

Characteristics of Online Social Services Sharing Long Duration Content

Hyewon Lim¹ Taewhi Lee² Namyoon Kim¹
Sang-goo Lee¹ Hyoung-Joo Kim¹

¹ Seoul National University ² ETRI

ICOMP'14, 2014/07/21 @ Las Vegas, U.S.A.

Introduction

Online Social Service

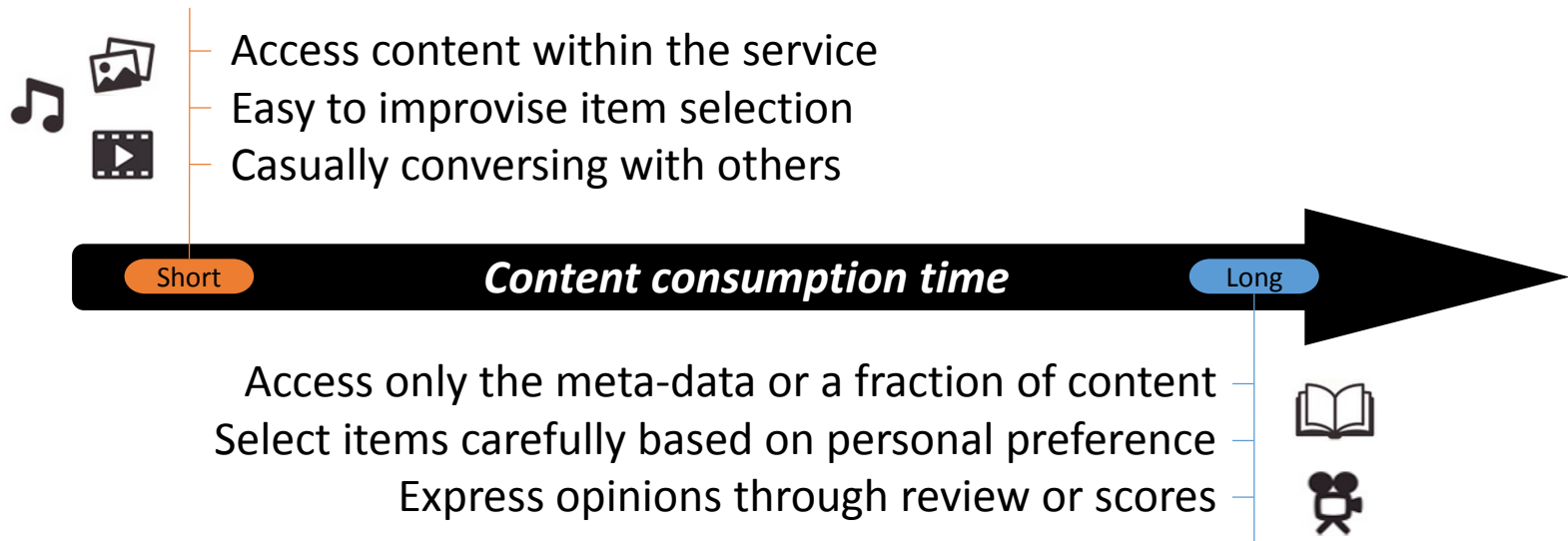
- A catalyst in the explosion of online media content
- Users share their content and find an audience
- Social content sharing service
 - Deal with target content



Introduction

Social Content Sharing Service

- Different characteristics depending on target content



Introduction

Influence in Long Content Services

- Usually have low communication ratios
- Users cannot be completely isolated from social influence

What affects users' item selection?

Dataset

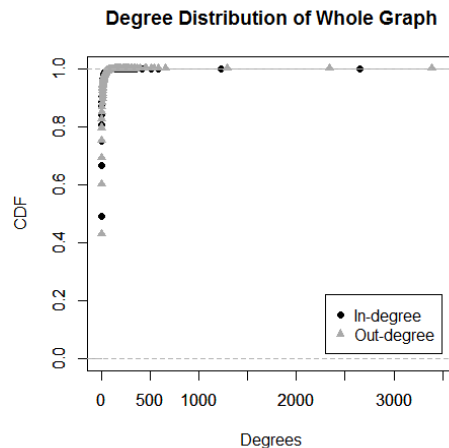
- Online social cataloging service
 - LibraryThing
 - January 23, 2013 – January 30, 2013
 - Userstory Book (South Korea)
 - Complete dataset up to May 8, 2012

Data	LibraryThing	Userstory Book
The number of users	108,221	12,933
The number of relationships (unilateral)	320,728	13,591
The number of relationships (reciprocal)	225,783	7,582
The number of books	13,285,867	100,168
The number of comments	161,340	2,181

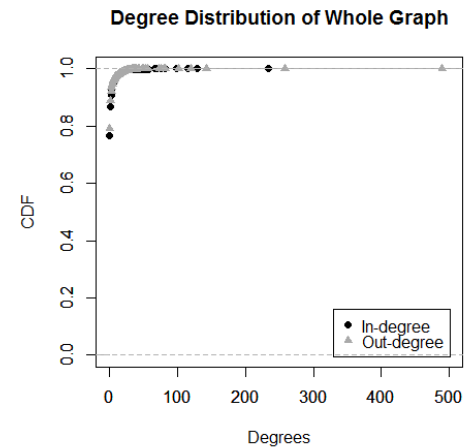
Network Analysis

Degree Distribution

- 56% (LT) and 21% (UB) of users make a friend
- About 90% of users have zero or one friend



LibraryThing

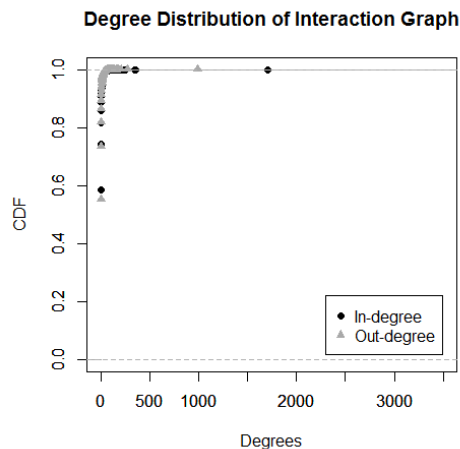


Userstory Book

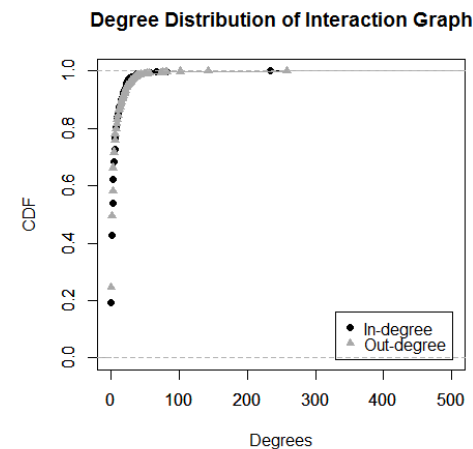
Network Analysis

Degree Distribution (cont.)

- User interaction
 - A user u leaves messages on others' pages
 - 23% at LT and 6.7% at UB users have interactions with others
 - Among them, 50% of the users interact with friends



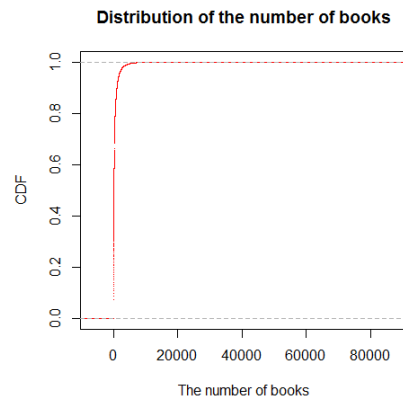
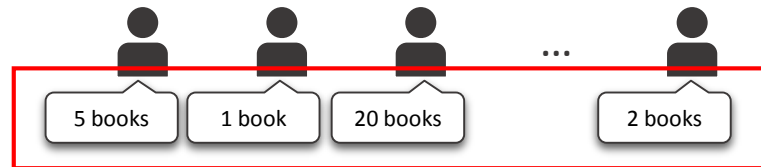
LibraryThing



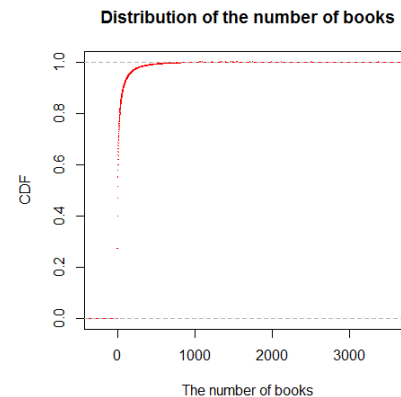
Userstory Book

Network Analysis Relate to Content

- Distribution of the number of books each user has



LibraryThing
(avg.: 5 friends, 388.25 books)

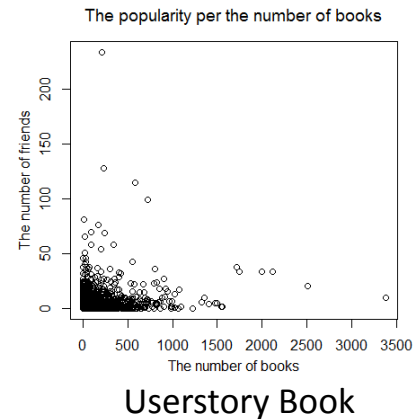
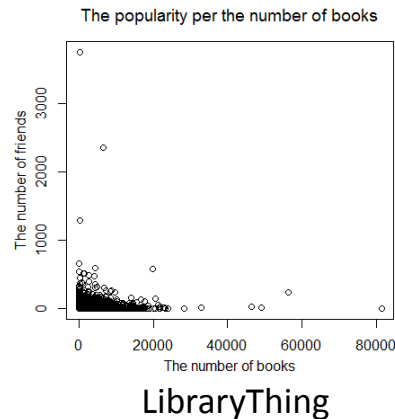
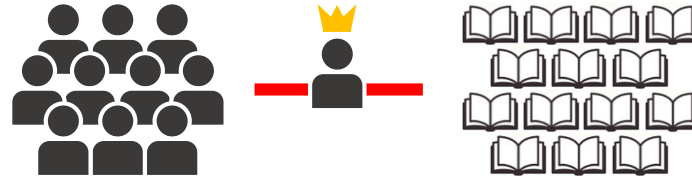


Userstory Book
(avg.: 1 friends, 31.65 books)

Network Analysis

Relate to Content

- The relation between popularity and the number of books



Characteristics of Long Content Services

Characteristics of Long Content Service

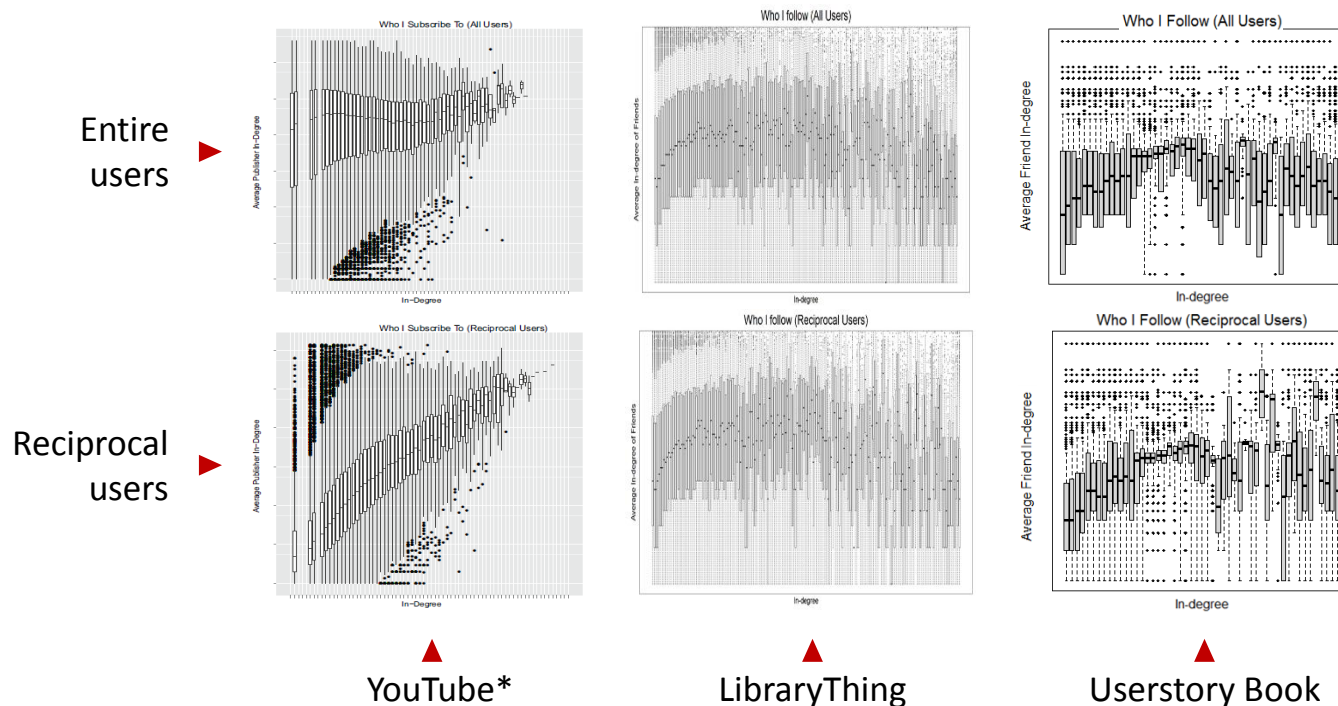
- Our work vs. YouTube

	Cataloging Service	YouTube
Content Type	Meta-data	Content itself
Communication	Low	High
Casual selection	Low	High

- Comparison with YouTube* in three aspects
 - Assortativity
 - Reciprocity
 - Homophily

Characteristics of Long Content Service Assortativity

- The tendency of nodes to connect with other nodes with similar degrees of a certain unit

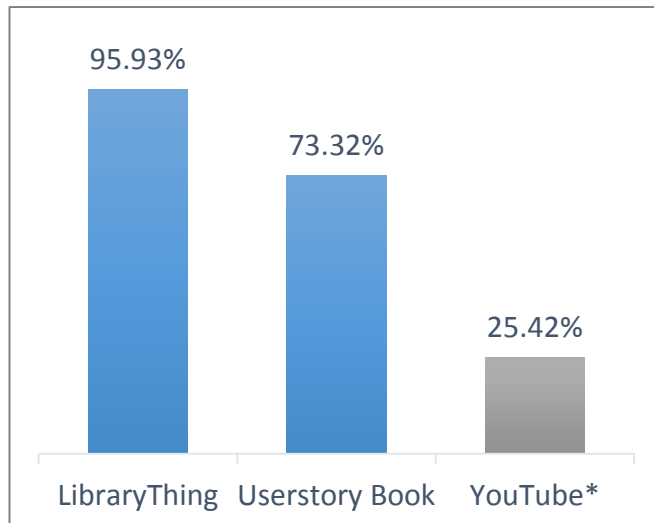


Characteristics of Long Content Service

Reciprocity and Homophily

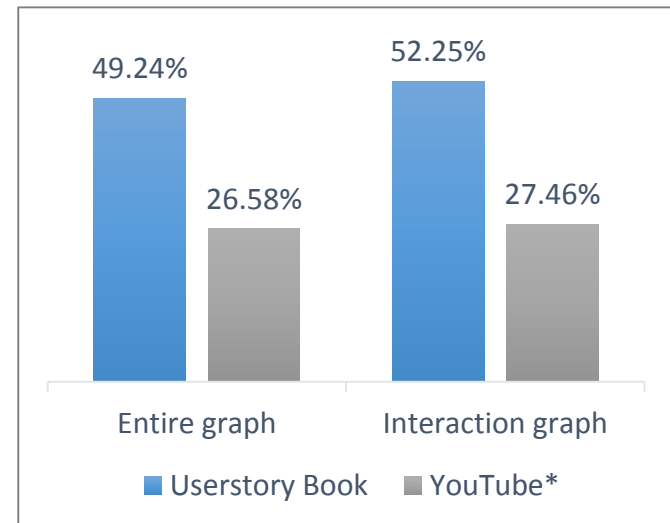
- Reciprocity

- Mostly reciprocal
- Passive relationships



- Homophily

- Use UB data only
- Classify into 29 genres commonly seen in online bookstore



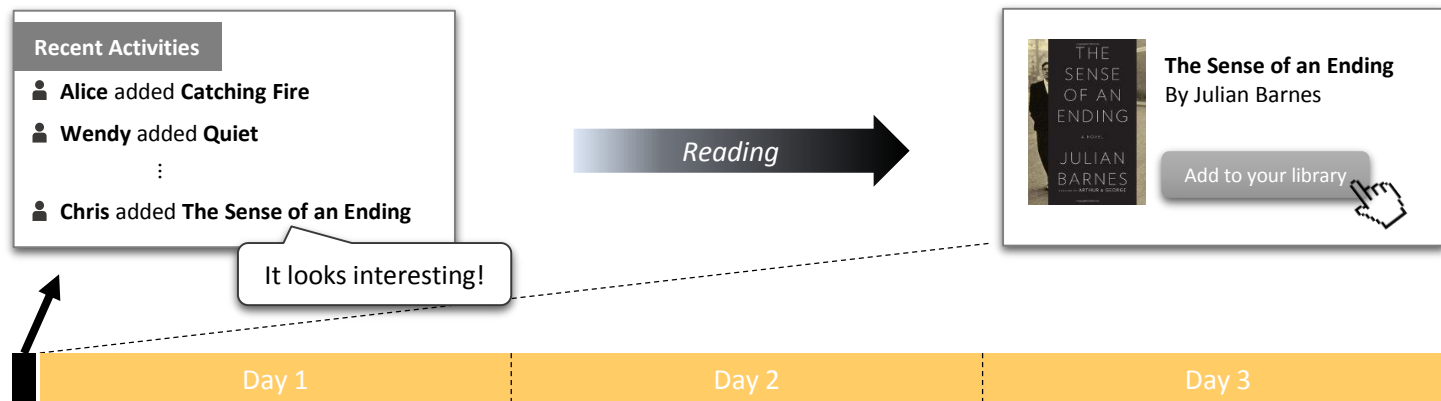
Influential Features in Long Content Service

Influential Features in Long Content Service User Activity

Hypothesis 1

- Others' recent activities are helpful for users in choosing new books
- Average period of reading a book is within three days*

- Add book in reading list either before or after reading



* <http://www.goodreads.com/poll/show/45995-how-long-does-it-take-you-to-finish-an-average-size-book-approx>
<http://dearauthor.com/features/poll-misc/poll-how-long-does-it-take-to-read-a-book/#ViewPollResults>

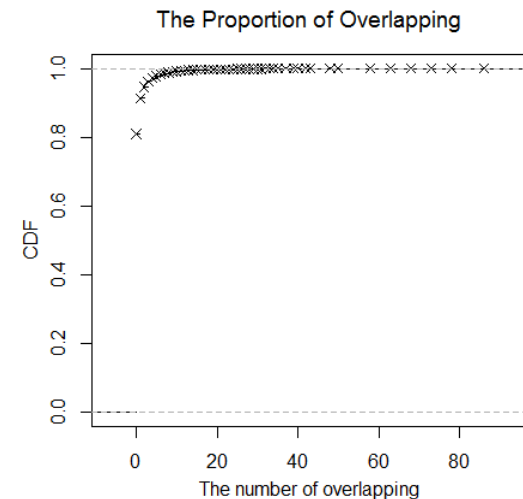
Influential Features in Long Content Service User Activity (cont.)

Hypothesis 1

- Others' recent activities are helpful for users in choosing new books
- Average period of reading a book is within three days*

• Result

- 80% of books are not overlapped
- People may see other users' activities
 - do not select that book as next item



* <http://www.goodreads.com/poll/show/45995-how-long-does-it-take-you-to-finish-an-average-size-book-approx>
<http://dearauthor.com/features/poll-misc/poll-how-long-does-it-take-to-read-a-book/#ViewPollResults>

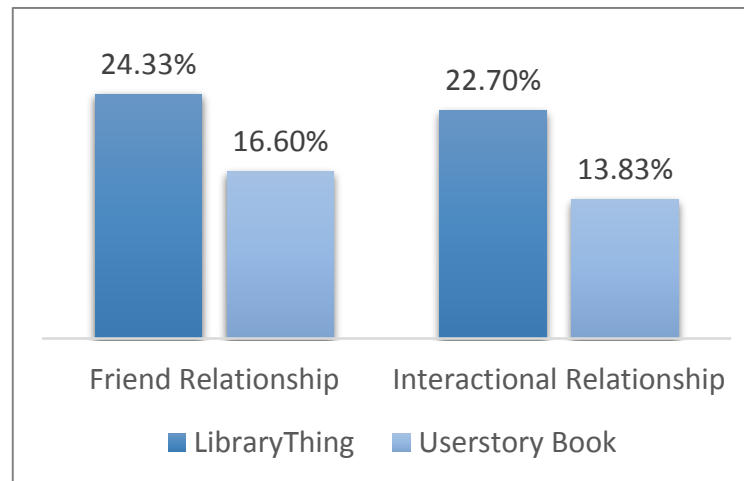
Influential Features in Long Content Service

Relational Feature

Hypothesis 2

A user's friend influences the user the most because of the high reciprocity ratio

- Average overlap between a user's book list and that of friends

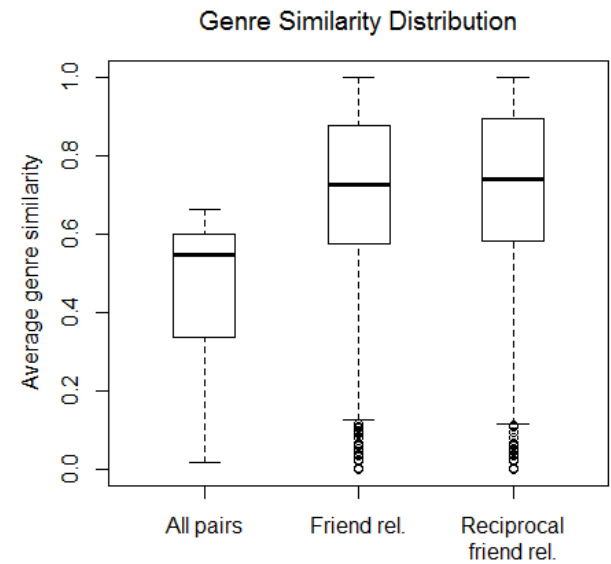
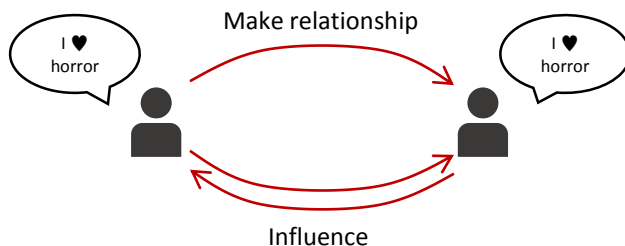


Influential Features in Long Content Service Relational Feature (cont.)

Hypothesis 2

A user's friend influences the user the most because of the high reciprocity ratio

- Interest similarity
 - Based on genre composition of reading list
 - Using cosine similarity



Conclusion

- Social content sharing services classification
 - based on the consumption time of the target content
- Characteristics of long content services
 - Low assortativity, high reciprocity and homophily
 - Interest similarity is key factor in selecting items
- Future work
 - Focus deeper into social features of long content network

Thank you

Backup Slides

Influential Features in Long Content Service

Relational Feature

Hypothesis 2

A user's friend influences the user the most because of the high reciprocity ratio

- Average book list overlap
 - with friends (left) and with interacted friends (right)

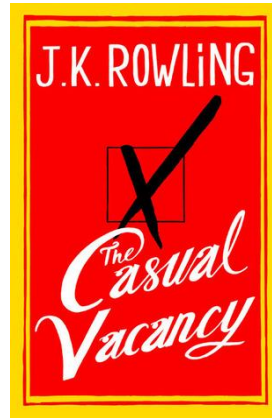
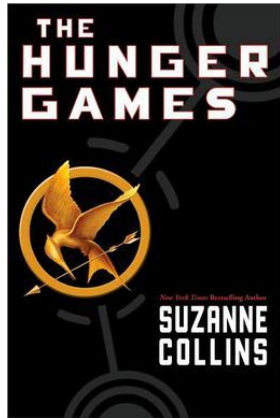
		(a)	(b)	(c)	(d)
Library Thing	AVG	127.36	4.94	24.33%	48,674
	SD	377.82	17.91	22.70%	
Userstory Book	AVG	17.31	4.44	22.80%	1,759
	SD	49.05	9.55	22.33%	

		(a)	(b)	(c)	(d)
Library Thing	AVG	108.07	2.96	16.60%	24,506
	SD	321.55	7.64	18.46%	
Userstory Book	AVG	10.05	1.86	13.83%	453
	SD	20.75	2.46	16.74%	

- (a) How many books a user has in common with his or her friends
- (b) How many friends have one or more common books with each user
- (c) The percentage of overlap between a user's book list and that of his or her friends
- (d) The number of users who have the same books with the list of their friends

Dataset

- Crawl seed in LibraryThing
 - Users who have one of three books



The most popular books
in crawling period

To avoid collecting users
in a limited age group

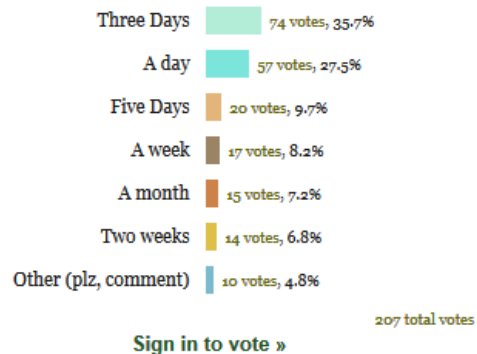
Polls

- Average period of reading a book

- Goodreads.com

Poll

How long does it take you to finish an average size book? (approx.)



Poll added by: [Brenna{#1 Hg Fan!}](#)
Voting started on: March 21st, 2011
Ends at: November 29th

- Dearauthor.com

I know that this will vary from book to book but generally I finish a book in one day if not in one sitting. I generally start a book after I've put the tot to bed and finish it before I go to sleep. If it is a particularly good book, I'll read into the wee morning hours. Who needs to sleep when you can read right? Libraries give people 21 days to finish a book (which is why it is the high end of the poll). I'm curious about your general reading habits, knowing that occasionally you'll spend longer or shorter depending on the book.



Maili

NOV 13, 2009 @ 12:02:09

A category romance, roughly an hour and half.
A typical romance novel, between two and four hours.

I don't like interruptions because if I stop reading a book it'd take a long time before I'd get back into it, so I usually wait until I'm sure I wouldn't be interrupted.

Edit: day?! How about hours? :D



Elise Logan

NOV 13, 2009 @ 12:03:39

I read fast. If it's a standard sized paperback – say under 300 pages, I'd say it takes me less than 24 hours, depending on what else is going on. Shorter, category length, take me a couple, maybe 3 hours total. Longer paperbacks more like 5 or so, depending. So, usually, I can wedge that into a 24 hour period.

I'm also a serially monogamous. reader. I am very, very rarely (almost never) reading more than one fiction book at a time.



Danielle Yockman

NOV 13, 2009 @ 12:03:44

If it is good...I read pretty fast. An average single title romance, about 7hrs give or take. Usually in one sitting – certainly willing to loose sleep to finish the story! Longer books – two to three days. By

Average length of a YouTube video

- Video statistics by “sysomos.com”

Average	Overall	Music	Entertainment	People & Blogs	News & Politics	Sports
Duration	4' 12"	4' 4"	3' 55"	4' 15"	5' 19"	3' 4"
Rating	3.97	4.51	4.24	3.29	3.90	3.92
Rating Count	224	446	518	384	318	646
Favorite Count	396.5	986.5	813.0	678.3	326.2	1514.7
Comment Count	179.4	336.0	436.8	298.4	561.3	490.2
View Count	99,160	224,448	190,827	152,252	105,044	285,571
Source: sysomos.com						