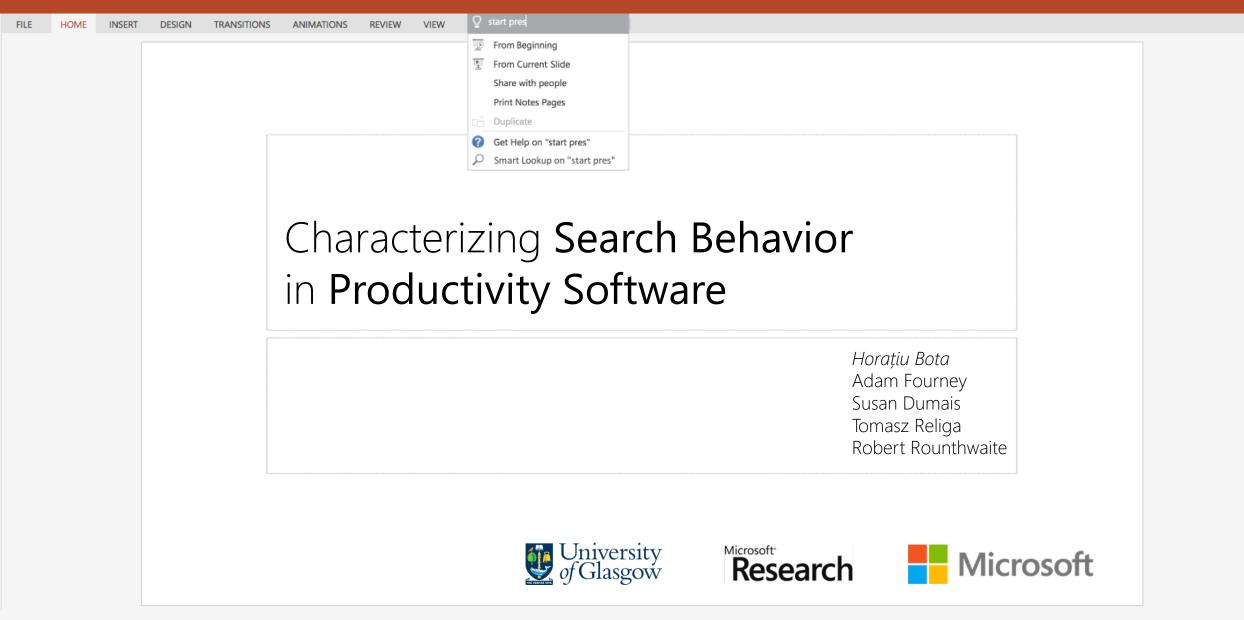
FILE HOME INSERT DESIGN TRANSITIONS ANIMATIONS REVIEW VIEW Q Tell me what you v



■ PowerPoint



Characterizing Search Behavior in Productivity Software

Horațiu Bota Adam Fourney Susan Dumais Tomasz Religa Robert Rounthwaite







Bing O Cortana Q Tell Me

Informational

Transactional

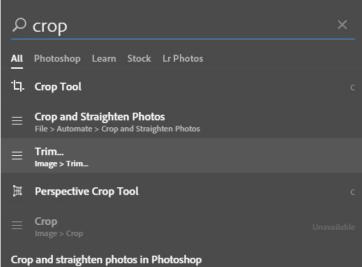
Bing O Cortana Q Tell Me

Informational

Transactional

Queries people use to "perform a web-mediated activity" (Broder, 2002)

Adobe Photoshop



Learn how to crop and straighten photos in Adobe Photoshop. Use the Crop tool to easily remove portions of a photo to create focus or strengthen the composition. You can also use t... https://helpx.adobe.com/photoshop/using/crop-straighten-photos.html



Microsoft Office (TellMe)

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Ą	Ò,	Print Preview and Print				∧ ¬ ₽	
4	Ô,	Preview and Print	►	BPCC	AaBbCcE	AdD	AaBbCcD
*	0	Print		ading 1	Heading 2	Title	Subtitle
		Display and Printing Options					
_		Print Layout					
	?	Get Help on "print"					
	Ĵ	Smart Lookup on "print"					

As seen at: https://helpx.adobe.com/photoshop/using/search.html

Help search

PowerPoint 2016 Help

📀 🏵 🟠 Search

What is a slide master?

The master slide is the top slide in the thumbnail pane on the left side of the window. The related slide layouts appear just below the slide master:

ρ

 \times

-13

Change a slide master

Every PowerPoint presentation contains a slide master with related slide layouts that control the look.

Video: Change slide masters

Training: to add consistency to your colors, fonts, headings, and other styles, and to unify the look of your presentation, use a slide master.

Insert a picture in PowerPoint

Insert a picture in PowerPoint. Applies To: ... If you want a picture to appear as background without affecting all slides in a Master, ...

Add a background picture (or watermark) to

 Image: Side Master View

 Image: Side Master View

 Image: View Notes Master

 Image: Handout Master View

 Image: Delete Slide

 Footers

 Image: Get Help on "master"

 Image: Smart Lookup on "master"

Web search

Help search

🕞 🕘 🟠 🛛 Search

What is a slide master?

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♀ master

- Slide Master View
- View Notes Master
- Handout Master View
- 👿 Delete Slide
 - Footers
- ? Get Help on "master"
- Smart Lookup on "master"

Web search

nsights	*>
Explore Define	
Explore Wikipedia	
Master - Wikipedia Look up Master, master, masterful, masters, or mastership in Wiktionary, the free dictionary. Master, masters, and the Master may refer to:	



The Master (Doctor Who) - Wikipedia

The Master is a recurring character in the British science fiction television series Doctor Who and its associated spin-off works. The character is a ...

More

Web search

Masters Tournament - Official Site

http://www.masters.com

The Official Site of the Masters Golf Tournament 2016. This major golf tournament is played annually at the Augusta National Golf Club.

Master | Definition of Master by Merriam-Webster https://www.merriam-webster.com/dictionary/master

As a slave he was required to do his master's bidding without question. The dog was always obedient to its master, the master and mistress of the house

More

Powered by bing

1. Describe search activity in Office

- 1.1 What **types of search** do people engage in?
- 1.2 How do they **perform** these search activities?

2. Describe **abandonment** in Office command search 2.1 Effect of **Menu** results

Describe search activity in Office 1.1 What types of search do people engage in? 1.2 How do they perform these search activities?

Describe abandonment in Office command search 2.1 Effect of Menu results

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Describe abandonment in Office command search
 2.1 Effect of Menu results

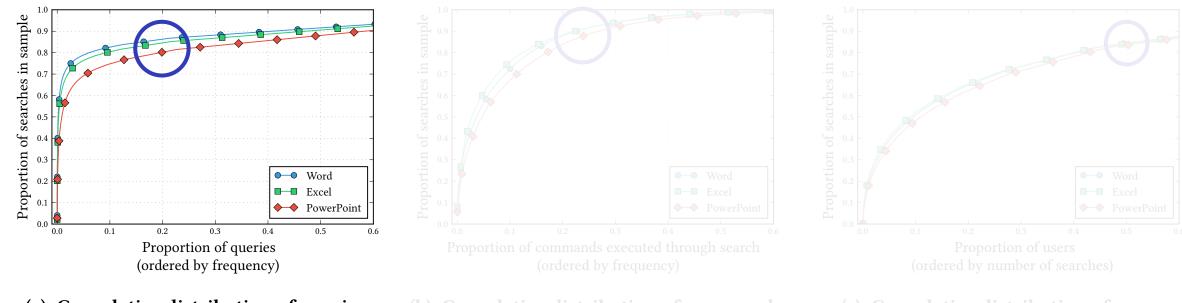
1. Describe search activity in Office

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Describe abandonment in Office command search 2.1 Effect of chevroned results

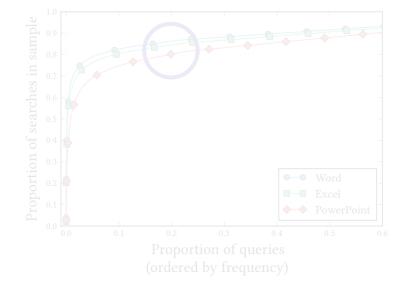
Random sample of **1 million unique users** and their millions of searches.

User location: U.S. User type: Desktop only App Version: Office 16+ Apps: Word, Excel, PowerPoint Start/End Date: 29/05 – 02/07/2017 (5 weeks)

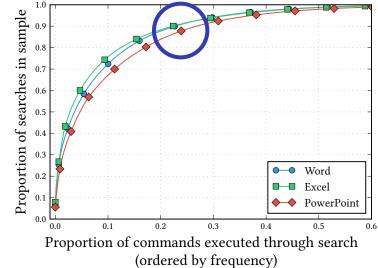


- (a) Cumulative distribution of queries
- (b) Cumulative distribution of command
- (c) Cumulative distribution of users

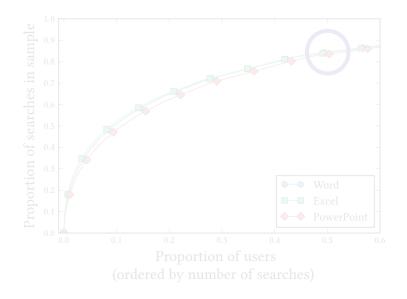
~20% of queries account for ~80% of searches with a typed query. ~90% of searches usec to access ~25% of commands executed through search.



(a) Cumulative distribution of queries

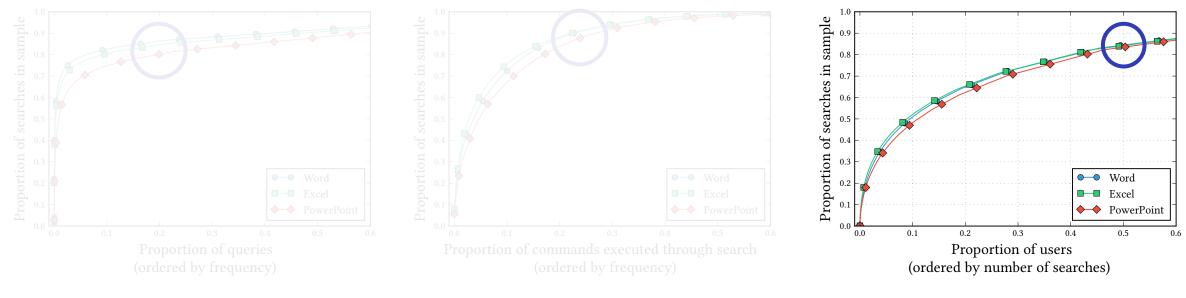


(b) Cumulative distribution of commands



(c) Cumulative distribution of users

~20% of queries account for ~80% of searches with a typed query. ~90% of searches used to access ~25% of commands executed through search.

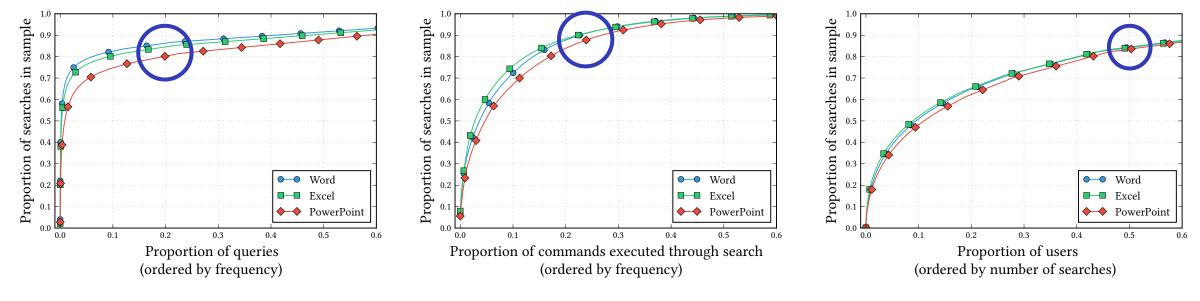


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- (b) Cumulative distribution of commands
- (c) Cumulative distribution of users

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Results

When users issue search queries in Office, the results may include **commands**, a link to **Office help**, or a link to **Web search** results.

Command execution is the most likely outcome

Command results are clicked **6.4 times as often as help documentation**, and **32 times as often as web search**.

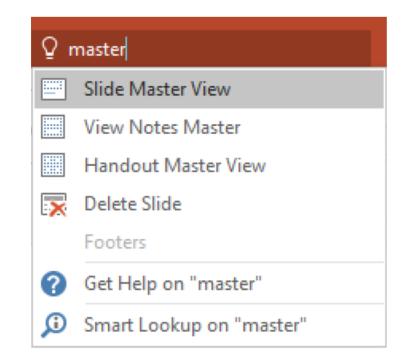
master Slide Master View View Notes Master Handout Master View Delete Slide Footers Get Help on "master" Smart Lookup on "master"

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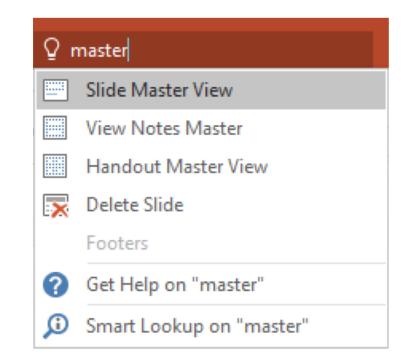


Results

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Query	Most Popular Command	% Search Volume	% App Sessions	% Users	% Aban- doned	% Requery	# Query Rank	# App Rank	# Users Rank
header	HeaderAndFooter	2.09%	3.04%	3.32%	6.88%	39.17%	1	1	1
free	FreezePanes	1.70%					2		
print	PrintDefault	1.44%					3		
sort	Sort	1.18%					4		
find	Find	1.07%					5		
insert	InsertSheetRows	1.06%					6		
freeze the top row†	FreezePanes	0.93%					7		
insert row	InsertSheetRows	0.85%					8		
freeze	FreezePanes	0.80%					9		
insert a table†	InsertList	0.79%					10		

Head queries in Excel.

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(a)	hora	†11 I I	nota.
Co	1010	uui	0010

Query	Most Popular Command	% Search Volume	% App Sessions	% Users	% Aban- doned	% Requery	# Query Rank	# App Rank	# Users Rank
header	HeaderAndFooter	2.09%	3.04%	3.32%	6.88%	39.17%	1	1	1
free	FreezePanes			2.11%					
print	PrintDefault			2.53%					
sort	Sort			1.44%					
find	Find			1.27%					
insert	InsertSheetRows			1.24%					
freeze the top row†	FreezePanes			1.92%					
insert row	InsertSheetRows			1.06%					
freeze	FreezePanes			1.41%					
insert a table†	InsertList			1.79%					

Low overlap between users.

Head queries in Excel.

Query	Most Popular Command	% Search Volume	% App Sessions	% Users	% Aban- doned	% Requery	# Query Rank	# App Rank	# Users Rank
header	HeaderAndFooter	2.09%	3.04%	3.32%	6.88%	39.17%	1	1	1
free	FreezePanes			2.11%		52.57%			
print	PrintDefault			2.53%		32.90%			
sort	Sort			1.44%		53.38%			
find	Find			1.27%		54.82%			
insert	InsertSheetRows			1.24%		55.58%			
freeze the top row†	FreezePanes			1.92%		20.93%			
insert row	InsertSheetRows			1.06%		52.43%			
freeze	FreezePanes			1.41%		32.94%			
insert a table†	InsertList			1.79%		13.77%			
		ow overla etween u							

Head queries in Excel.

Frequent re-finding.

Query	Most Popular Command	% Search Volume	% App Sessions	% Users	% Aban- doned	% Requery	# Query Rank	# App Rank	# Users Rank
header	HeaderAndFooter	2.09%	3.04%	3.32%	6.88%	39.17%	1	1	1
free	FreezePanes			2.11%		52.57%			3
print	PrintDefault			2.53%		32.90%			2
sort	Sort			1.44%		53.38%			7
find	Find			1.27%		54.82%			9
insert	InsertSheetRows			1.24%		55.58%			10
freeze the top row†	FreezePanes			1.92%		20.93%			4
insert row	InsertSheetRows			1.06%		52.43%			12
freeze	FreezePanes			1.41%		32.94%			8
insert a table†	InsertList			1.79%		13.77%			6
						Î			
	L	ow overlag between us	p sers.						ver users wit eated use.
Head queries	s in Excel.			Fr	equer	it re-fir	nding		

	Microso	oft Word		Microsoft Pov	verPoint
Command Name	Query		Command Name	Query	
Proofing	spell	28.07%	Orientation	portrait	24.38%
	sp	18.51%		orientation	6.65%
	spe	15.27%		landscape	5.02%
spelling6.35%change to portraitspell check6.25%change orientation	3.94%				
	spell check	6.25%		change orientation	3.20%
WordCount	word	42.96%	DesignerPane	des	23.29%
	word count	20.13%		design	19.80%
	wor	12.15%		de	16.39%
	wo	4.86%		desi	8.33%
	character count	4.40%		d	6.10%
LineSpacing	line	14.94%	Crop	crop	81.16%
	spacing	6.80%	-	cr	12.42%
	single space	6.61%		crop picture	0.60%
	double space	6.19%		finish crop	0.39%
	double	4.78%		crop image	0.34%

 Table 2: Most frequently used queries for executing top three most frequent commands executed through search.

	Microso	oft Word
Command Name	Query	
LineSpacing	line	14.94%
	spacing	6.80%
	single space	6.61%
	double space	6.19%
	double	4.78%

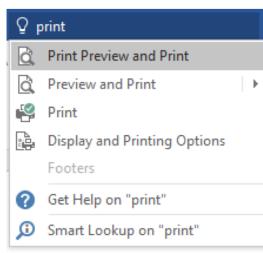
Microsoft PowerPoint

Command Name	Query	
Orientation	portrait	24.38%
	orientation	6.65%
	landscape	5.02%
	change to portrait	3.94%
	change orientation	3.20%
	des	

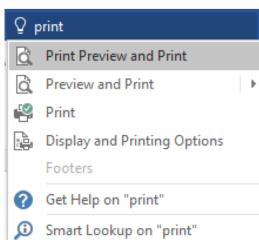
Table 2: Most frequently used queries

Parameterized commands lead to more variation in queries used to access them.

Search Abandonment

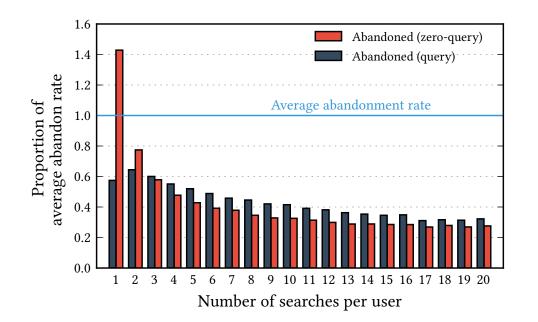


Search Abandonment

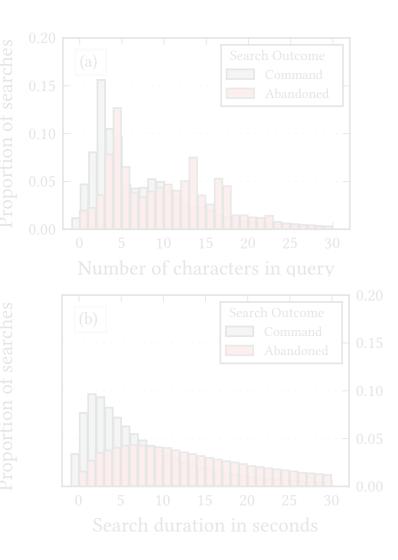


Query	% Abandoned
header	6.88%
free	8.25%
print	16.21%
sort	11.85%
find	7.35%
insert	23.88%
freeze the top row†	99.78%
insert row	8.62%
freeze	13.41%
insert a table†	99.77%

Abandonment for head queries in Excel.

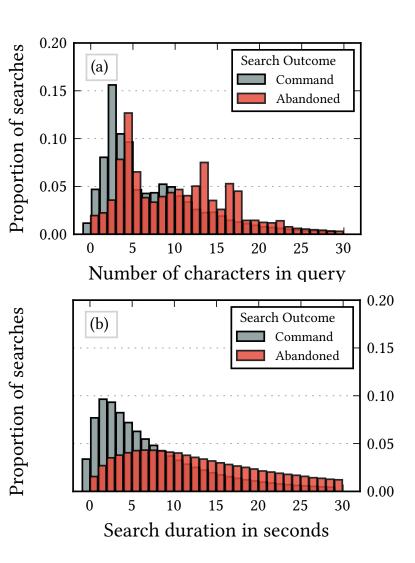


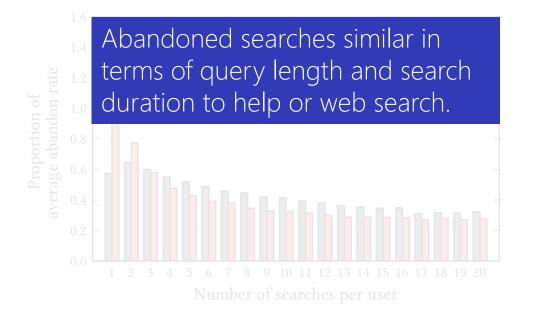
Abandonment rates lower for frequent searchers.



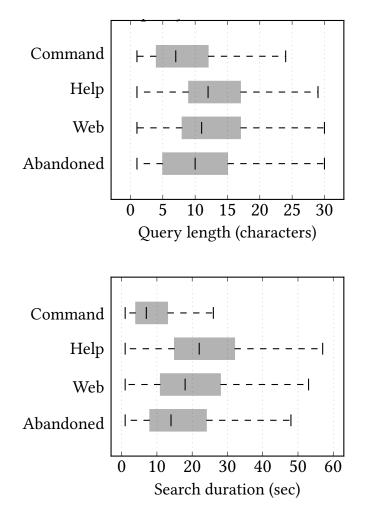


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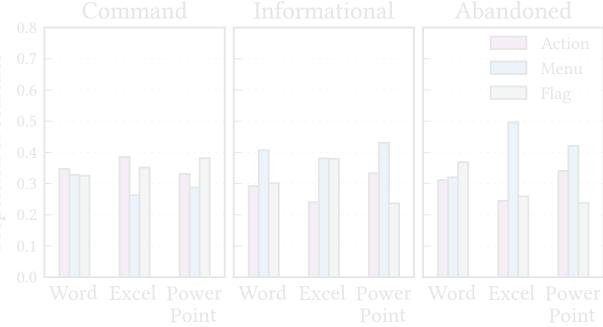


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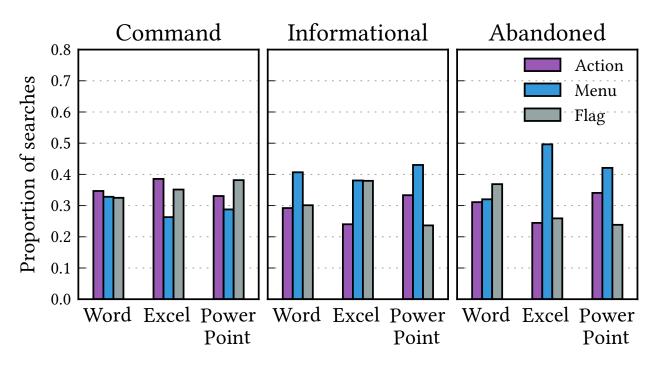
Different types of command results.





Different types of command results.

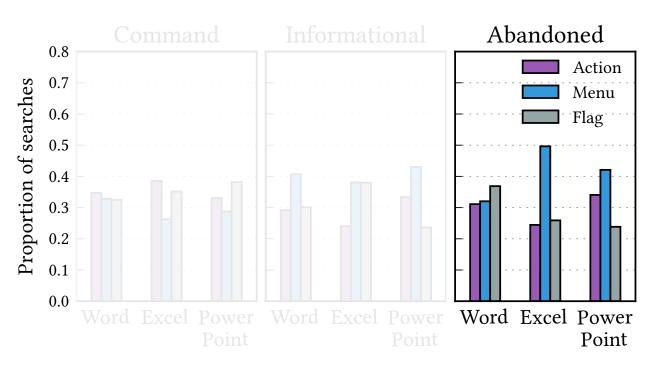
Action		
♀ new file		
🗋 New File		
Close File		
Menu		
∑ language		
= inigange		
⊕ Language	▶ @ ₂	Set Proofing <u>L</u> anguage
	► @	Set Proofing <u>L</u> anguage Language <u>P</u> references
 ♣ Language a Translate 	_	
⊕A Language	_	
 ♣ Language a Translate 	_	
 ▲ Language ▲ Translate Flag 	_	



Different types of command results.

Action	
♀ new file	
🗋 New File	
Close File	
Menu	
~	
♀ language	
🛱 Language	E Set Proofing Language
்க் Translate	Language Preferences
Flag	

FI	lag	
Ωı	bold	
в	Bold	
*	Animation Styles	Þ



Menu results more frequent at top rank in the case of abandoned / informational search.

Re-ranking Strategies

Result type

Footer

Get Help on 'print'

Smart Lookup on "print

Q primi

	0.21	

Per-query CTR

Re-ranking Strategies

Result type

print Print Preview and Print Preview and Print Print Print Display and Printing Options Footers Get Help on "print" Smart Lookup on "print"

	0.21	

Re-ranking Strategies

Result type

Overall CTR

Print 0.08 Preview and Print 0.05 Preview and Print 0.21 Print 0.21 Display and Printing Options 0.03 Footers 0.01 Get Help on "print" 0.01

Per-query CTR

♀ print ▶ Print Preview and Print ● Preview and Print ● Print ● Display and Printing Options ● Doters ● Doters ● Doters ● Doters ● Doters

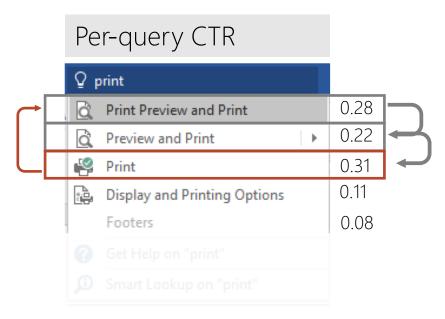
Re-ranking Strategies

Result type

Footer

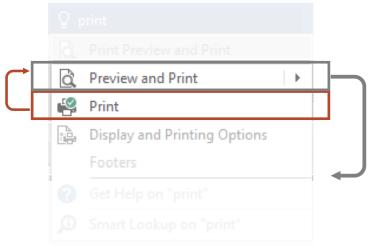
- Get Help on "print"
- Smart Lookup on "print

	0.21	



Re-ranking Strategies

Result type



Overall CTR print Print Preview and Print Preview and Print Preview and Print Print O.03 Pooters O.01 Get Help on "print" Smart Lookup on "print"

	Pe	er-query CTR		
	٥	print		
-	à,	Print Preview and Print	0.28	
	à	Preview and Print	0.22	 ← \
_	2	Print	0.31	
		Display and Printing Options	0.11	-
		Footers	0.08	

Selection	Strategy		Clicke	d result	rank	
		1	2	3	4	5
	No re-ranking	70.54%	15.93%	7.18%	3.85%	2.50%
Historical	Result type Overall click-through Per-query click-through	71.17% 74.66% 77.93%	12.47% 12.52% 12.29%	7.21% 6.47% 5.32%	5.28% 3.83% 2.68%	3.87% 2.51% 1.78%
Oracle	Result type Overall click-through Per-query click-through	76.77% 82.65% 83.18%	7.48% 7.25% 9.47%	5.76% 5.08% 4.24%	5.63% 3.20% 1.99%	4.36% 1.82% 1.12%

Without re-ranking, most command clicks occur at rank one.

Selection	Strategy		Clicke	d result	rank	
		1	2	3	4	5
	No re-ranking	70.54%	15.93%	7.18%	3.85%	2.50%
Historical	Result type	71.17%	12.47%	7.21%	5.28%	3.87%
	Overall click-through	74.66%	12.52%	6.47%	3.83%	2.51%
	Per-query click-through	77.93%	12.29%	5.32%	2.68%	1.78%
Oracle	Result type	76.77%	7.48%	5.76%	5.63%	4.36%
	Overall click-through	82.65%	7.25%	5.08%	3.20%	1.82%
	Per-query click-through	83.18%	9.47%	4.24%	1.99%	1.12%

Lowering Menu results in the ranking increases clicks on rank one by 6 percentage point.

Selection	Strategy	Clicked result rank						
		1	2	3	4	5		
	No re-ranking	70.54%	15.93%	7.18%	3.85%	2.50%		
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Re-ranking based on perquery CTR increases clicks on rank one by 13 percentage points.

Selection	Strategy	Clicked result rank						
		1	2	3	4	5		
	No re-ranking	70.54%	15.93%	7.18%	3.85%	2.50%		
Historical	Result type Overall click-through Per-query click-through	71.17% 74.66% 77.93%	12.47% 12.52% 12.29%	7.21% 6.47% 5.32%	5.28% 3.83% 2.68%	3.87% 2.51% 1.78%		
Oracle	Result type Overall click-through Per-query click-through	76.77% 82.65% 83.18%	7.48% 7.25% 9.47%	5.76% 5.08% 4.24%	5.63% 3.20% 1.99%	4.36% 1.82% 1.12%		

Re-ranking based on perquery CTR increases clicks on rank one by 7 percentage points in a train/test split.

Command execution is most likely outcome in Office Search.

Frequent command refinding through search. Abandonment

Abandonment rates lower for frequent searchers.

Abandoned searches similar (in terms of query length and search duration) to help or web search.

Menu results more frequent at top rank in the case of abandoned / informational search. Re-ranking

Most command clicks occur at rank one.

Lowering Menu results in the ranking increases clicks on top rank.

Re-ranking based on perquery CTR is most effective strategy nvestigated.

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Thanks Q

Horațiu Bota Adam Fourney Susan Dumais Tomasz Religa Robert Rounthwaite