes & suffixes

- No real difference between p-partners and s-partners
- No support for Isačenko hypothesis
- Since p-partners and s-partners behave the same, we merge data from both types in Study 2.

# Aspect Study 2: TAM & outlier verbs

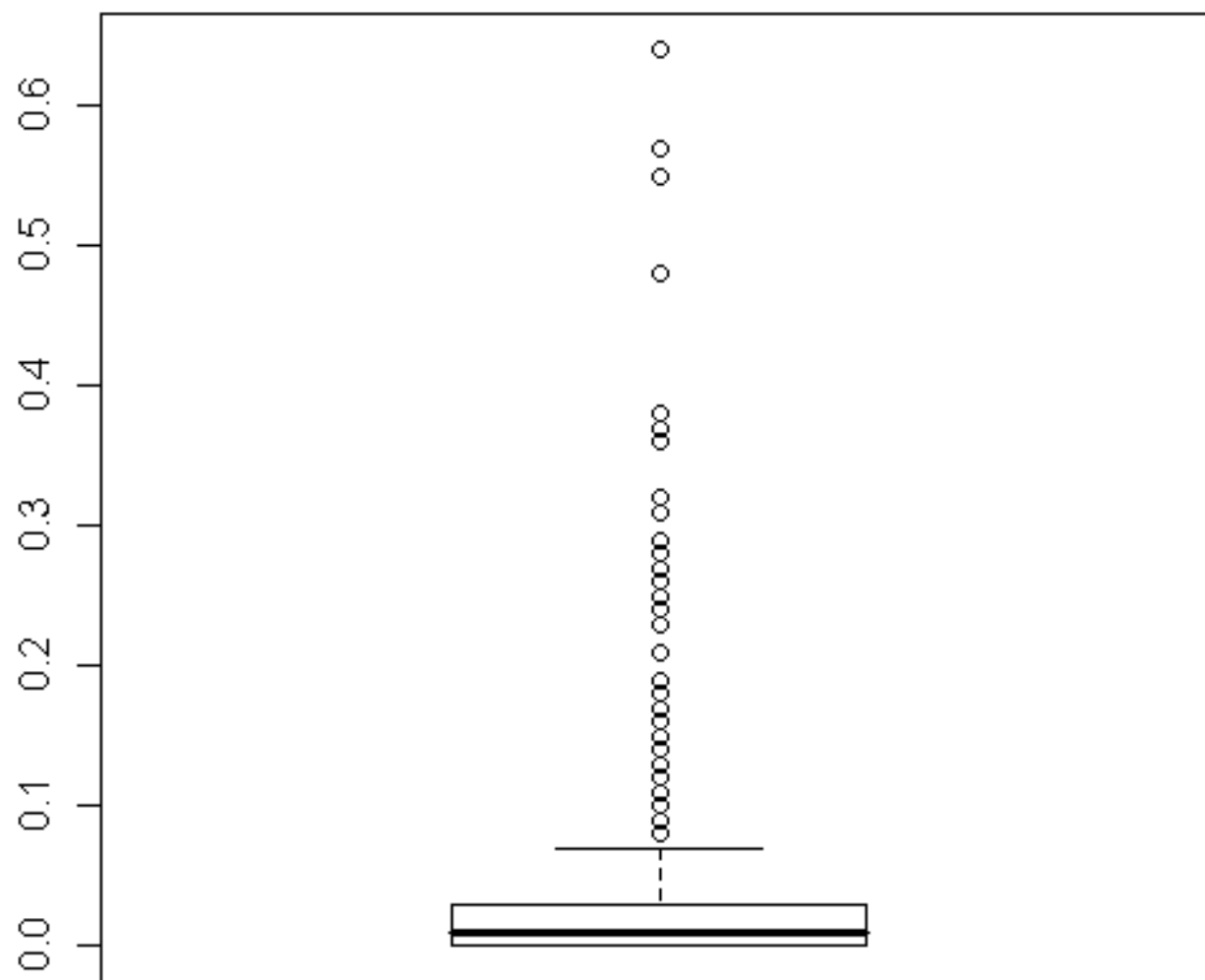
- Hypothesis for each TAM combination based on previous scholarship
- We look at outlier verbs for each combination of imperfective vs. perfective with imperative, non-past, infinitive, and past
- Outlier verbs are statistically deviant, strongly attracted to (or repulsed by) a given TAM combination
- We also sampled verbs from mid- and bottom-range



Proportion of Imperfective NonPast

# Imperfective imperative “be doing X!”

- Hypothesis:
  - In comparison with Perfective imperative, it denotes
    - categorical negation
    - politeness
    - insistence (rudeness)
- ✓ Hypothesis confirmed, but other findings too



Proportion of Imperfective Imper

# Imperfective imperative

- Over 200 outliers
- Polite: guest **knows what to expect**: *razdevajtes* 'take off your coat', *sadites* 'sit down', *prisoedinjajtes* 'join in', *zakusyvajte* 'eat a chaser', *zakurivajte* 'have a smoke', *zaezžajte* 'stop by', *zalezajte* 'get into the car'
- Insistence: hearer is **hesitant**: *stupajte* 'get going', *gljadite* 'look', *zabirajte* 'take'
- Insistence: hearer has **not behaved properly** (connection with negation): *provalivaj* 'get out of here', *končaj* 'stop', *ne perebivaj* 'don't interrupt', *ne prikidyvajsja* 'don't pretend to be something you aren't', *ne peredergivaj* 'don't distort the facts', *otvalivaj* 'get out of here'

# Imperfective imperative

- Other findings
  - Polite requests: *vyručajte* ‘help’
  - Kind wishes: *vyzdoravlivajte* ‘get well’
  - Conventional construction: *davajte* ‘let’s/let me’ (*posmotrim* ‘take a look’, *pomogu* ‘help’, *rasskažu* ‘tell’, *pokažu* ‘show’, *sdelaju* ‘do’)
  - Idiomatic/culturally anchored: *proščaj(te)* ‘farewell’, *soedinjajtes’* ‘unite’ (slogan), *obogoščajsja* ‘be prosperous’ (NEP), *zapevaj* ‘sing’ (army), *ne pominaj lixom/kak zvali* ‘bear no ill will/they just vanished’, *spasajsja, kto možet* ‘every man for himself’, *na čužoj karavaj rot ne razevaj* ‘don’t take others’ belongings’

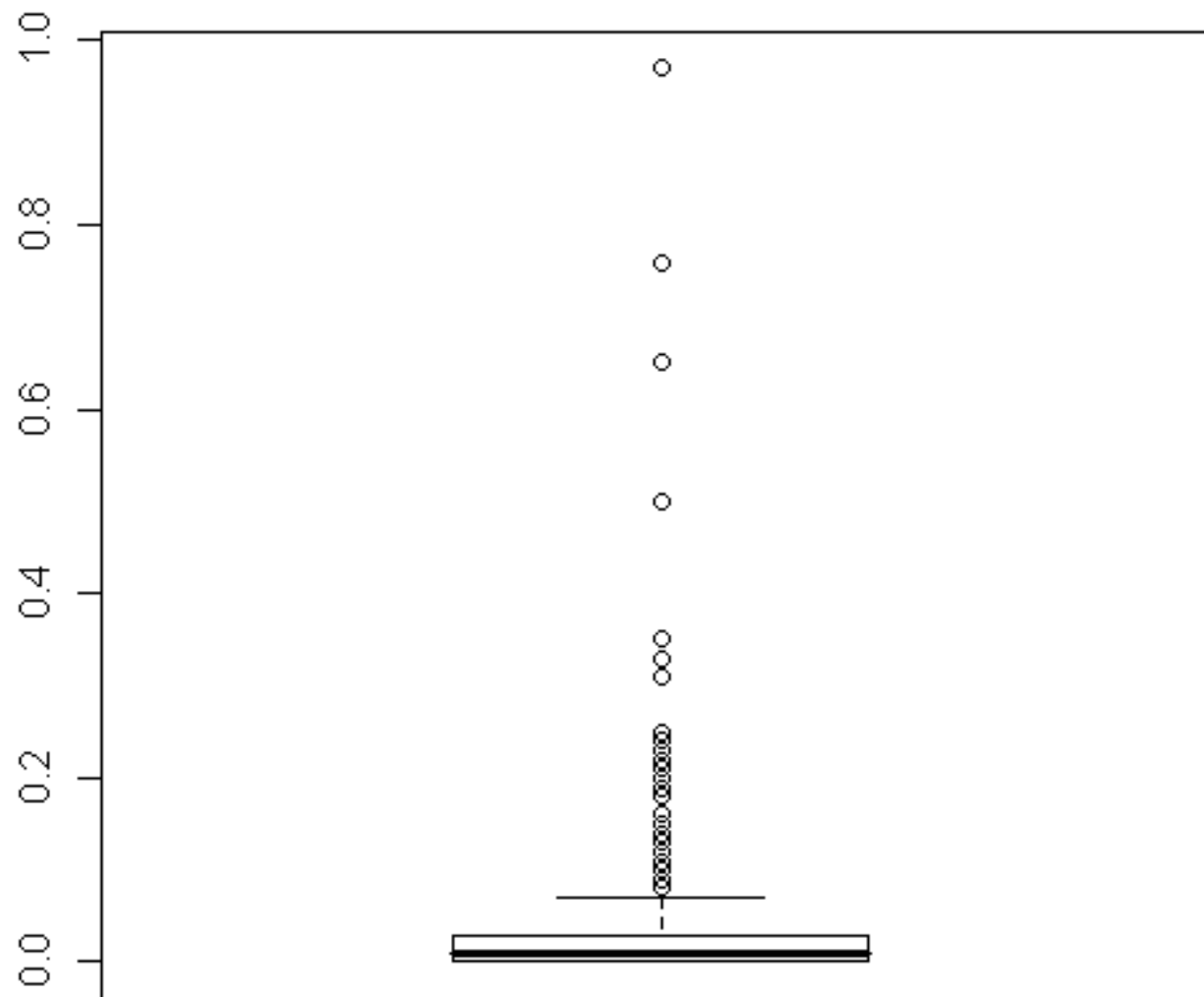


# Perfective imperative “make X happen!”

- Hypothesis

- Rude
- Instructions
- Warnings

✓ Hypothesis confirmed for rude and instructions, but not for warnings, and there are other findings too



Proportion of Perfective Imper

# Perfective imperative

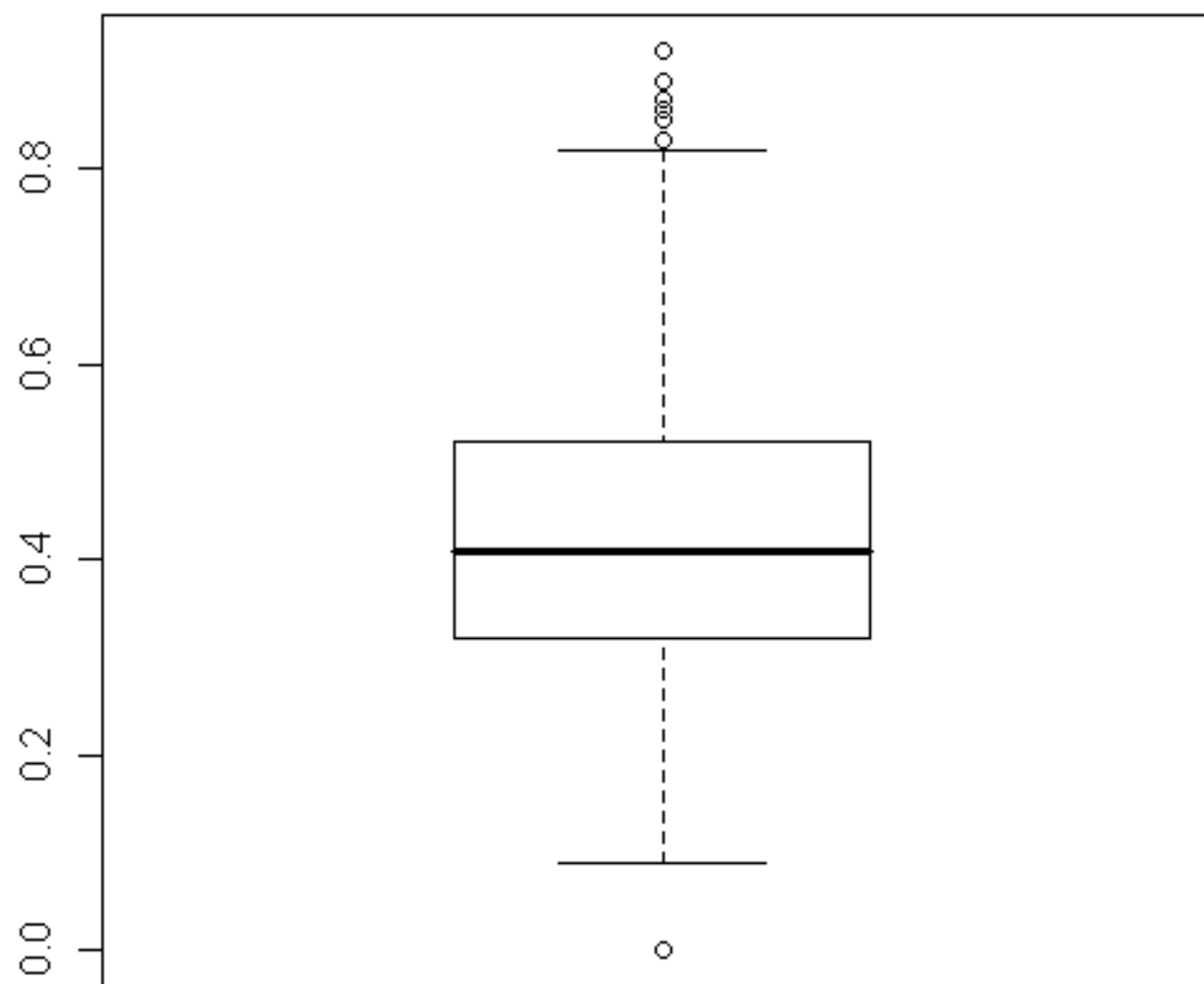
- Over 300 outliers
- Rude: *otstan* 'leave me alone', *otpustis* 'let me go', *perestan* 'stop it'
- Instructions: (cooking) *vskipjatite* 'boil', (exercising) *sognite* 'bend', (official transactions) *raspišites* 'sign for', (text instructions) *rassmotrite* [grafik x] 'see [figure x]'
- **Additional findings**
- Polite expressions: *izvinite* 'excuse me', *poterpite* 'please be patient', *predstav'te* 'imagine'
- Attention-directing: *posmotrite* 'look at', *vslušajtes* 'listen to', *ponjuxajte* 'sniff', *ugadajte* 'guess'

# Perfective imperative

- Additional findings, cont'd.
- Discourse markers: *požaluj* 'perhaps', *razrešite* 'allow', *podskažite* 'prompt, tell', *uvol'te* 'spare'
- Religious: *Gospodi pomiluj* 'Lord have mercy', *blagoslovi otče* 'Father bless'
- Conventional construction: *dajte* 'let me' (*poceluju* 'kiss', *posmotrju* 'take a look', *vzgljanu* 'take a peek')
- Idioms: *xot' zalejsja/zavalis'* 'a very large amount', *ne razlej voda* 'really close friends', *čert razderi* 'to hell with it'

# Imperfective non-past “is doing X”

- Hypothesis
  - On-going processes
  - Concrete processes with a duration
  - Simultaneous processes
  - Repeated actions
- ✗ Hypothesis NOT confirmed – gnomic situations instead



Proportion of Imperfective NonPast

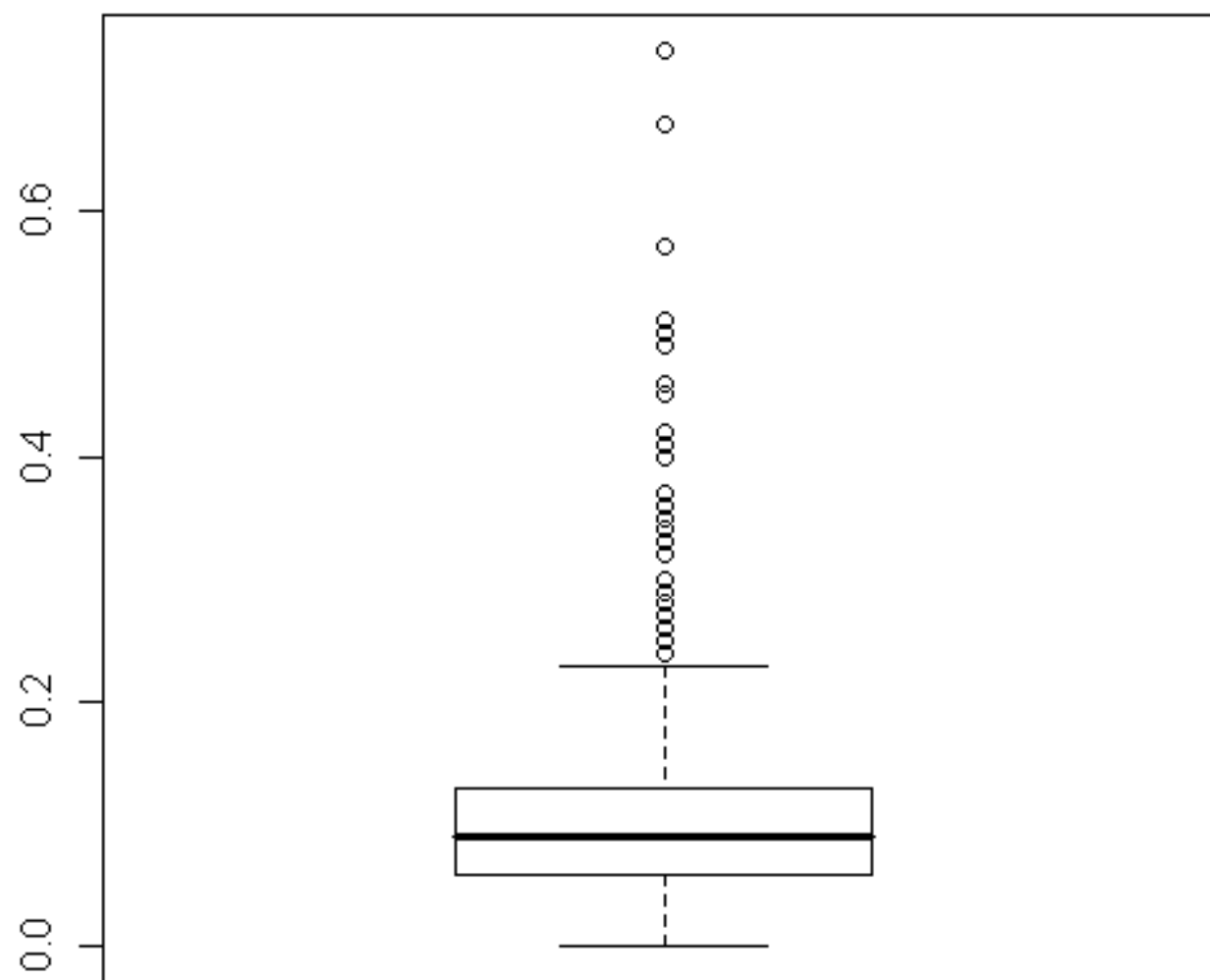
# Imperfective non-past

- 10+1 outlier verbs (*slyxat'* 'hear' lacks non-past)
- 10 used in gnomic constructions:
  - *diskussija vseгда javljaetsja naibolee produktivnoj formoj naučnogo obsuždenija problemy* 'a discussion is always the most productive form for scholarly debate on an issue'
  - *dannoe obstojatel'stvo vlečet za soboj negativnye posledstvija* 'this situation entails negative consequences for the clients'
  - *okazyvaetsja* 'turns out to be'; *vyjasnjaetsja, čto* 'it turns out that'; *čto kasaetsja* 'as far as X is concerned'; *storony objazujutsja* 'the parties are obliged to'; *zatrudnjajus' otvetit'* 'not sure'

# Perfective non-past “will get X done”

- Hypothesis
  - Predicted actions
  - Promised actions
- ✓ Hypothesis is confirmed, but there are other findings too





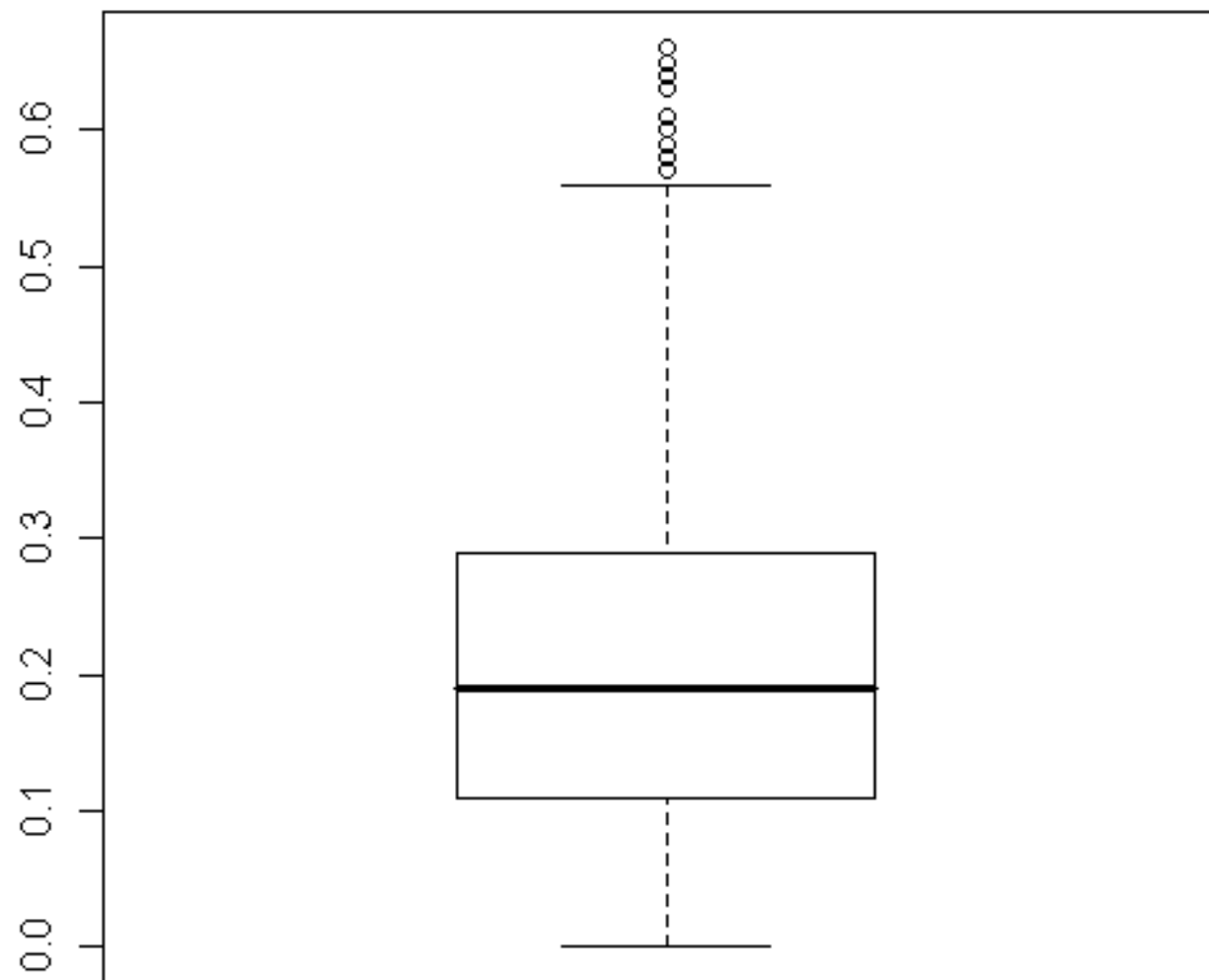
Proportion of Perfective NonPast

# Perfective non-past

- 84 outlier verbs
- Predictions: *prevysit* 'will exceed', *umen'sitsja* 'will decrease', *prodlitsja* 'will last', *naladitsja* 'will work out well', *vyzdoroveet* 'will get well', *zatrudnit* 'will make things difficult', *razoritsja* 'will go broke', *potrebuetsja* 'will be necessary', *podoxnet* 'will die', *pridetsja* 'will be necessary', *(ne) obojdetsja (bez)* 'will (not) manage (without)'
- Promises: *upravitsja* 'will take care of something', *postaraetsja* 'will try', *rasterzaet* 'will tear to pieces', *prokljanet* 'will curse'
- Performatives: *osmeljus'* 'I will take the liberty of', *procitiruju* 'I quote'
- Idioms: *ne pridereš'sja* 'don't find fault with', *ostal'noe priložitsja* 'the rest will come', *ot tebjja ne ubudet* 'nothing is going to happen to you', *vragu ne poželaesh'* 'I wouldn't wish it on my worst enemy'

# Imperfective infinitive “to be Xing”

- 2 hypotheses
  - Šmelev & Zaliznjak (2006): Imperfective used when action is controllable
  - Divjak (2009): Imperfective has generic interpretation
- ✓ Divjak’s hypothesis is confirmed



Proportion of Imperfective Inf

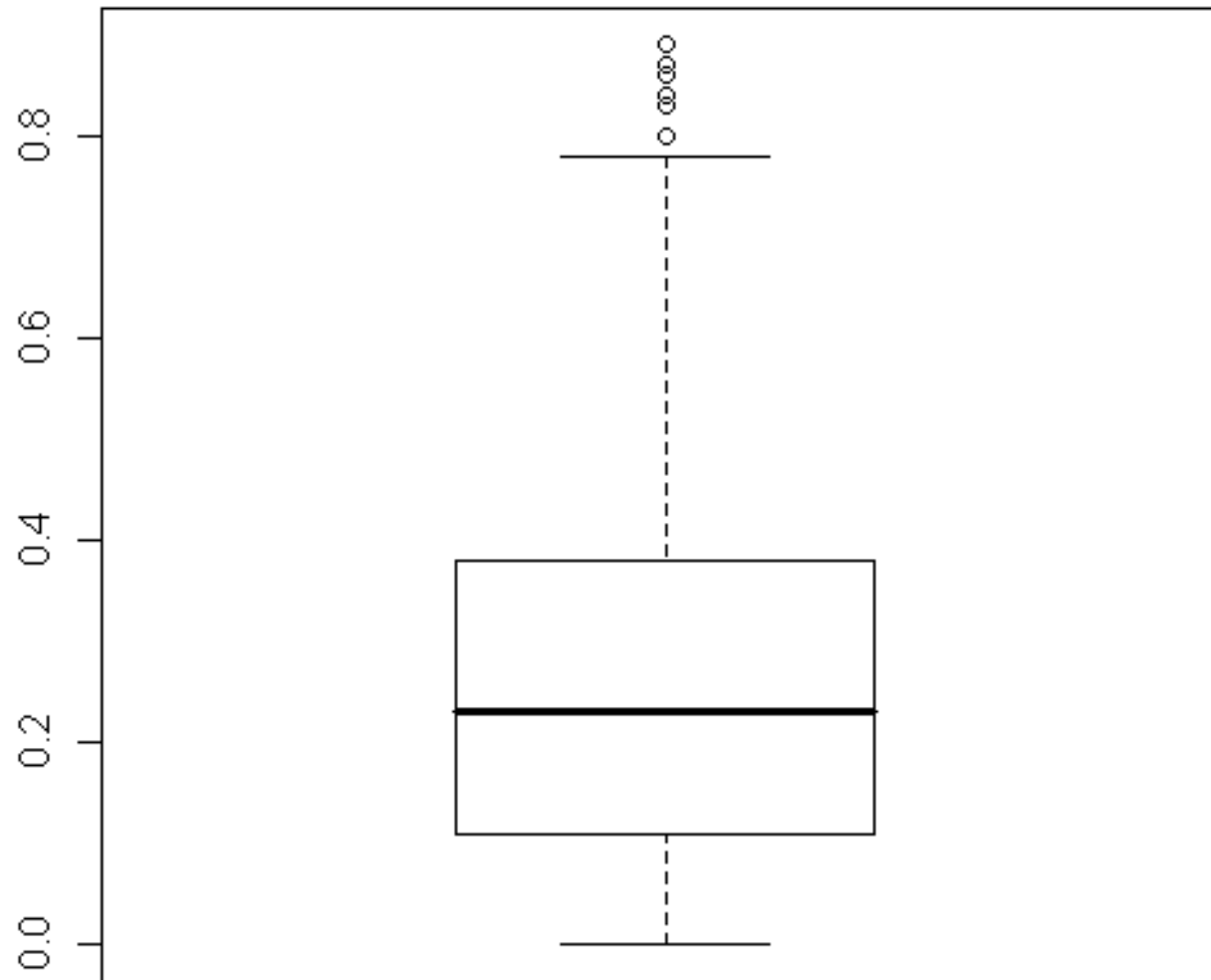
# Imperfective infinitive

- 12 outlier verbs
- 1 is idiomatic: *mne plevat* ‘I don’t give a damn’
- Others used in modal constructions
- Our data supports Divjak
  - outlier verbs include uncontrollable actions: *vvjazyvat’sja* ‘get mixed up in’, *raspoznavat* ‘recognize, identify’, *soglasovyvat* ‘conform to, agree with’
  - outlier verbs target conformist behavior: *sobljudat* ‘conform to’, *peredelyvat* ‘redo’, *ispravljat* ‘repair’, *učityvat* ‘take into account’

# Perfective infinitive “to get X done”

- 2 hypotheses
  - Šmelev & Zaliznjak (2006): Perfective used when action is controllable
  - Divjak (2009): Perfective has specific interpretation; also used with “tentative verbs”, *čtoby* ‘in order to’ construction and adverbs describing difficulty/importance of achieving X

✓ Divjak’s hypothesis is confirmed



Proportion of Perfective Inf

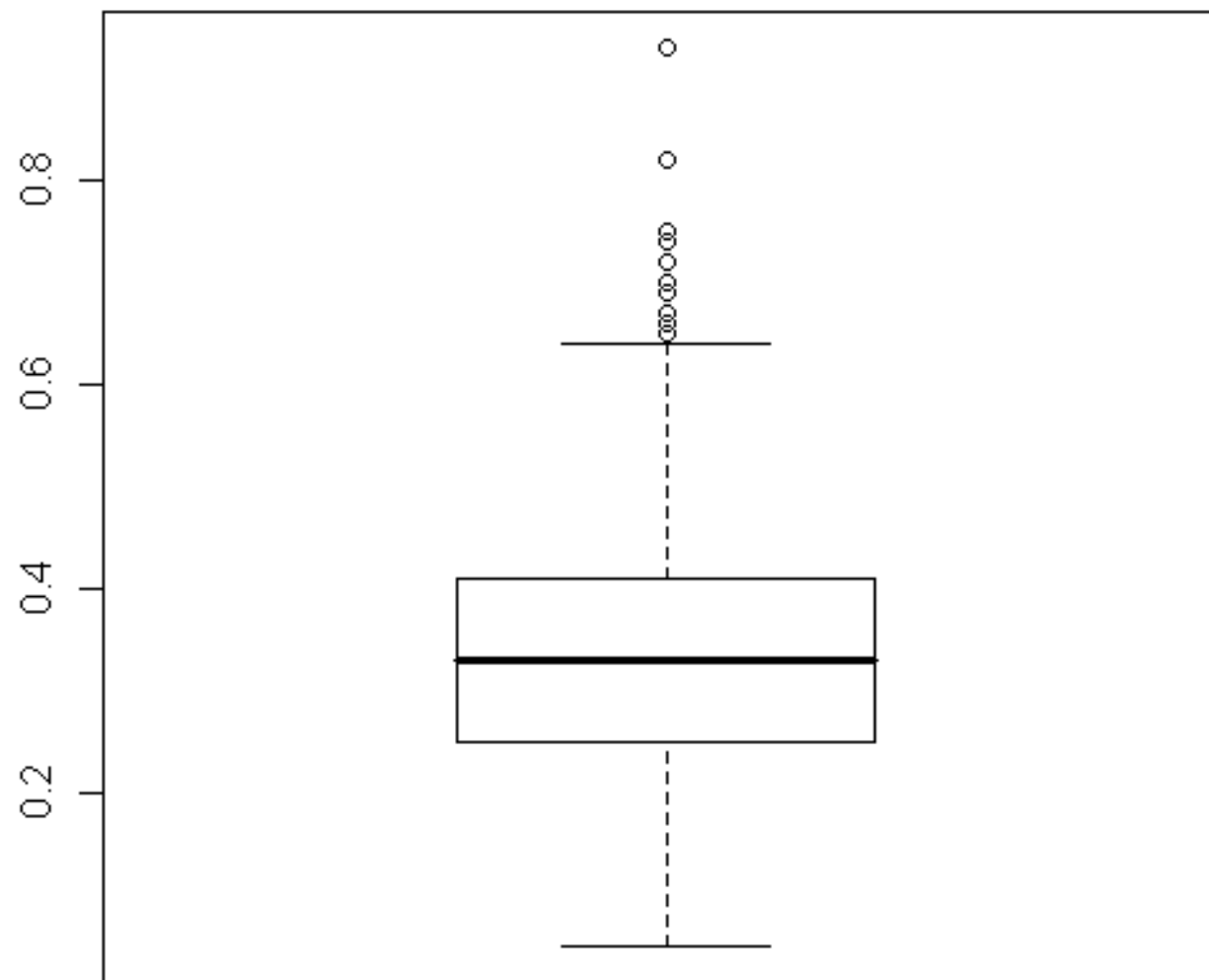
# Perfective infinitive

- 12 outlier verbs (*mne naplevat'* 'I don't give a damn')
- Modal uses for specific situations
- Tentative verbs:
  - *Poètomu my popytaemsja vospolnit' ètot probel, opirajas' na fakty i cifry.* 'That is why we are trying to fill in that gap, relying on facts and figures.'
- *Čtoby* 'in order to' construction:
  - *Posle zanjatija možno vypit' vody, čtoby vospolnit' ee poterju.* 'After working one can drink some water in order to make up for its loss.'
- Adverbs describing difficulty/importance
  - *Fruktami istinnyj deficit kalija vospolnit' očen' tjaželo, praktičeski nevozmožno.* 'It is very difficult, practically impossible, to make up for a real calcium deficit by [eating] fruit.'



# Imperfective past “was X-ing”

- Hypothesis
  - Durative past actions
  - Repeated past actions
- ✓ Hypothesis is confirmed, but there are other findings too



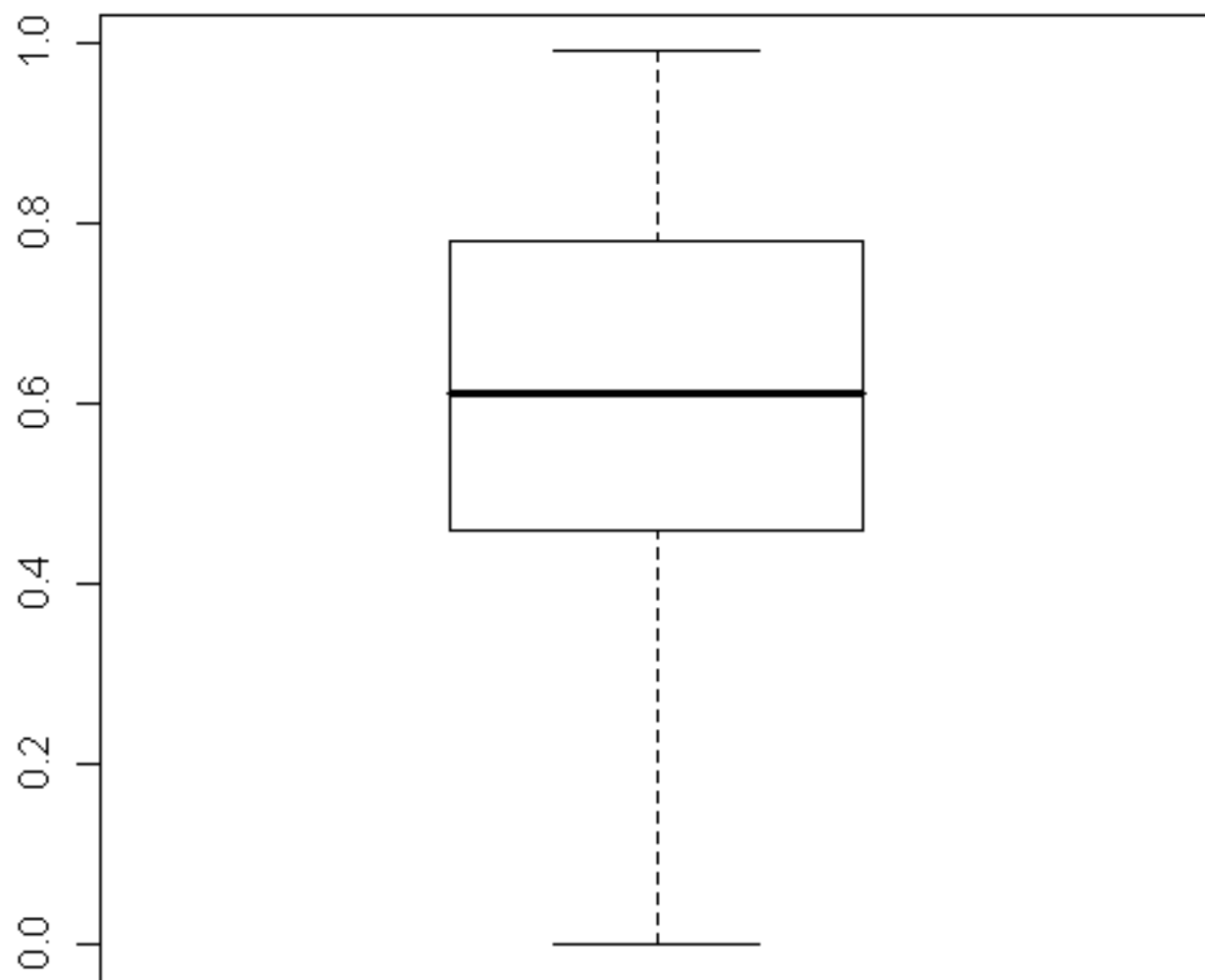
Proportion of Imperfective Past

# Imperfective past

- 13 outlier verbs
- Evidentials: *slyxal*, *slyl* ‘heard’
- Defective paradigms: 10 of these verbs have no imperative
- Narration of observations: *belel* ‘showed white’, *černel* ‘showed black’, *mračnel* ‘showed dark’, *svešivalsja* ‘hung, dangled’
- Negation for categorical statements: *ne pomyšljaj* ‘not thought about, dreamt of’, *ne unimalsja* ‘there was no stopping X’
- Behaviors accompanying dialog: *ščurilsja* ‘squinted’, *otščučivalsja* ‘made joking replies’, *mračnel* ‘glowered’

# Perfective past “Xed, got X done”

- no outlier verbs



Proportion of Perfective Past

# Conclusions

- Aspectual pairs behave similarly, regardless of whether they are formed via suffixation or prefixation
  - It may be that meanings of prefixes and verbs overlap
- Outlier verbs support some previous scholarship, but also present new insights and challenges

# Conclusions

- Imperfective imperative
  - extend list of typical polite and rude expressions; added familiar uses
- Perfective imperative
  - new details on rude and neutral uses; added polite uses and use for attention-directing
- Imperfective non-past
  - gnomic reference (instead of ongoing-durative)
- Perfective non-past
  - predictions of improvements/problems, threats, promises, performatives

# Conclusions

- Imperfective & Perfective infinitive
  - Mainly modal uses
  - Imperfective infinitives express generic circumstances
  - Perfective infinitives express specific situations (both circumstances and physical necessity/capacity); constructions with tentative verbs, adverbs, *čtoby* ‘in order to’
- Imperfective past
  - evidentials, habituais, narration of observations



# Impact

- Better linguistic analysis
- Pedagogical applications