

# GAP E NUOVE TECNOLOGIE

 Consiglio Nazionale delle Ricerche  
ISTITUTO DI NEUROSCIENZE



**Gioco d'Azzardo Patologico-GAP**  
dalla Neurobiologia Sperimentale alla Clinica  
Bologna, giovedì 26 Gennaio 2017  
Aula MURRI, Polo Murri, Policlinico di S. Orsola  
Via Massarenti, 9



Iniziativa promossa  
nell'ambito del progetto NeuroGAP  
finanziato dal Dipartimento Politiche Antidroga  
della Presidenza del Consiglio dei Ministri

Con il patrocinio di



**Roberto Mollica**

Sistema Socio Sanitario  
 Regione  
Lombardia  
ATS Milano  
Città Metropolitana



## Progetto NeuroGAP - Formazione itinerante sulle basi neuroscientifiche del gioco d'azzardo patologico

Data pubblicazione 18 novembre 2016

**Linked in**

**Progetto Neurogap**  
Bologna, 26 gennaio 2017

## GENERAL FRAMEWORK

Il gioco d'azzardo sta suscitando attenzioni da più portatori di interesse a causa della sua penetrazione sociale particolarmente progressiva ed evidente in questi ultimi anni.

Gli interessi finanziari di natura economica, industriale e fiscale, sono noti e cospicui ma confliggono con l'ipotesi di generare danni da cui derivano costi sociali realistici ma di entità presunta e non definita, e quindi spesso poco misurabili.

I soggetti più giovani e minorenni, per i quali il gioco è vietato, risultano essere per contro i giocatori più assidui sia per numerosità che per frequenza di gioco. Questo deriva da una ancora incompleta maturità cerebrale che ne condiziona i processi decisionali logici a favore dell'adozione di comportamenti istintivi più inclini a prendere rischi.

In uno scenario dominato dalla assenza di elementi tra loro comparabili (benefici economico/finanziari sociali vs. costi sociali) è comunque preferibile e necessario assumere un atteggiamento conservativo e adottare soluzioni, anche tecnologicamente avanzate, a supporto della tutela dall'esplicitarsi di un danno socio-sanitario.

## Agenda



I dati del gioco  
d'azzardo



La quarta rivoluzione  
industriale



Soluzioni tecnologiche



Conclusioni

## Agenda



I dati del gioco  
d'azzardo



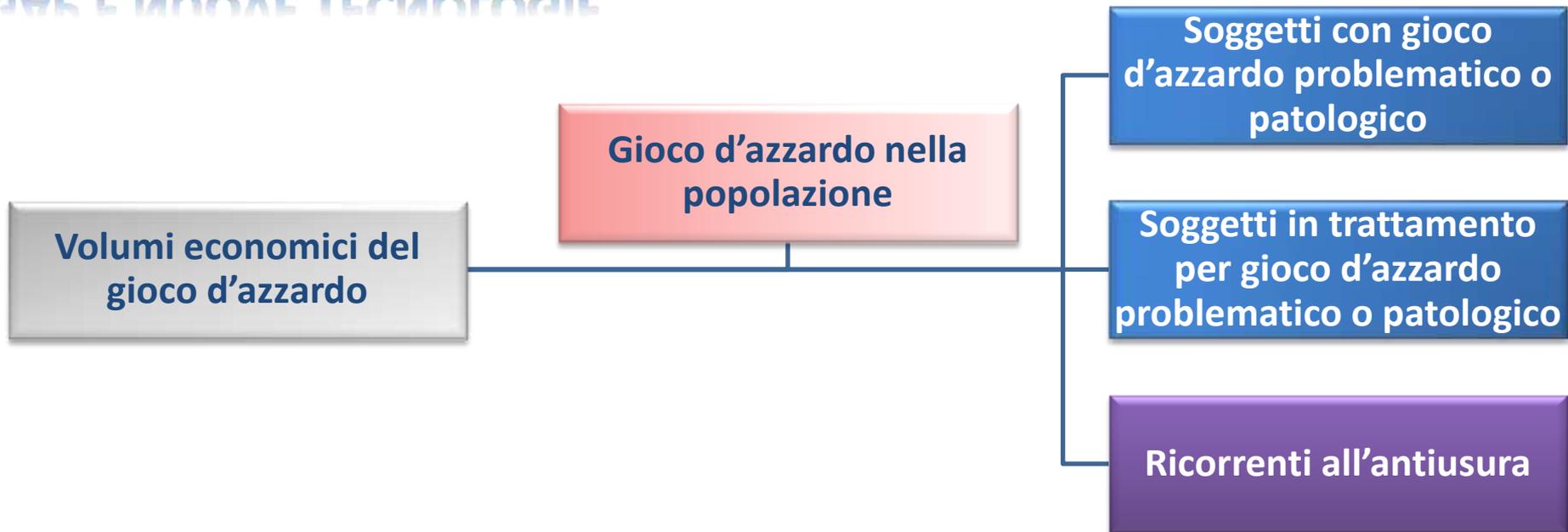
La quarta rivoluzione  
industriale



Soluzioni tecnologiche



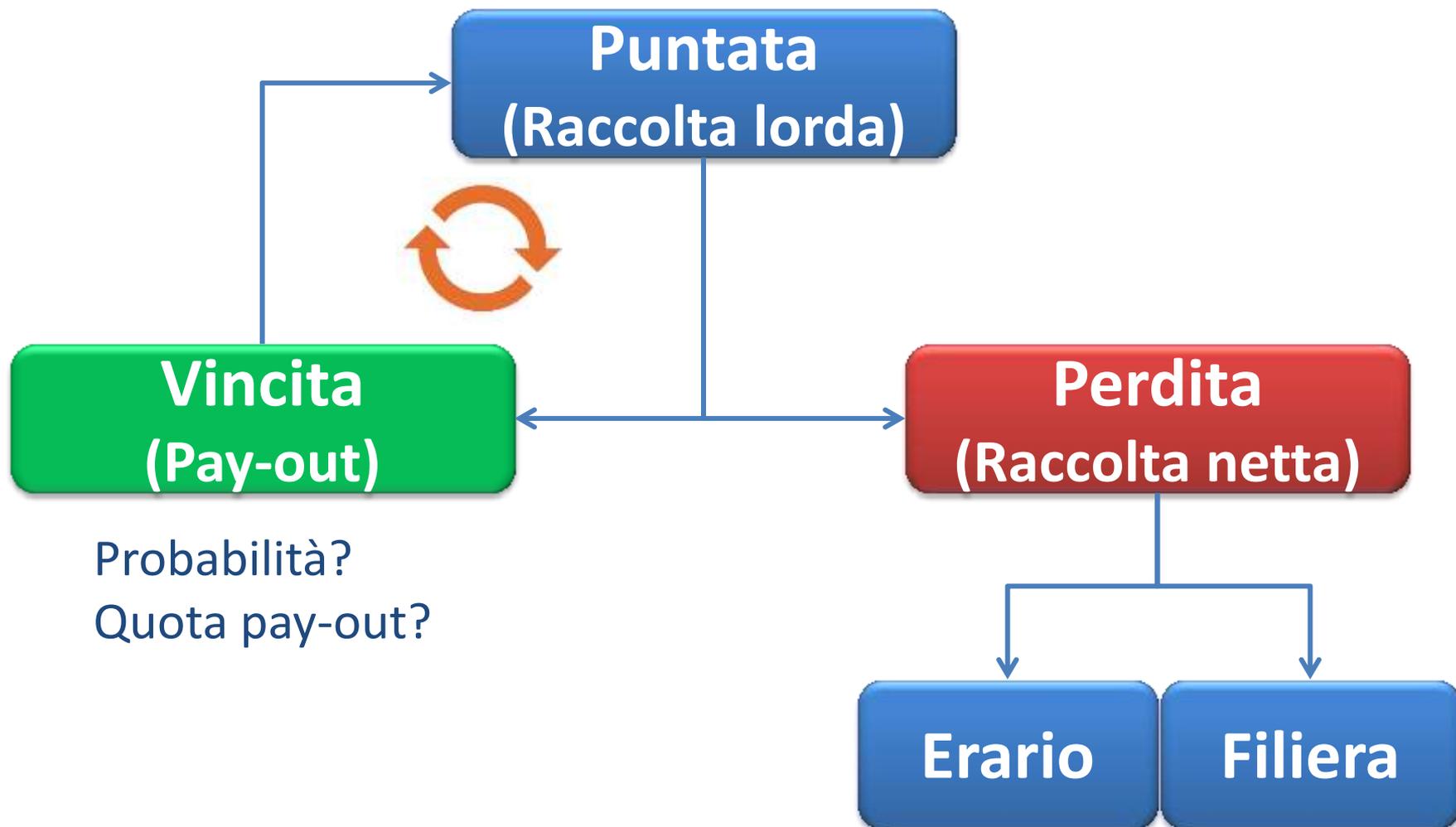
Conclusioni

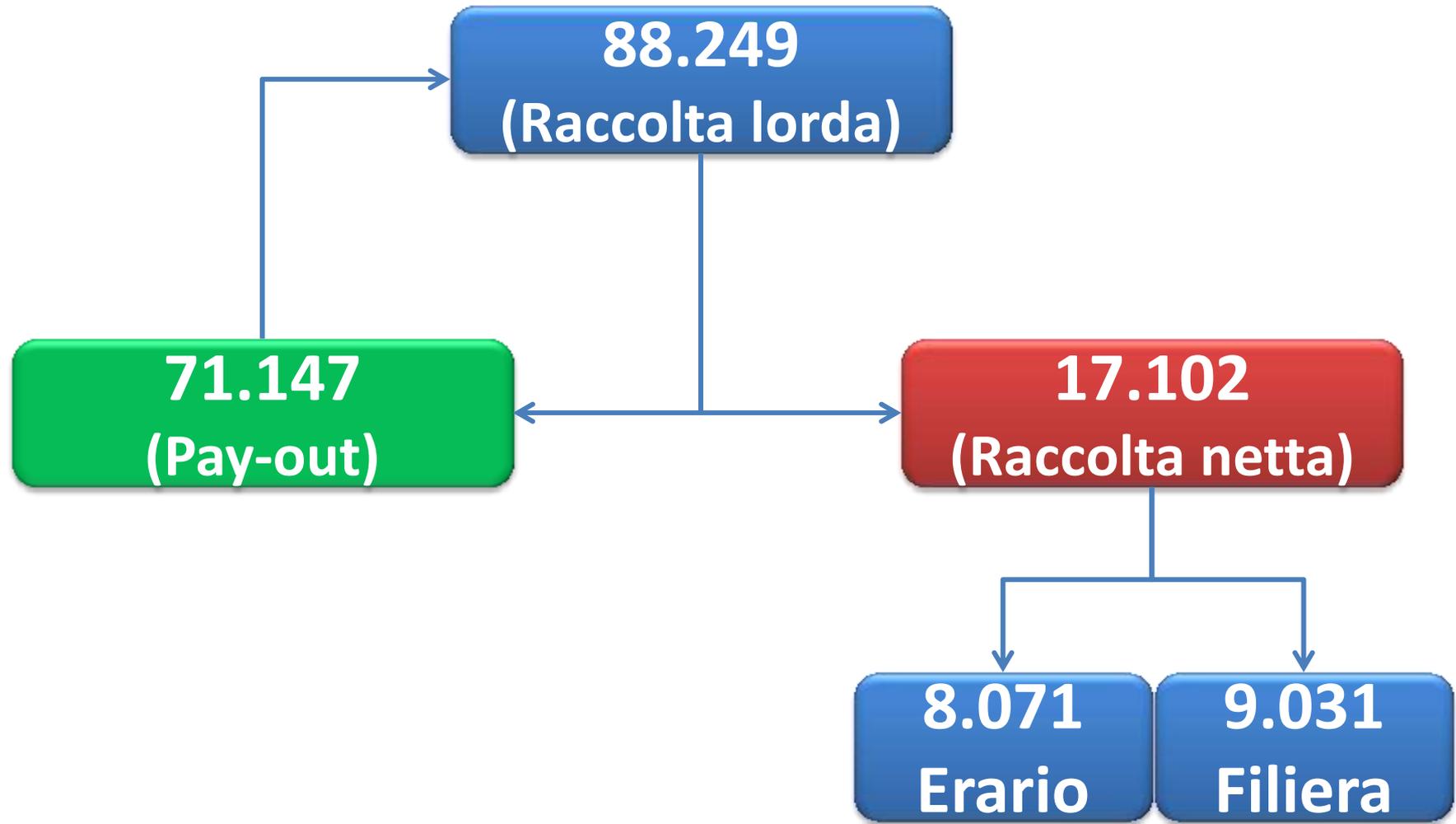


# DATA IS POWER

HOW INFORMATION  
IS DRIVING THE FUTURE









concorso TURISTA PER 10 ANNI		
nr premi	importo	payout
12	254884	3.058.608,00
408	1000	408.000,00
408	500	204.000,00
4284	100	428.400,00
112200	50	5.610.000,00
2350080	10	23.500.800,00
2937600	5	14.688.000,00
7822600	2	15.645.200,00
<b>payout totale</b>		<b>63.543.008,00</b>
nr biglietti	costo	raccolta
48.960.000	2,00	<b>97.920.000,00</b>
		<b>Tot € +34.376.992,00</b>

20€



10€



2€



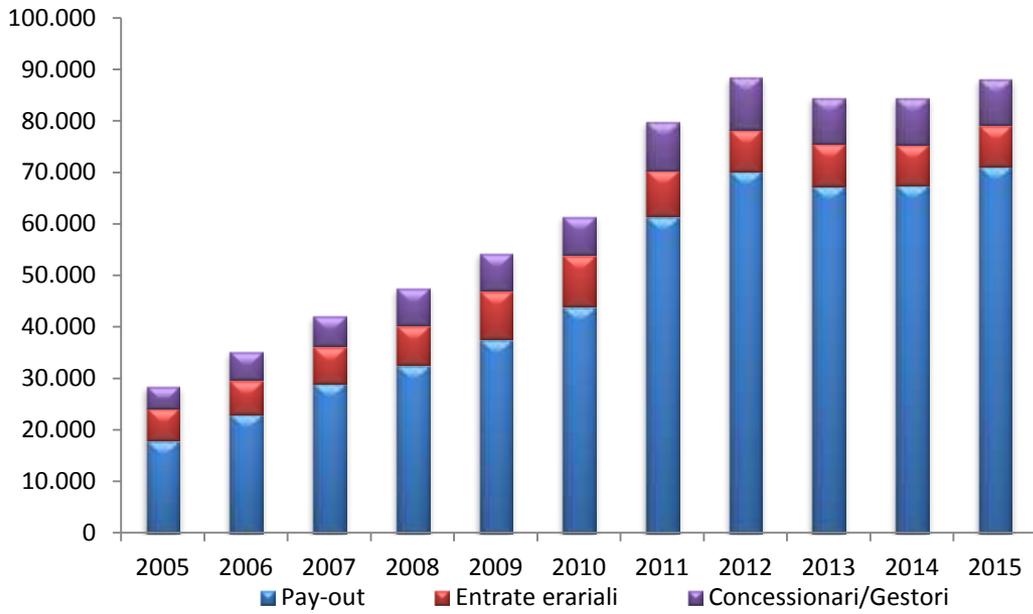
130.666.400

64.002.500

34.516.458

# GAP E NUOVE TECNOLOGIE

Trend 2005-2015

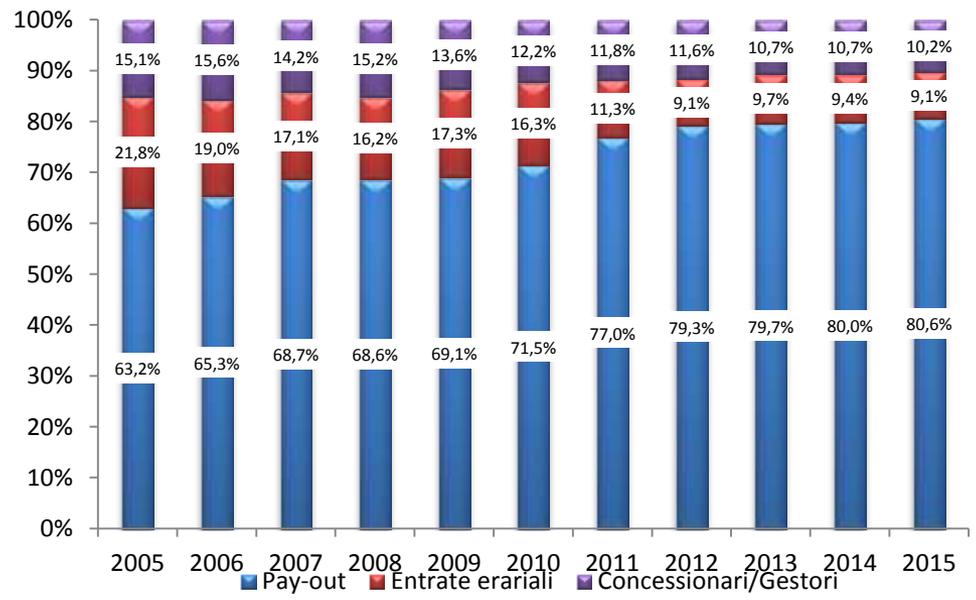


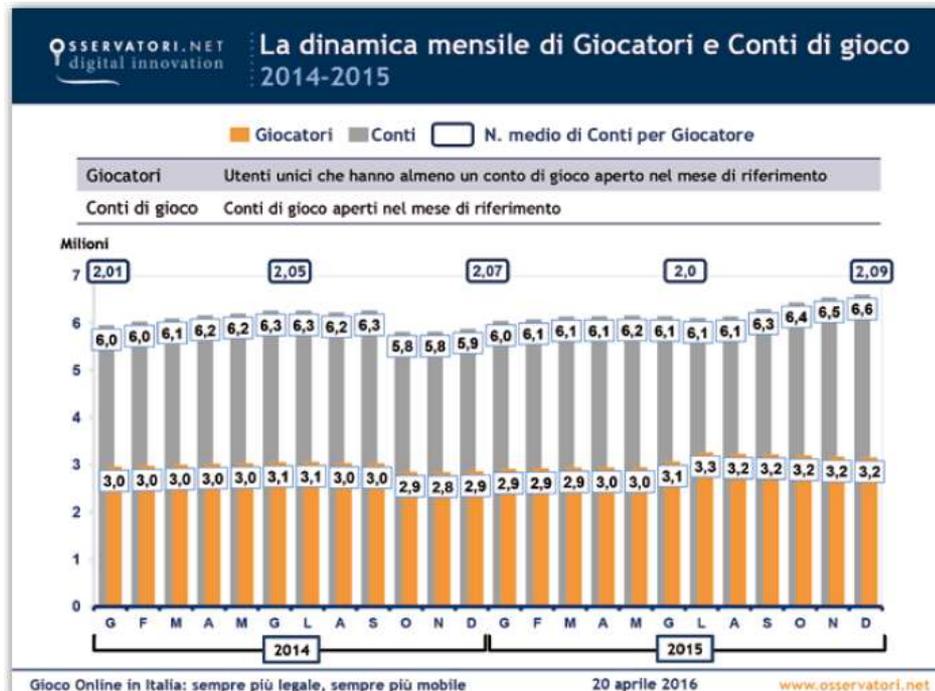
2005  
28.500



2015  
88.249

**+310**





**888casino.it**

**RICEVI 88  
GIOCA TE GRATIS  
+  
500€  
BONUS DI BENVENUTO**

**Scarica Ora** **Gioca Online**



Il gioco con vincita è vietato ai minori di 18 anni e può causare dipendenza. Consulta probabilità di vincita su [www.aams.gov.it](http://www.aams.gov.it)

## ENTRATE TRIBUTARIE GIOCHI SU DEL 13,8 PERCENTO NEL PRIMO TRIMESTRE 2016

Categoria principale: Gioco e Politica   Creato Giovedì, 05 Maggio 2016 15:43   Data pubblicazione   Scritto da Redazione

**Monitoraggio attività anti frode**



Il gioco nella popolazione  
rilevazione tramite indagini  
campionarie



Campioni rappresentativi di

- popolazione generale (18-64)
- popolazione studentesca (15-19)

Questionario standard

Stimano la prevalenza del consumo

- nella vita
- nell'ultimo anno
- nell'ultimo mese

Stimano la percentuale di soggetti

- giocatori sociali
- giocatori problematici
- giocatori patologici



Indagine demoscopica ISS (3.000 soggetti)

Quale dei seguenti è un gioco d'azzardo?



Sì

Poker 81

Videopoker 79

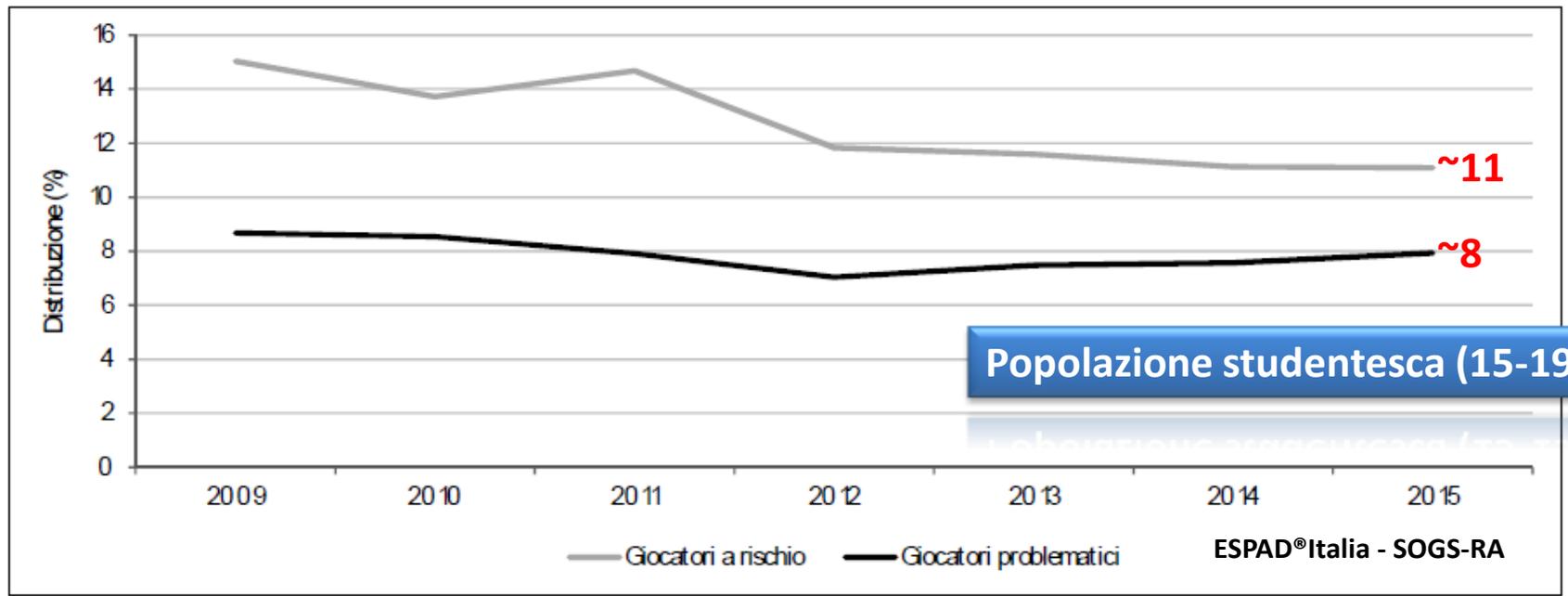
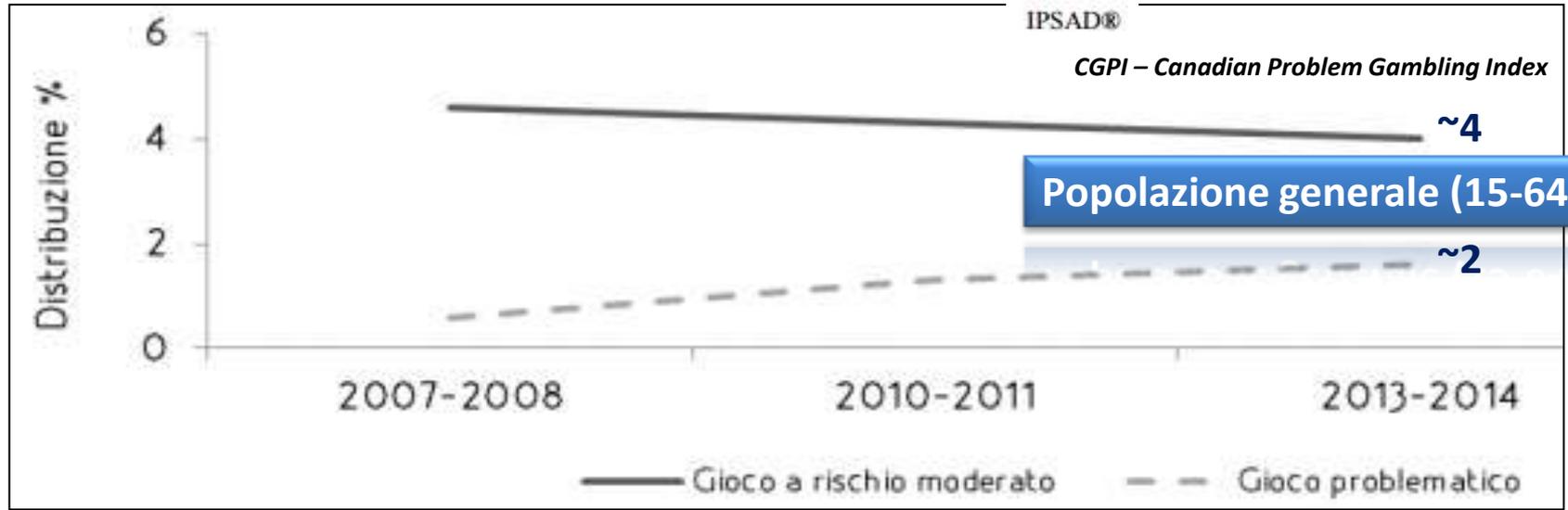


No

Gratta e Vinci 56

Lotto 54

Win for life 51



IL GIOCO E' VIETATO  
AI MINORI DI 18 ANNI



## Popolazione studentesca 15-19 anni

### a) Gioco a rischio



### b) Gioco problematico

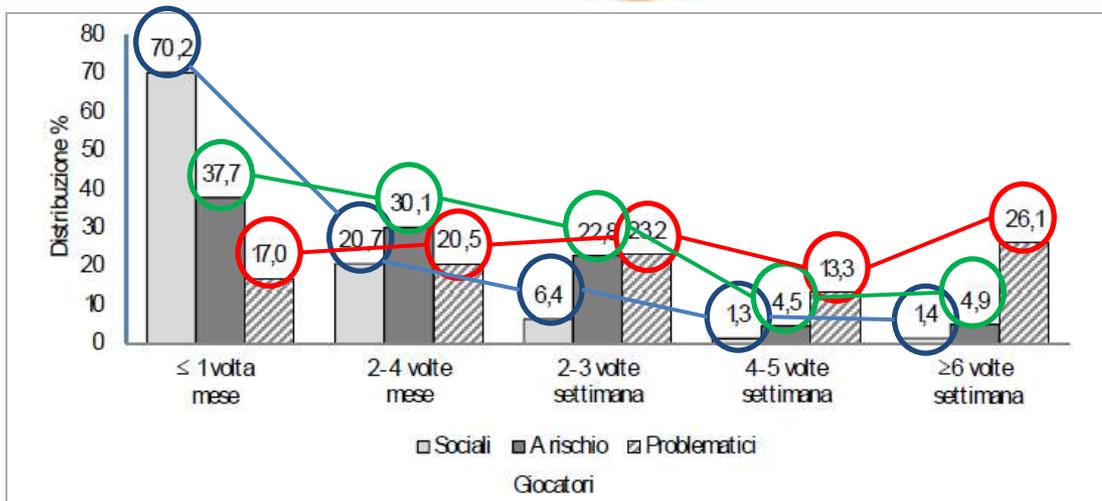


Distribuzione percentuale degli studenti italiani che hanno giocato d'azzardo nell'ultimo anno e che hanno un profilo di gioco definibile a rischio e problematico. ESPAD®Italia 2015

IL GIOCO E' VIETATO  
AI MINORI DI 18 ANNI



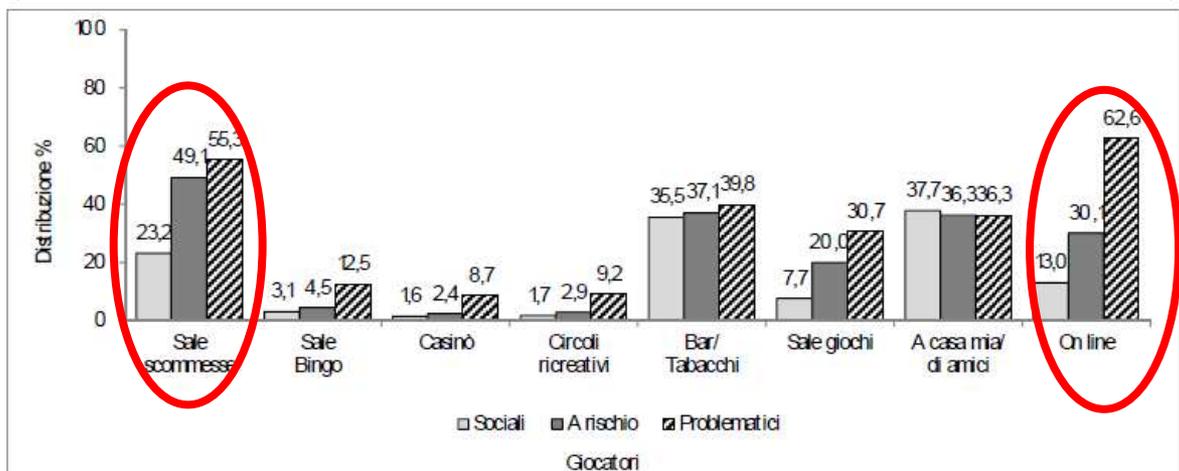
## Popolazione studentesca 15-19 anni



Frequenza di gioco

Problematici  
A rischio  
Sociali

Contesti di gioco

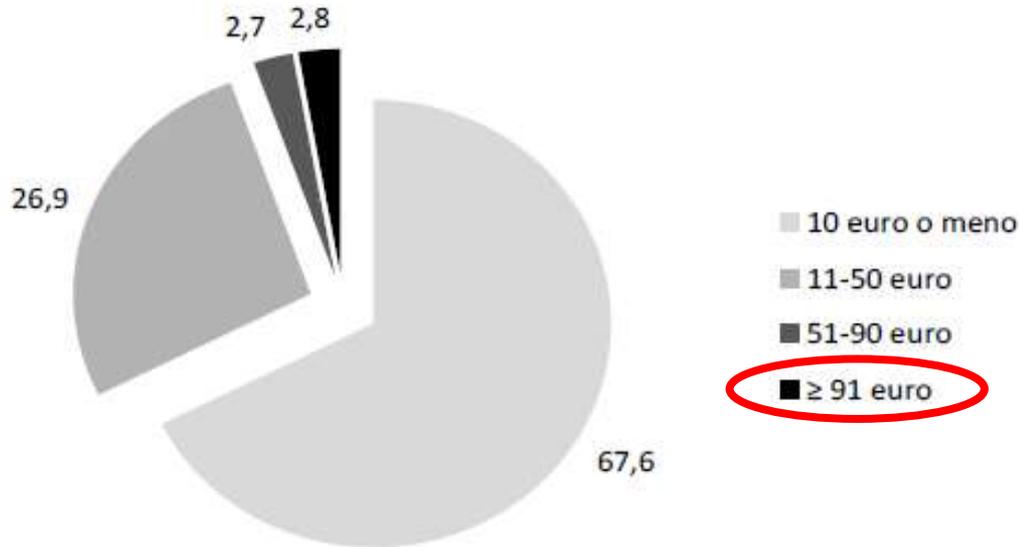


IL GIOCO E' VIETATO  
AI MINORI DI 18 ANNI

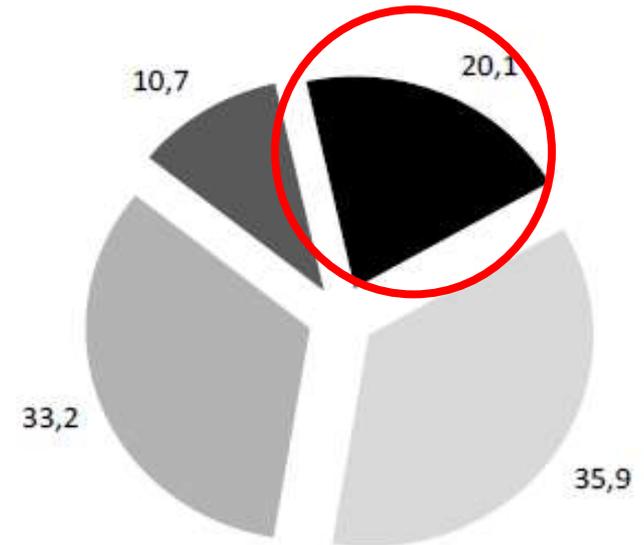


## Popolazione studentesca 15-19 anni

a) Giocatori a rischio



b) Giocatori problematico



Spesa sostenuta nell'ultimo mese dagli studenti che hanno giocato d'azzardo durante l'anno secondo il profilo di gioco. ESPAD®Italia 2015

IL GIOCO E' VIETATO  
AI MINORI DI 18 ANNI



Popolazione studentesca 15-19 anni

Non giocatore (=1)

Giocatore sociale

Giocatore a rischio

Giocatore problematico

Essere un forte fumatore quotidiano ( $\geq 10$ sig/die)	1.41	n.s.	3.02
Aver usato droghe sconosciute	1.43	n.s.	10.38
Aver usato almeno una sostanza illegale nell'anno (esclusa cannabis)	n.s.	1.87	6.54
Aver rubato qualcosa del valore di >10 euro	1.94	2.18	5.66
Aver venduto oggetti rubati	1.40	2.28	10.7
Aver perso 3 o più giorni di scuola senza motivo	1.19	1.68	3.33
Trascorrere più di 2 ore in un giorno infrasettimanale a fare giochi di abilità on line	n.s.	n.s.	8.86
Avere amici che giocano d'azzardo	2.63	2.21.	2.46
Ritenere che chi gioca d'azzardo $\geq 1$ volte/settimana ha un grado di rischio moderato/elevato di danneggiarsi	n.s.	0.73	0.35

Associazione delle caratteristiche degli studenti con profilo di giocatore sociale (vs. non giocatore), a rischio e problematico (vs. giocatore sociale) - OR adjusted. ESPAD®Italia 2015

IL GIOCO E' VIETATO  
AI MINORI DI 18 ANNI



Popolazione studentesca 15-19 anni

## GIOCO PROBLEMATICO

- NORD 8,1%
- CENTRO 9,8%
- SUD 13,0%

## GIOCO PROBLEMATICO

- FISICO 24%
- ON-LINE 31%



## SPESA SETTIMANALE

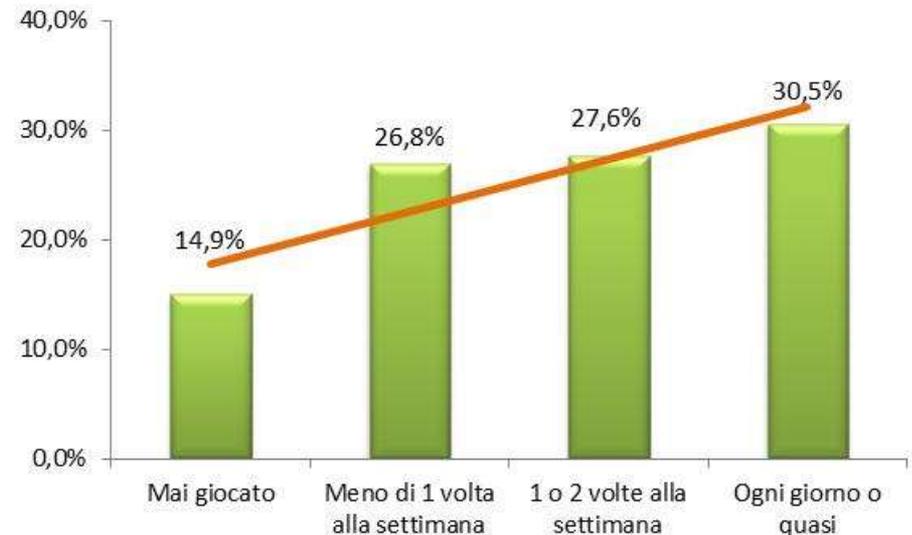
- MEDIA 24€
- PROBLEMATICI 31€

Giovani e gioco d'azzardo – Young Millenials Monitor (Nomisma) 23.01.2017



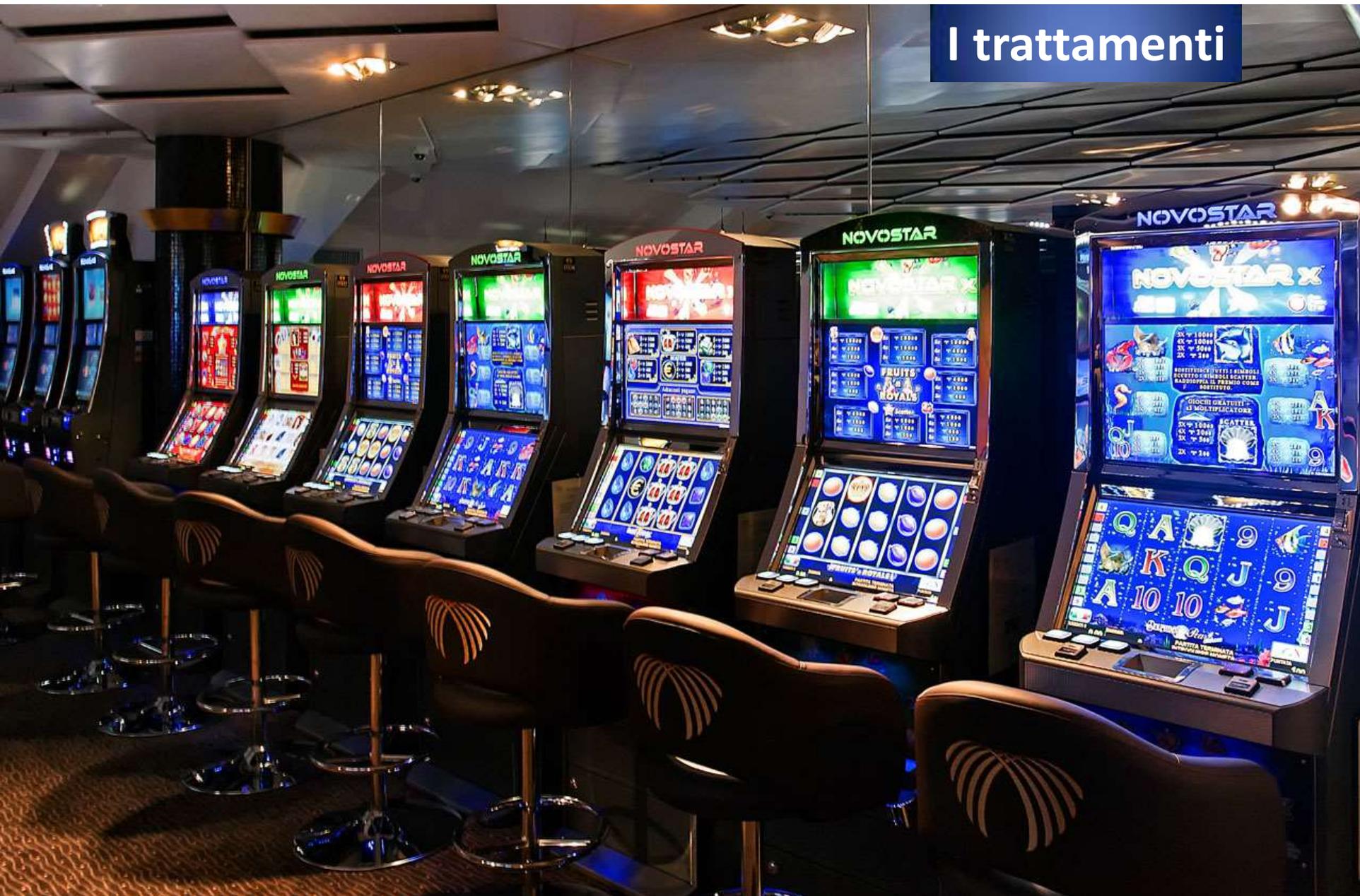
Popolazione Generale 18-64 anni (GPS-DPA 2012)

Forte associazione con  
altre forme di disturbi  
da dipendenza

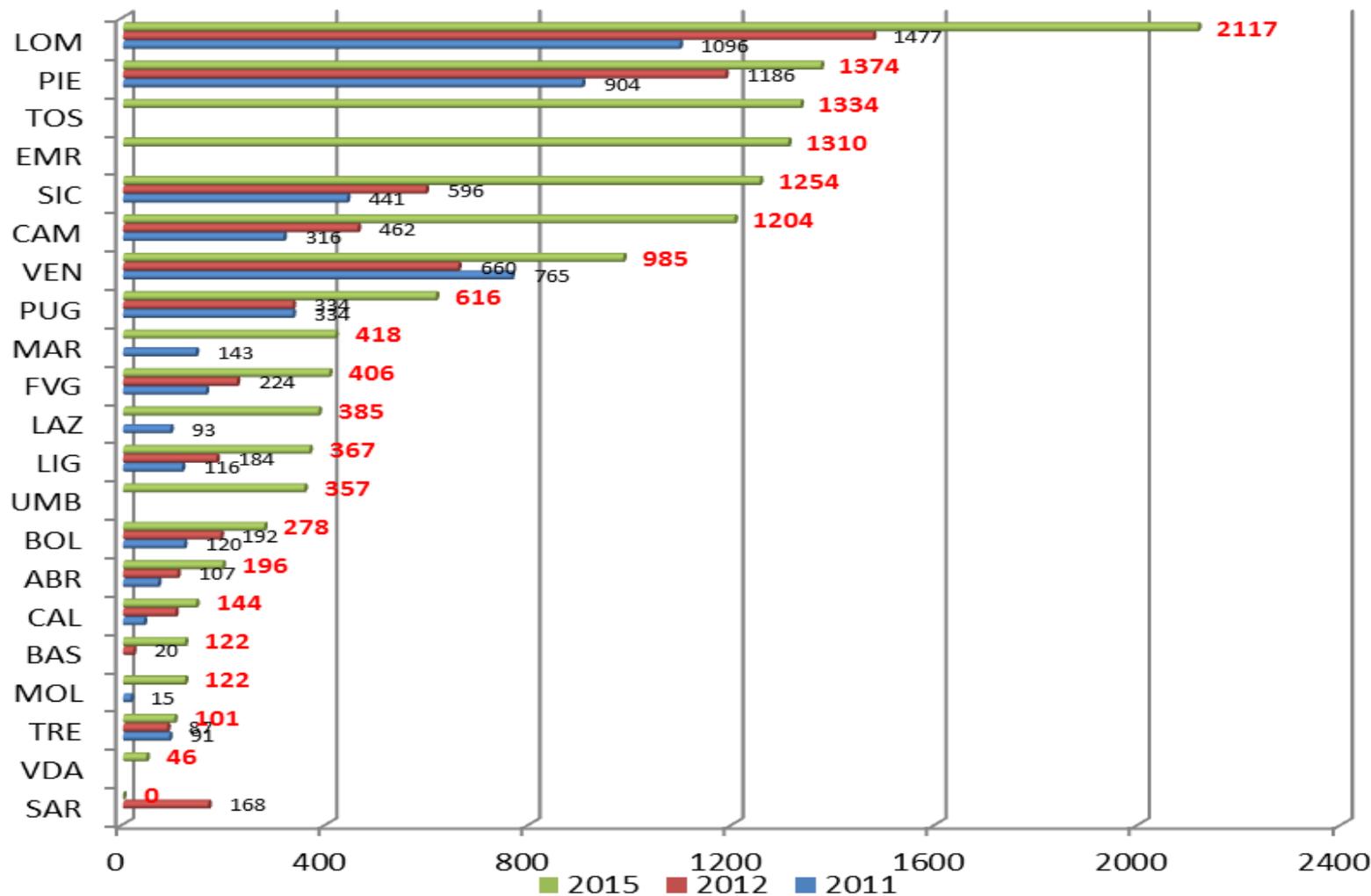


Popolazione Studentesca 15-19 anni (SPS-DPA 2013)

### I trattamenti

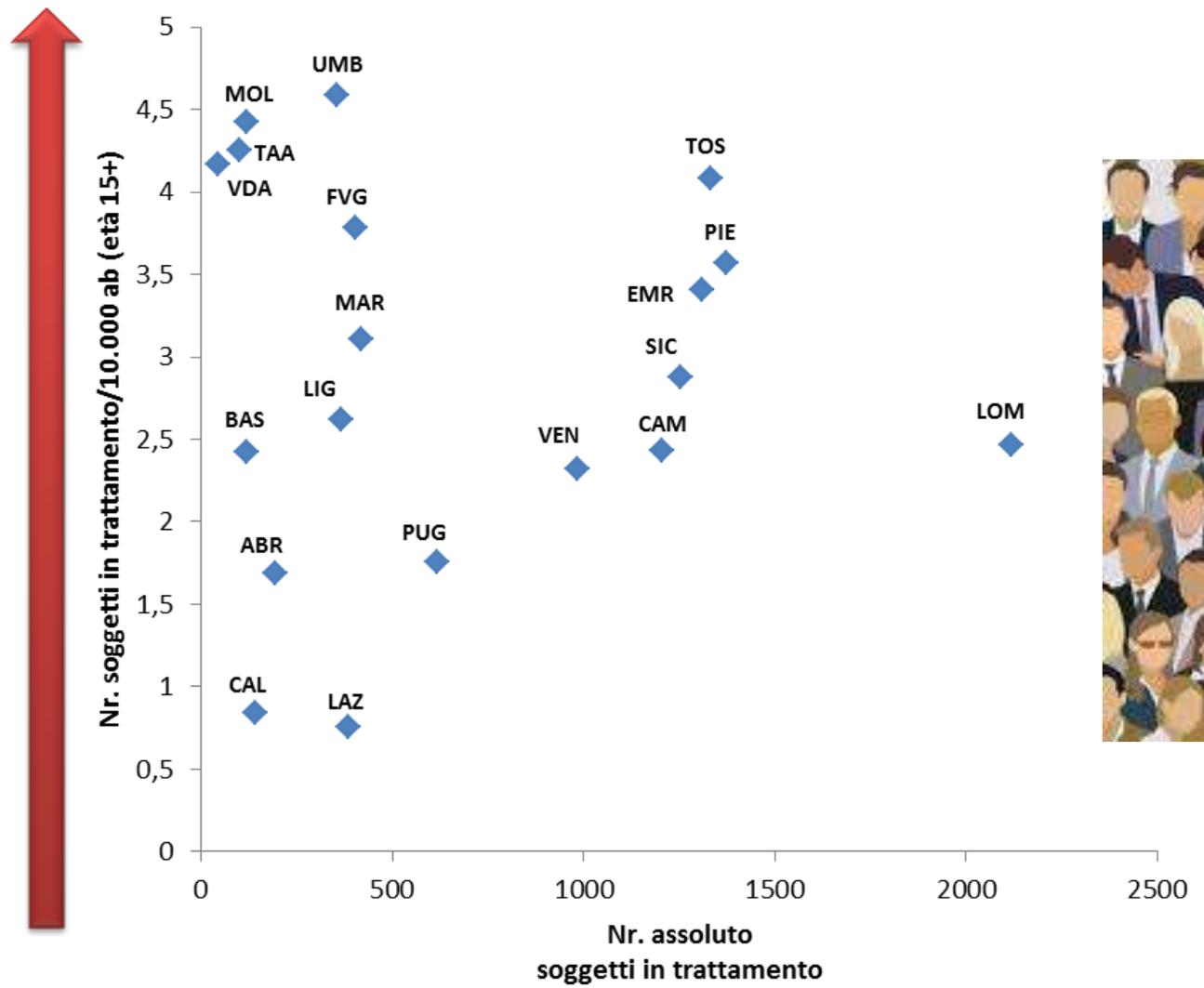


## Soggetti in trattamento per gioco patologico



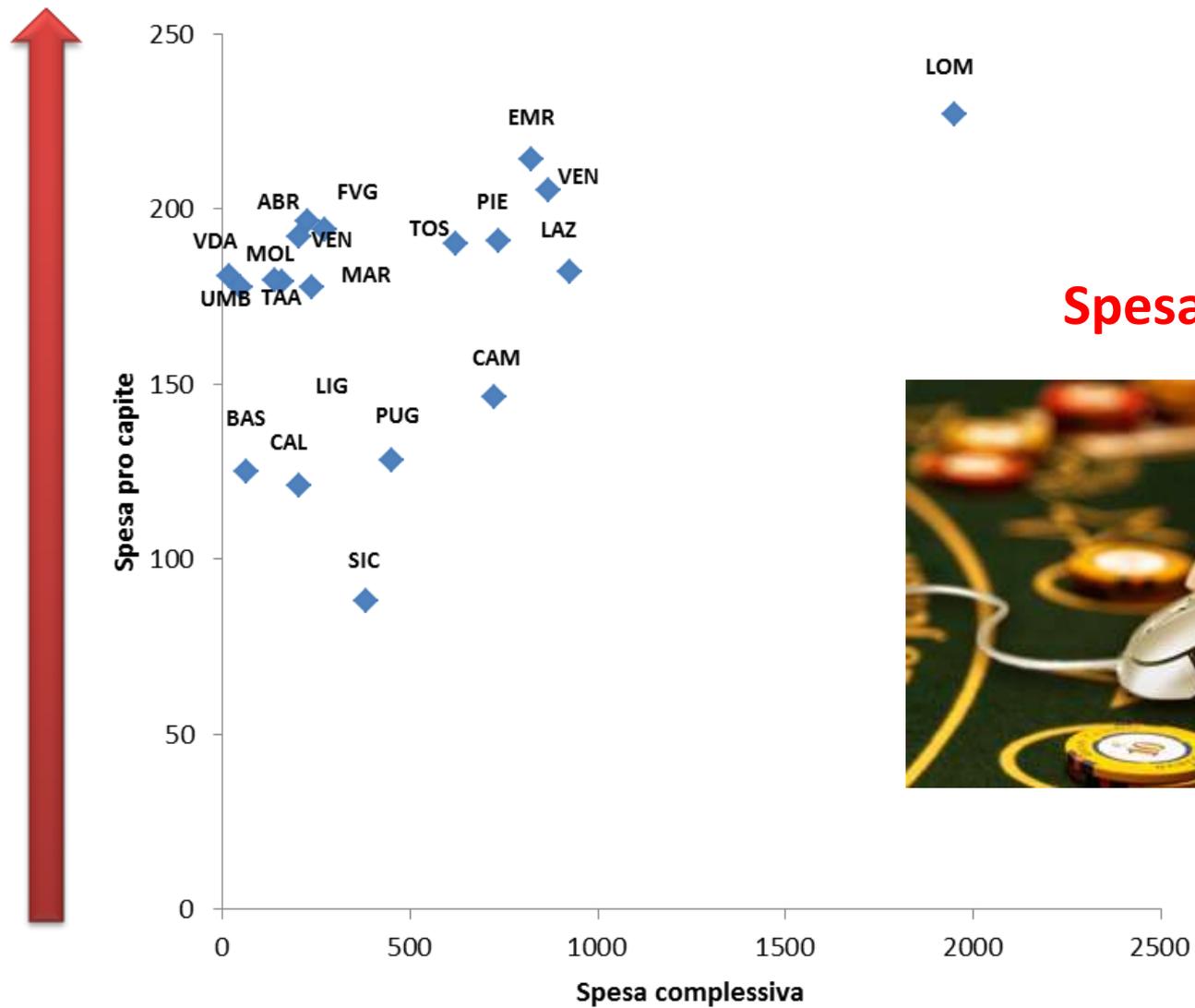


## Nr. Soggetti in trattamento vs. popolazione di riferimento





## Spesa complessiva vs. spesa pro capite



**Spesa ~ Problematicità?**







Social costs?  
Which balance?

Good decision come from  
experience and experience  
comes from bad decisions.

- Unknown

Interessi di mercato e  
finanza pubblica



FILIERA  
~10 mld €

ERARIO  
~8 mld €

Prevenzione, cura,  
riabilitazione,  
criminalità, usura,  
polidipendenza



COSTI SOCIALI

- Diretti
- Indiretti
- Tangibili
- Intangibili

Dati incerti o assenti  
su stime di:

- Numero giocatori
- Impatto patologia
- Danno sociale

## Agenda



I dati del gioco  
d'azzardo



La quarta rivoluzione  
industriale



Soluzioni tecnologiche



Conclusioni

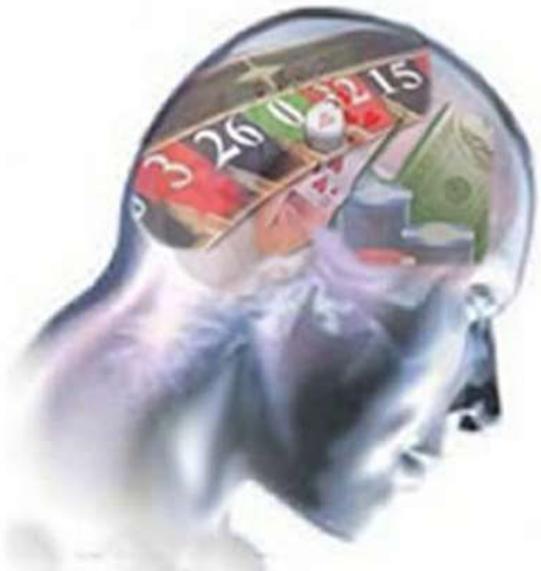
# GAP E NUOVE TECNOLOGIE



## Threats or opportunities?



<http://www.inventionmachine.com/DeepWeb> InventionMachine

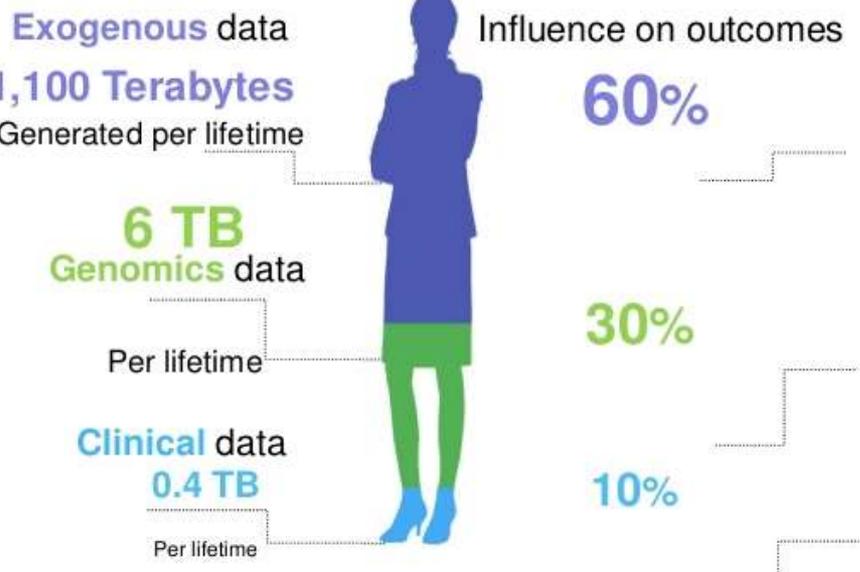
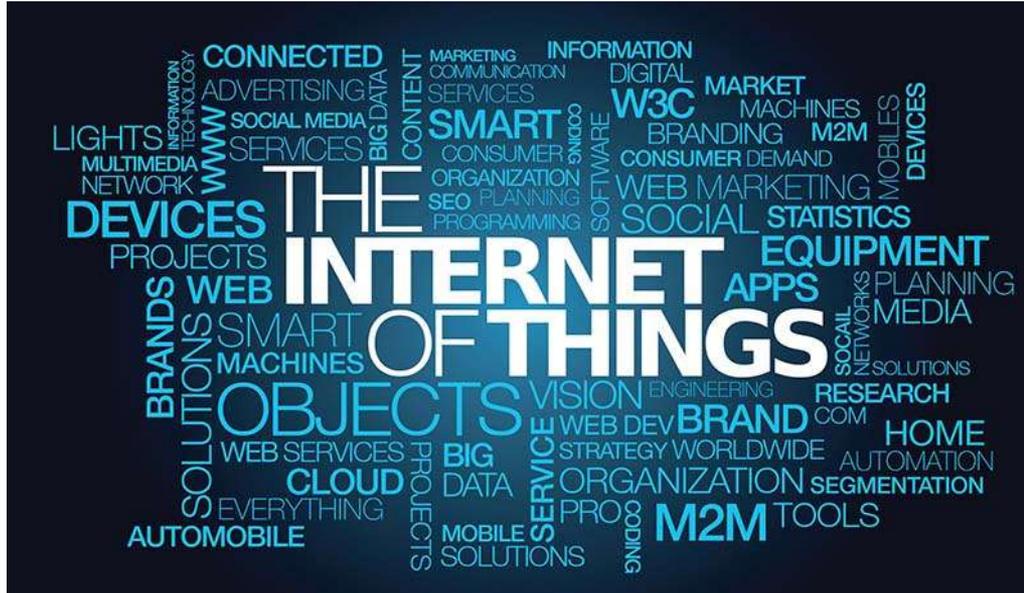


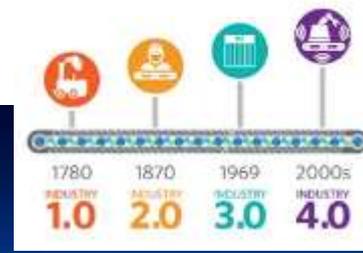
# GAP E NUOVE TECNOLOGIE

**Nuovo contesto**



High impact of technologies on real life



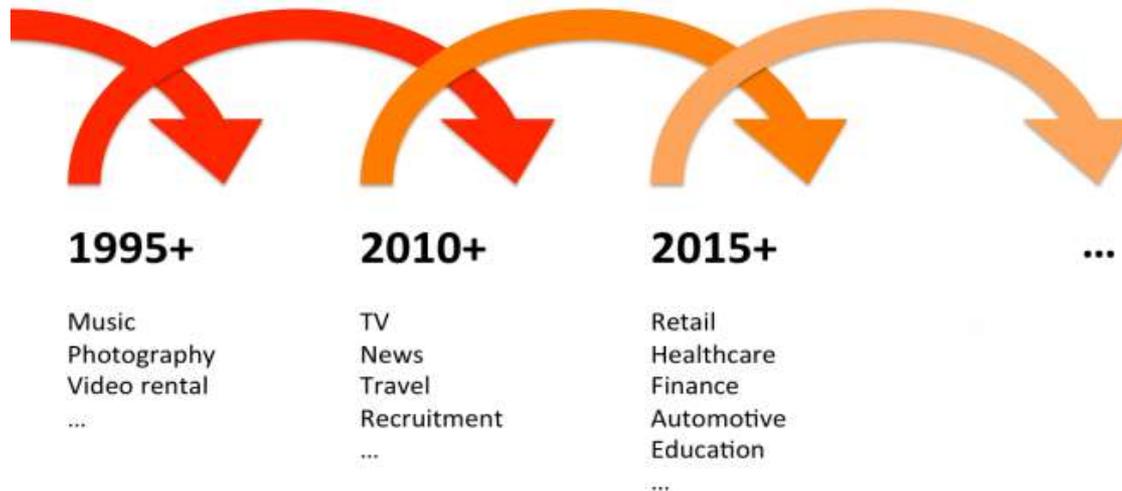


## DIGITALIZATION MEANS LESS

PLACELESS  
TIMELESS  
SIZELESS  
RESOURCELESS  
STRUCTURELESS

# Disruption

## Waves of **Digital Disruption**



**DearMedia,**  
Digital Strategies and Innovation

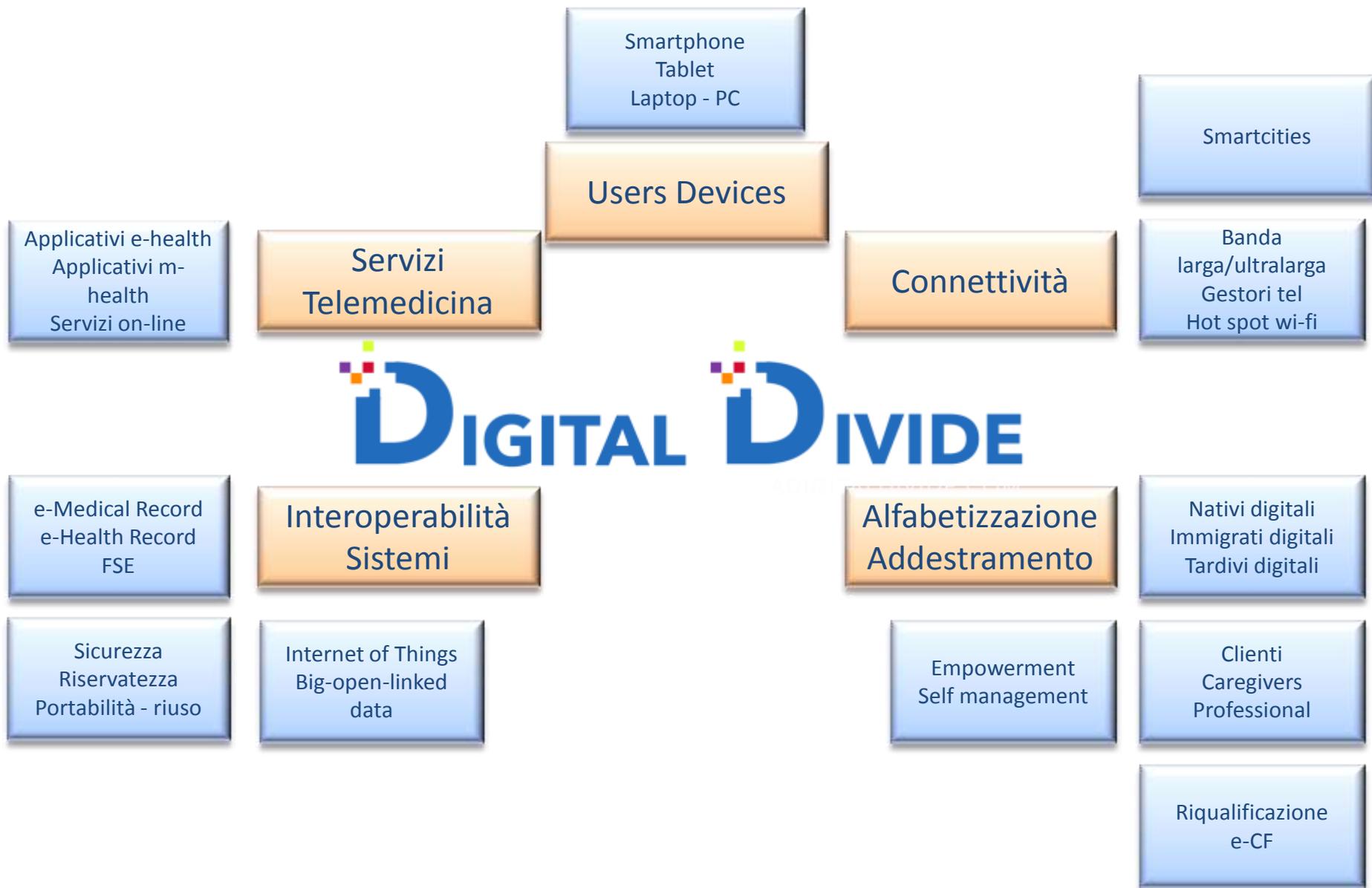


# DIGITAL disruption



# DIGITAL DIVIDE

# GAP E NUOVE TECNOLOGIE

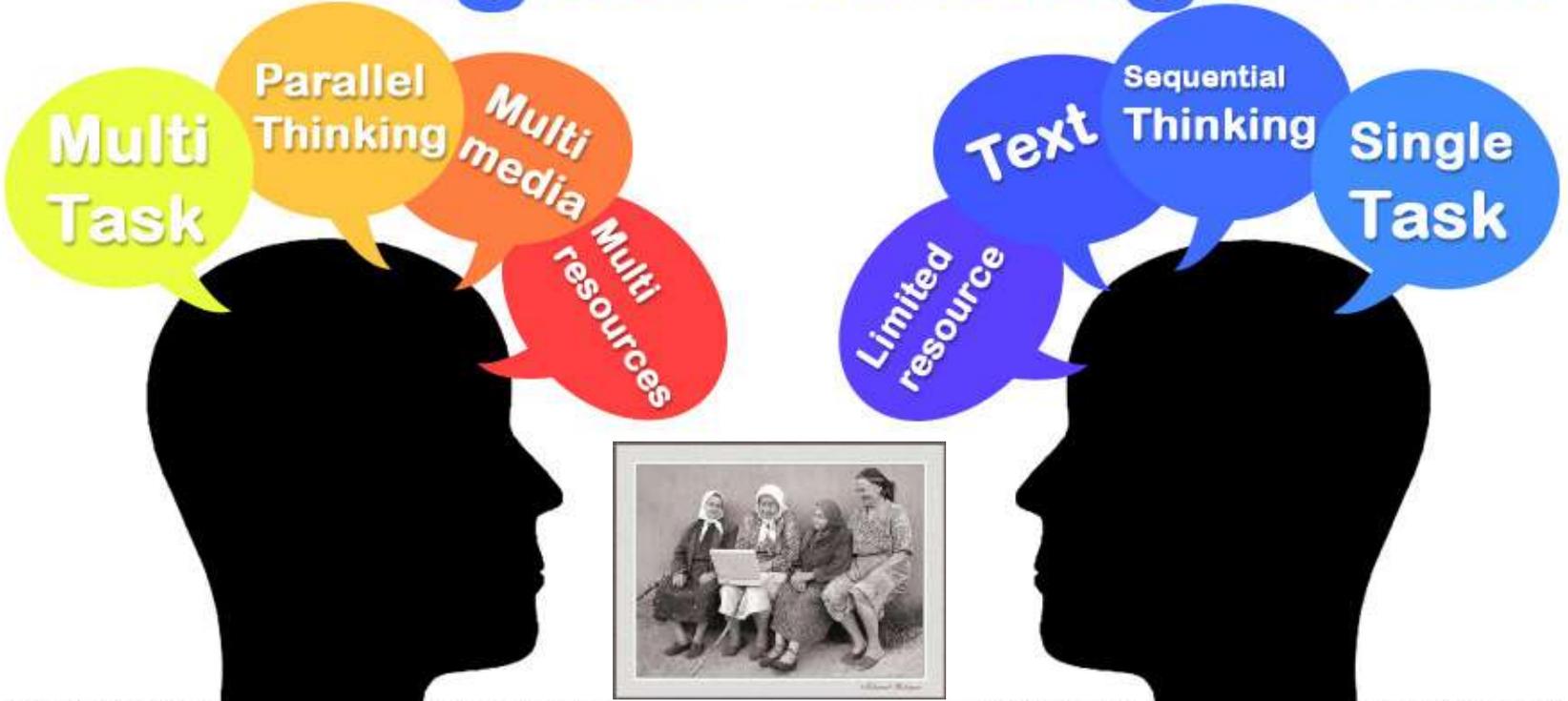


Immigrants have to develop their being to match natives' needs and patterns of being

# Digital Native



# Digital Immigrants



<http://thesocialmedia.wordpress.com/> <http://thesocialmediatraine.wordpress.com/> <http://thesocialmediatraine.wordpress.com/>

Pupils are digital and they will need different approaches

## Targeting

New

# Patient Engagement





IL GIOCO È VIETATO AI MINORI DI 18 ANNI.  
GIOCARRE TROPPO PUÒ CAUSARE DIPENDENZA

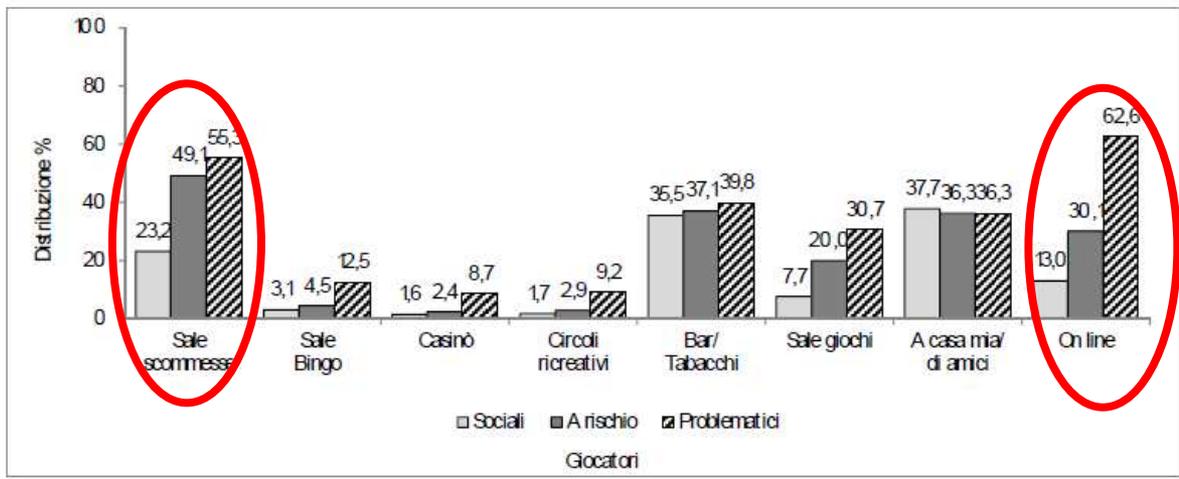
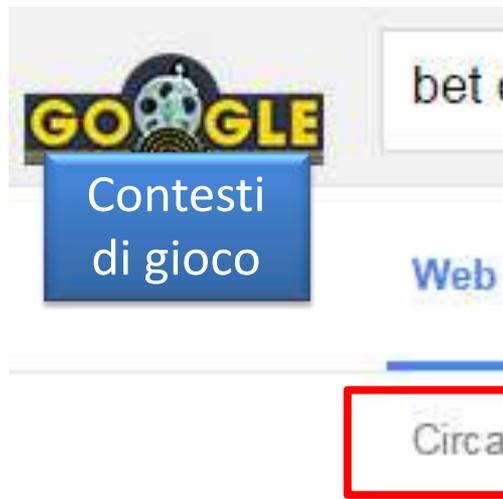


Gioca responsabilmente e' come dire:

- annega con cautela
- sparati con prudenza!!!
- buttati dalla finestra ma copriti che fa freddo!!!



### Nuovo scenario



**NO SLOT**

Per contrastare il gioco d'azzardo di massa, per informare su leggi e normative, per promuovere la cultura del buon gioco

scarica il manifesto aderisci

[Home] [Chi siamo] [Il manifesto] [La petizione] [I Materiali] [Aderisci] [Dona]



### Normative su limitazioni in luoghi fisici. E la rete?

## Agenda



I dati del gioco  
d'azzardo



La quarta rivoluzione  
industriale

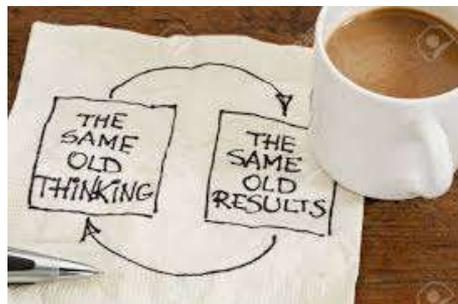


Soluzioni tecnologiche



Conclusioni

TREATMENT  
AS  
USUAL



TECHNO  
CARE  
SOLUTIONS

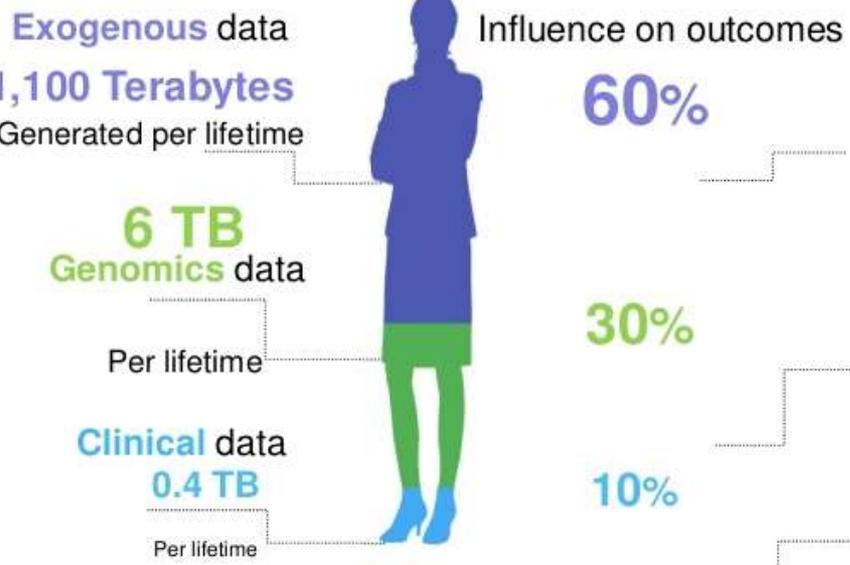
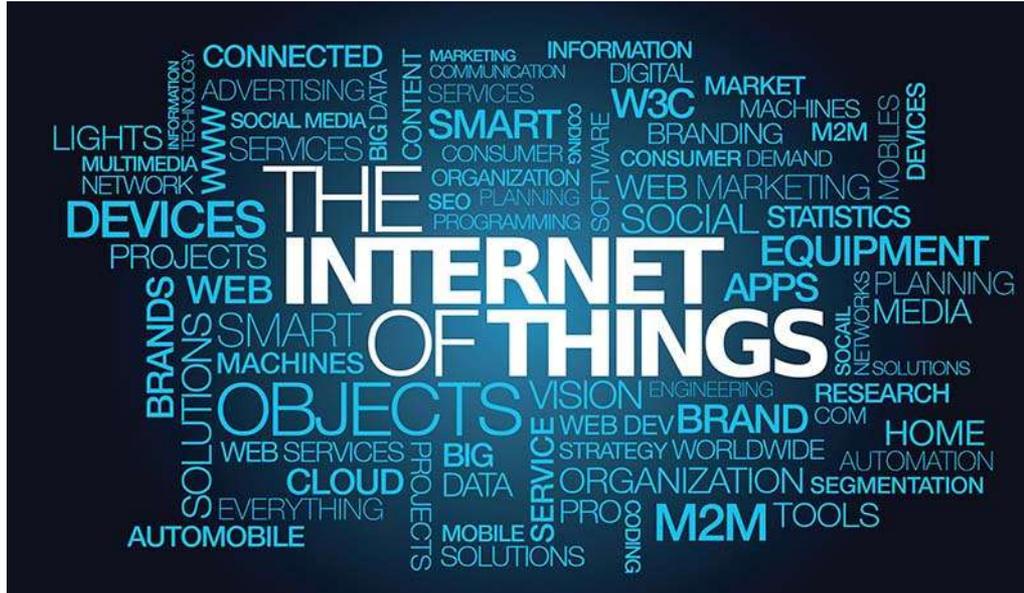


# GAP E NUOVE TECNOLOGIE

Nuovo contesto



High impact of technologies on real life



**“Unlike the genome, the exposome is a highly variable and dynamic entity that evolves throughout the lifetime of the individual...”**

-- Christopher Paul Wild



**Together** these lead to whether disease occurs or health is promoted...

Kevin Patrick, UCSD, NCI U01 CA130771



## EPIGENETICS

How the experiences of previous generations can affect who we are



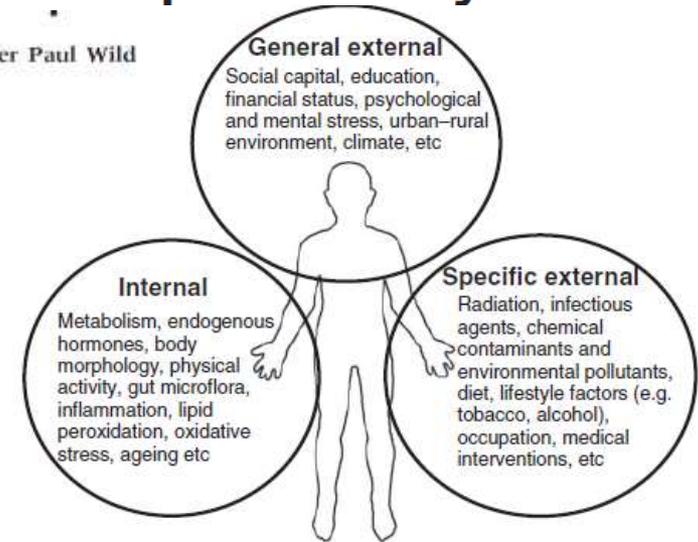
REVIEW

# The exposome: from concept to utility

Christopher Paul Wild

**Table 1** Some examples of approaches and tools to measure the exposome

Approach	Tools
Biomarkers (omics)	
General	Genomics, transcriptomics, proteomics, metabolomics, epigenomics
Targeted	Adductomics, lipidomics, immunomics
Sensor technologies (including mobile phones)	Environmental pollutants, physical activity, stress, circadian rhythms, location [global positioning systems (GPS)]
Imaging (including mobile phones, video cameras)	Diet, environment, social interactions
Portable computerized devices (including palmtop computers)	Behaviour and experiences (ecological momentary assessment), stress, diet, physical activity
Improved conventional measurements (combined with environmental measures)	Job-exposure matrices; dietary recall (e.g. EPIC-Soft)



**Figure 1** Three different domains of the exposome are presented diagrammatically with non-exhaustive examples for each of these domains



**The Relative Contribution of Multiple Determinants to Health Outcomes.**  
Researchers continue to study the many interconnected factors that affect people's health.

# 5 major categories

The literature highlights five major categories of health determinants: genetics, behavior, social circumstances, environmental and physical influences, and medical care.



...adattare e personalizzare gli interventi per tutti i pazienti con l'uso di telefoni, email, messaggistica, mobile apps e device wireless per misurazioni di parametri biologici...

...la tecnologia per raccogliere e integrare le informazioni riferite dai pazienti e le loro attività...

## Population Health Management

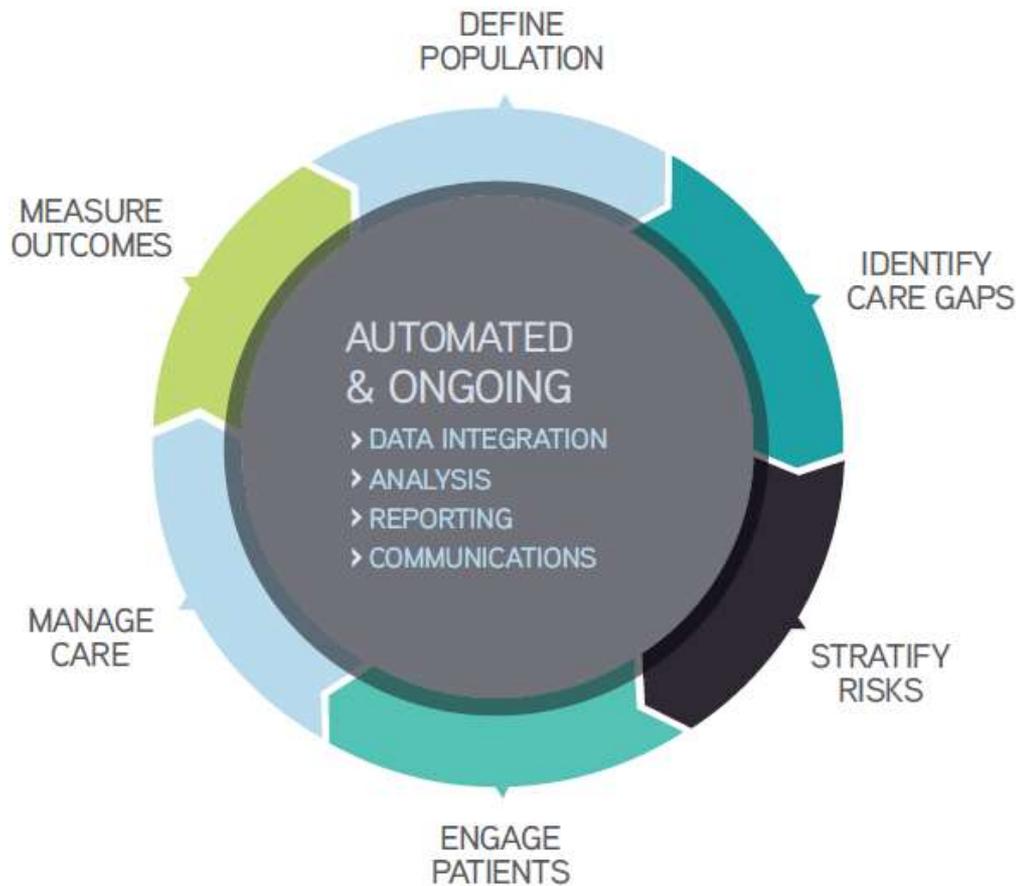
Transitions from fee for service to fee for value.

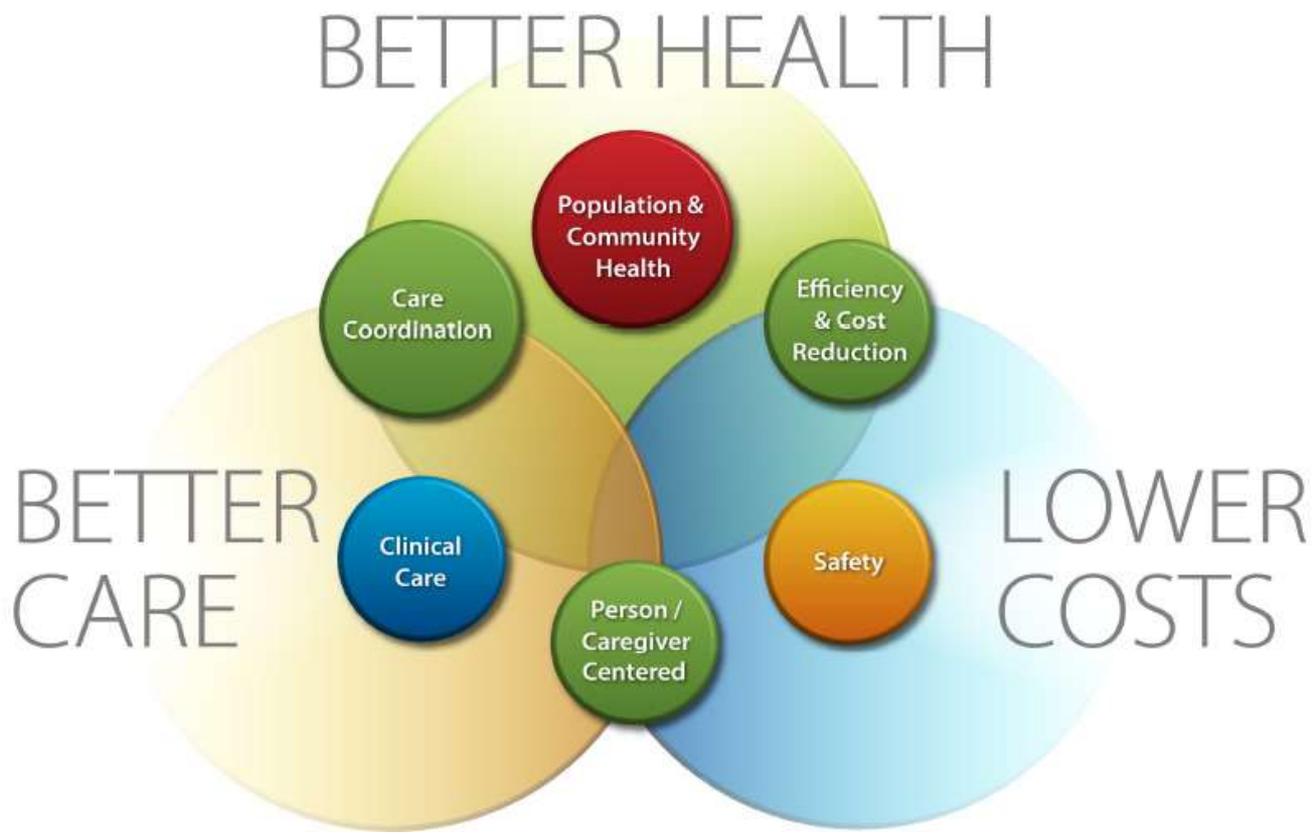
A Roadmap for Provider-Based Automation In a New Era of Healthcare



Population Health Management

Automation makes population health management feasible, scalable and sustainable.





U.S. Department of Health & Human Services

**NIH** National Institutes of Health  
*Turning Discovery Into Health*

Search NIH

NIH Employee Intranet | Staff Directory | En Español

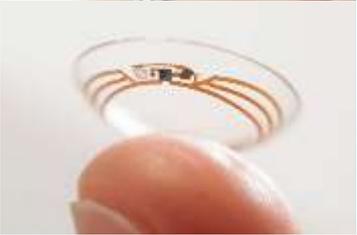
Health Information | Grants & Funding | News & Events | Research & Training | Institutes at NIH | About NIH

Home > Research & Training > Precision Medicine Initiative

**PRECISION MEDICINE INITIATIVE COHORT PROGRAM**



### Soluzioni innovative





NEWS +

NEUROSCIENCE +

NEUROLOGY +

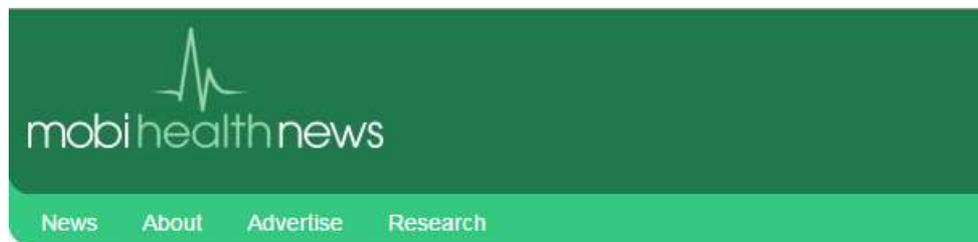
ROBOTICS +

PSYCHOLOGY

## Playing Tetris Can Block Addiction Cravings

Neuroscience News August 13, 2015 Featured, Psychology

Playing Tetris for as little as three minutes at a time can weaken cravings for drugs, food and activities such as sex and sleeping by approximately one fifth, according to new research published this week.



## iHeal device aims to prevent substance abuse relapses

By: Brian Dolan | Feb 9, 2012

Tweet 23

Share 24

Share 26

Tags: Affectiva Q Sensor | chronic pain | drug abuse | iHeal | medication adherence | MIT Media Lab | post traumatic stress disorder | remote monitoring substance abuse |

Published on 13.10.15 in Vol 17, No 10 (2015): October

This paper is in the following e-collection/theme issue:

Web-based and Mobile Health Interventions

Article

Cited By (0)

Tweetations (6)

Metrics

Original Paper

## A Web-Based Self-Help Intervention With and Without Chat Counseling to Reduce Cannabis Use in Problematic Cannabis Users: Three-Arm Randomized Controlled Trial

Michael P Schaub<sup>1</sup>, PhD  ; Andreas Wenger<sup>1</sup>, MSc  ; Oliver Berg<sup>2</sup>, MD  ; Thilo Beck<sup>2</sup>, MD  ; Lars Stark<sup>2</sup>, MA  ;

Eveline Buehler<sup>1</sup>, MSc  ; Severin Haug<sup>1</sup>, PhD 

<sup>1</sup>Swiss Research Institute for Public Health and Addiction (ISGF), associated to the University of Zurich and World Health Organization Collaborating Center, Zurich, Switzerland

<sup>2</sup>Arud Center for Addiction Medicine, Zurich, Switzerland

**Conclusions:** Web-based self-help interventions supplemented by brief chat counseling are an effective alternative to face-to-face treatment and can reach a group of cannabis users who differ in their use and sociodemographic characteristics from those who enter outpatient addiction treatment.

J Med Internet Res 2015;17(10):e232

doi:10.2196/jmir.4860



### Tapping onto the Potential of Smartphone Applications for Psycho-Education and Early Intervention in Addictions

Melvyn W. B. Zhang<sup>1\*</sup> and Roger C. M. Ho<sup>2</sup>

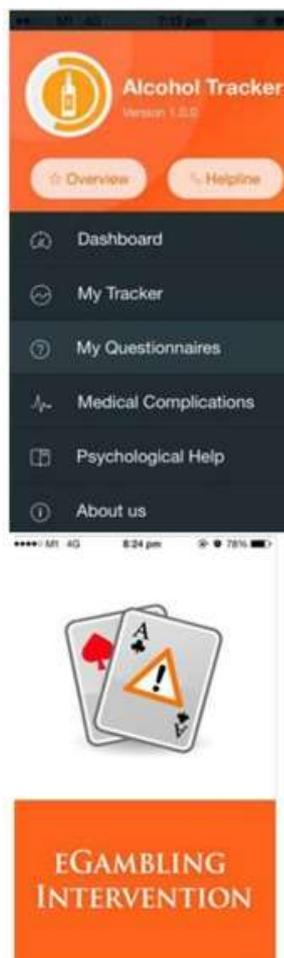
<sup>1</sup>Biomedical Global Institute of Healthcare Research & Technology (BIGHEART), National University of Singapore, Singapore, Singapore, <sup>2</sup>Department of Psychological Medicine, National University Healthcare Systems (NUHS), Singapore, Singapore

 frontiers  
in Psychiatry

PERSPECTIVE  
published: 17 March 2016  
doi: 10.3389/fpsyg.2016.00040

## CONCLUSION

E-health, and in particular smartphone applications, is increasingly becoming commonplace in healthcare. While psychiatry has tapped onto these innovations for conditions, such as affective disorders, and schizophrenia and psychosis, the usage of these technologies in addiction is limited. Addiction psychiatry could harness the potential of smartphone technologies in educating the masses about the harmful effects of drugs. This is particularly important given the changing perception held by individuals toward commonly abused drugs, as more drugs are being legalized or might be legalized for medical usage. Smartphone technologies incorporating theory-driven framework could be harnessed and used as interventional tool for those who are at-risk for the development of addiction. However, there remain limitations to the usage of such technologies that should be carefully considered.





## The efficacy of a web-based gambling intervention program for high school students: A preliminary randomized study

Natale Canale <sup>a,\*</sup>, Alessio Vieno <sup>a</sup>, Mark D. Griffiths <sup>b</sup>, Claudia Marino <sup>a</sup>, Francesca Chieco <sup>a</sup>, Francesca Disperati <sup>a</sup>, Stefano Andriolo <sup>a</sup>, Massimo Santinello <sup>a</sup>

<sup>a</sup> Department of Developmental and Social Psychology, University of Padova, Italy

<sup>b</sup> International Gaming Research Unit, Psychology Division, Nottingham Trent University, UK

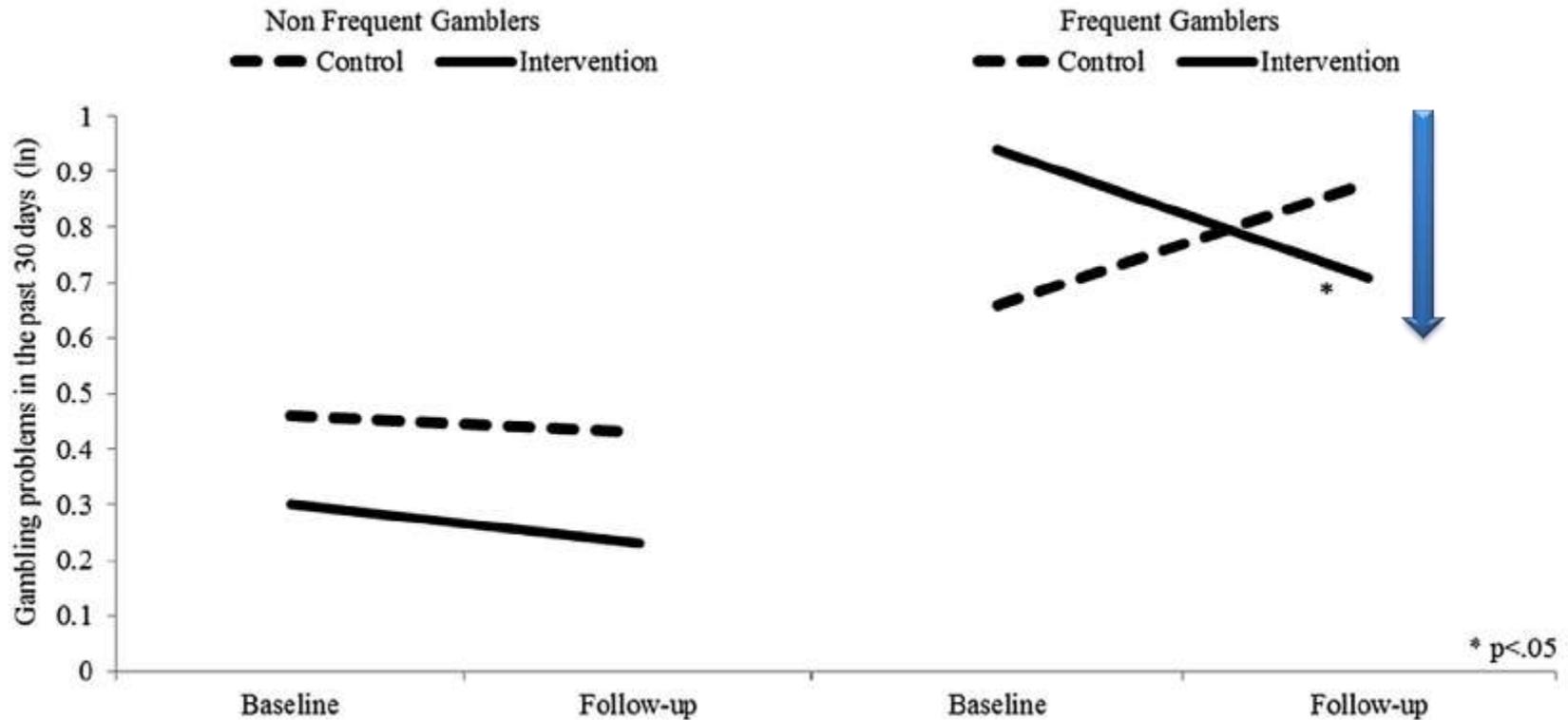


Fig. 2. Association between gambling problems in the past 30 days (ln) and time (baseline and follow-up) according to being frequent gamblers (yes/no).



## Serious games in prevention and rehabilitation—a new panacea for elderly people?

Josef Wiemeyer · Annika Kliem

<p><b>Cognition:</b> Perception Attention Understanding structures and meanings Strategic thinking Problem solving Planning, management Memory</p>	<p><b>Motor control:</b> Eye-hand/foot coordination Reaction time Rhythmic abilities Balance Flexibility, endurance, strength</p>
<p><b>Emotions &amp; volition:</b> Emotional control Stress control Endurance</p>	<p><b>Social competencies:</b> Cooperation Mutual support Empathy Interaction and communication skills Moral judgements</p>
<p><b>Personal competencies:</b> Self-observation Self-critics Self-efficacy Identity Emotional control</p>	<p><b>Media competency:</b> Media knowledge Self-regulated use Active communication Media design</p>

Fig. 1 Competencies that can be enhanced by playing digital games (adapted with modifications from Gebel, Gurt and Wagner [19], p. 262)

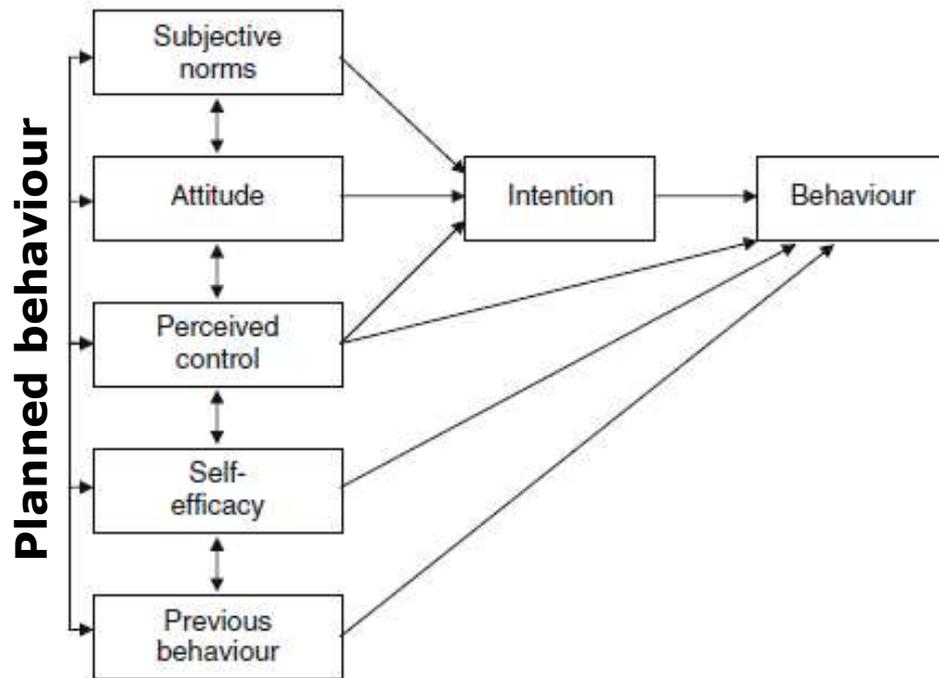


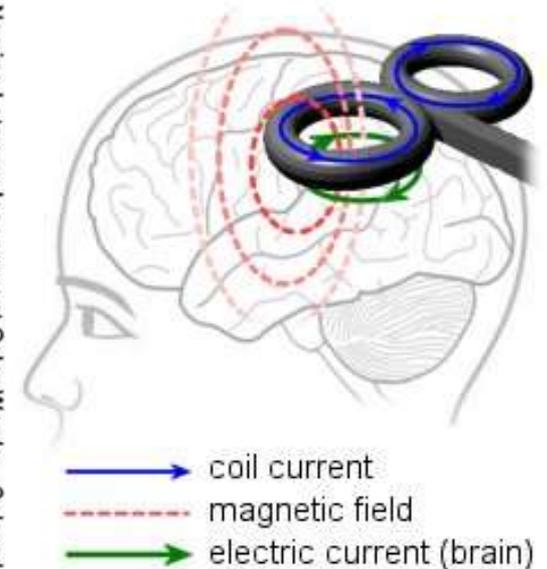
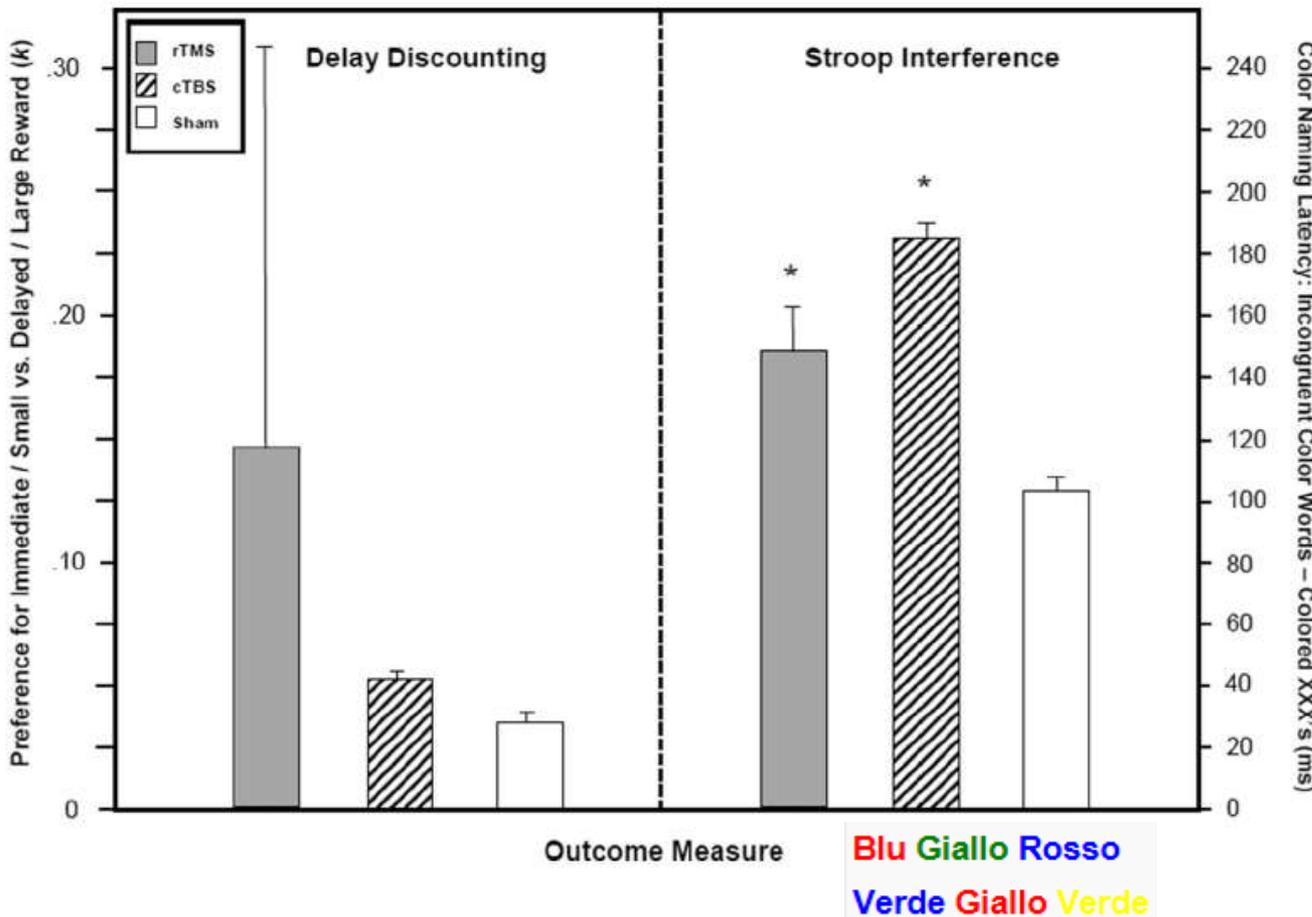
Fig. 2 Extended model of planned behaviour (adapted from Hagger, Chatzisarantis and Bidle [24])

## Effects of High Frequency Repeated Transcranial Magnetic Stimulation and Continuous Theta Burst Stimulation on Gambling Reinforcement, Delay Discounting, and Stroop Interference in Men with Pathological Gambling

Martin Zack <sup>a,\*</sup>, Sang Soo Cho <sup>b</sup>, Jennifer Parlee <sup>a</sup>, Mark Jacobs <sup>b</sup>, Crystal Li <sup>b</sup>, Isabelle Boileau <sup>b</sup>, Antonio Strafella <sup>b</sup>

<sup>a</sup> Neuroscience Research Department, Centre for Addiction and Mental Health, 33 Russell Street, Toronto, Ontario M5S 2S1, Canada

<sup>b</sup> Research Imaging Centre, Centre for Addiction and Mental Health, 250 College Street, Toronto, Ontario M5T 1R8, Canada





Enhancing decision-making and cognitive impulse control with transcranial direct current stimulation (tDCS) applied over the orbitofrontal cortex (OFC): A randomized and sham-controlled exploratory study

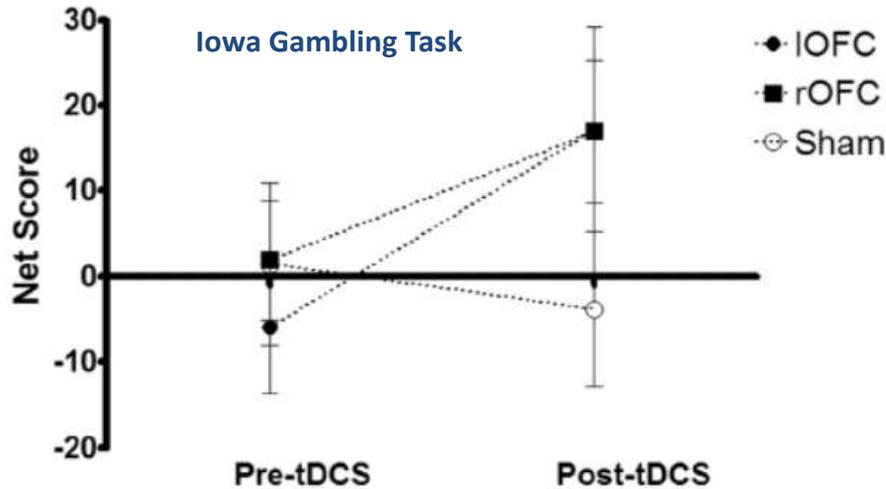
Julien Ouellet <sup>a</sup>, Alexander McGirr <sup>b</sup>, Frederique Van den Eynde <sup>a</sup>, Fabrice Jollant <sup>c</sup>, Martin Lepage <sup>d</sup>, Marcelo T. Berlim <sup>a,c,\*</sup>

<sup>a</sup> Neuromodulation Research Clinic, Douglas Mental Health University Institute, Montréal, Québec, Canada

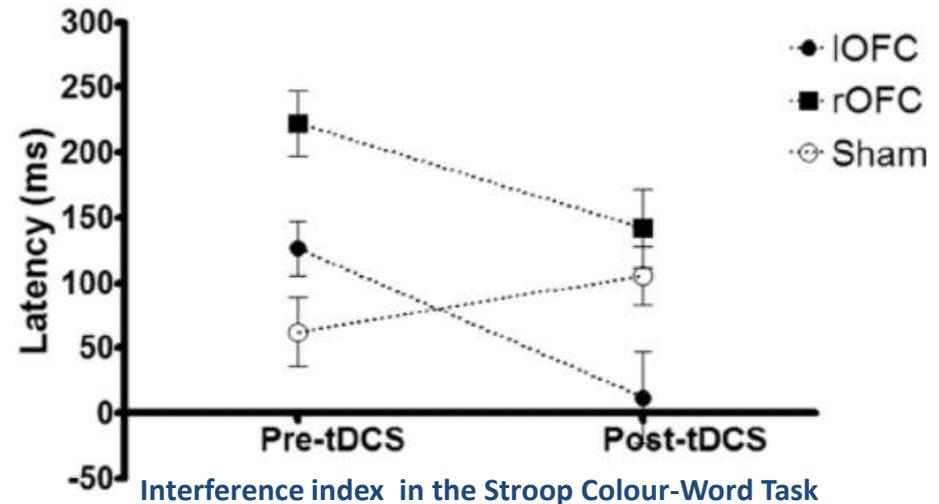
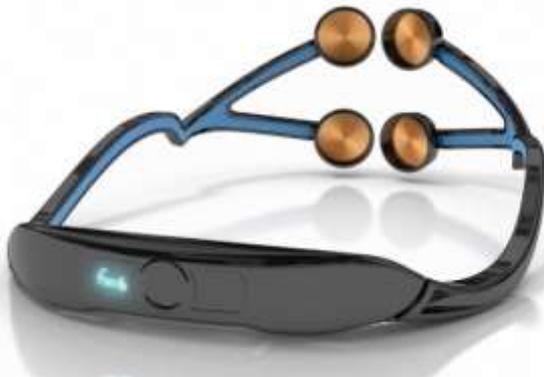
<sup>b</sup> Department of Psychiatry, University of British Columbia, Vancouver, British Columbia, Canada

<sup>c</sup> Depressive Disorders Program, Douglas Mental Health University Institute and McGill University, Montréal, Québec, Canada

<sup>d</sup> Brain Imaging Group, Douglas Mental Health University Institute and McGill University, Montréal, Québec, Canada



Abbreviations: IOFC = left orbitofrontal cortex; rOFC = right orbitofrontal cortex.



Abbreviations: IOFC = left orbitofrontal cortex; rOFC = right orbitofrontal cortex.



[www.masscompulsivegambling.org](http://www.masscompulsivegambling.org)

## GAME Me - Advanced system for self care gambling [Linked in](#)

Published on August 5, 2016

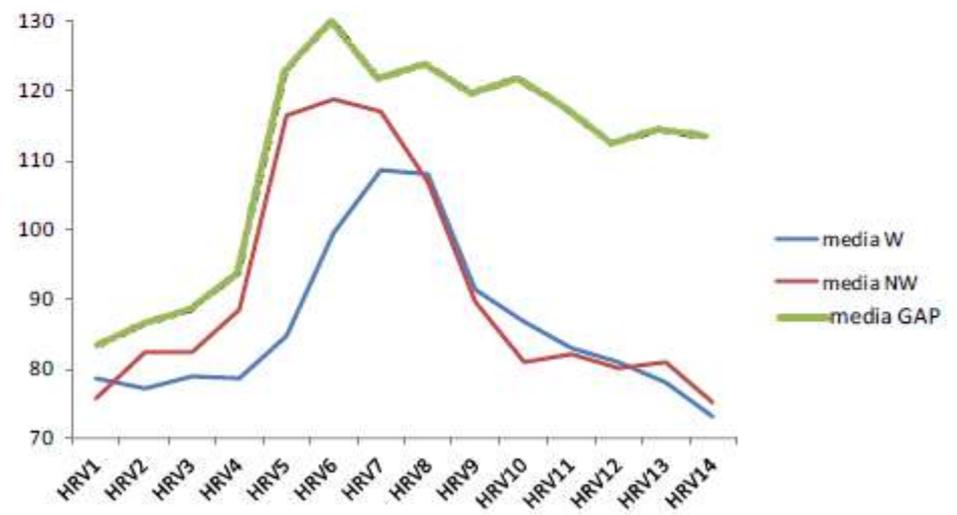
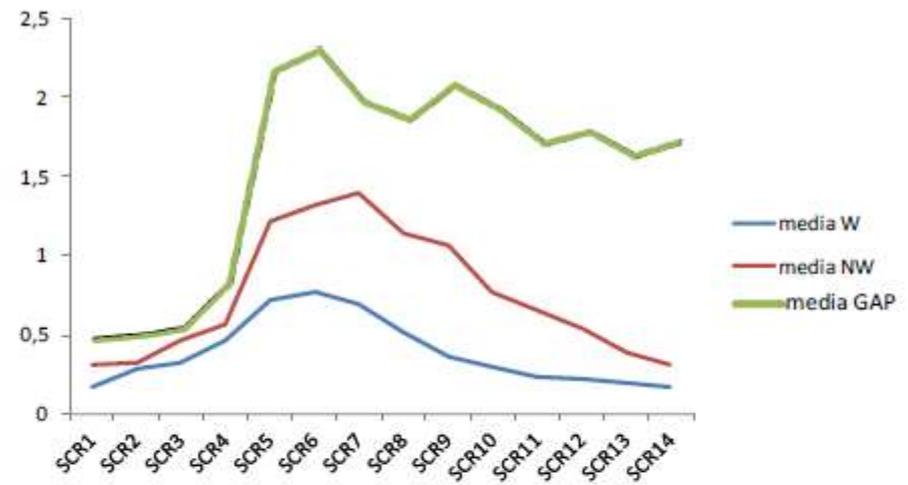


## ADVANCE SYSTEM FOR SELF CARE GAMING

Conduttanza cutanea



Frequenza cardiaca

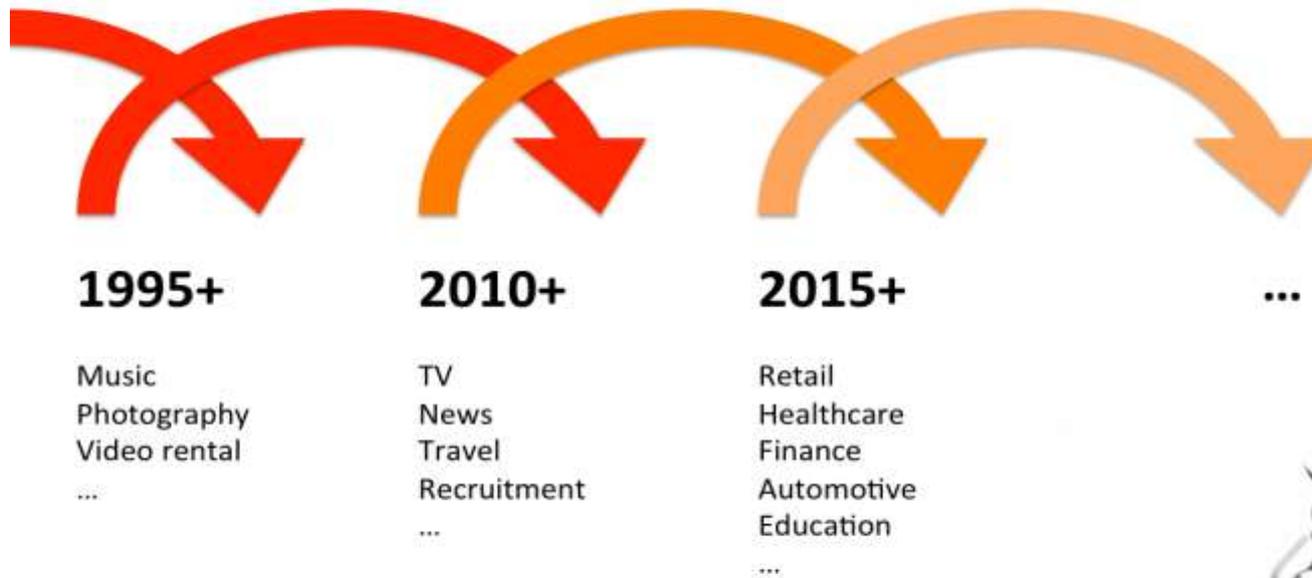




Subire o governare il cambiamento?

# Disruption

## Waves of **Digital Disruption**



**Professionals side**  
**Care providers**

Support change

Openness  
Lean organization  
Leadership model  
Systems  
interoperability  
Training  
e-CF

Matching supply  
and demand

Instruments

Connectivity  
Devices  
e—health solutions  
m—health solutions  
On-line services  
Big-open-linked data  
Internet of Things  
e-learning  
MOOC

**Clients side**  
**Cure demand**

Support accessibility

Education  
Literacy  
Pay for value  
Satisfaction  
Empowerment  
Self management  
Engagement

**APPROPRIATENESS – Outcome, not volume**

# GAP E NUOVE TECNOLOGIE



YOU CAN'T DO  
TODAY'S JOB WITH  
YESTERDAY'S  
METHODS AND BE IN  
BUSINESS TOMORROW.



**Ottimizzare le risorse**  
**Impiego soluzioni tecnologiche**  
**Riqualificazione professionisti**  
**Revisione procedure**  
**Leadership**

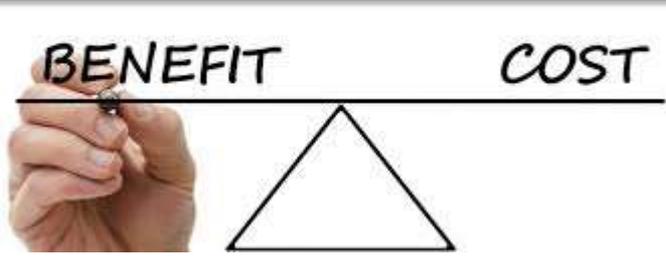
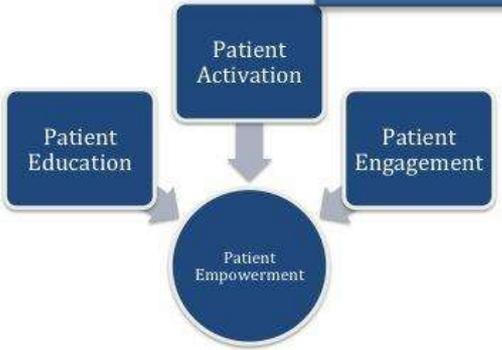




YOU CAN'T DO TODAY'S JOB WITH YESTERDAY'S METHODS AND BE IN BUSINESS TOMORROW.



**Miglioramento percorso clinico**  
**Analisi della domanda e riorganizzazione dell'offerta**  
**Coinvolgimento pazienti (empowerment)**  
**Valutazione efficienza ed efficacia**  
**Riduzione costi**



# GAP E NUOVE TECNOLOGIE

